

**DOMESTICATION OF OPEN EDUCATIONAL RESOURCES BY
ACADEMICS IN AN OPEN DISTANCE E-LEARNING
INSTITUTION OF SOUTH AFRICA**



by

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DECLARATION

I hereby declare that the thesis

**Domestication of open educational resources by academics in an open distance
e-learning institution of South Africa**

is my own work and all sources have been acknowledged through referencing.

Signed by candidate

.....

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DEDICATION



This study is dedicated to my late mother, Miss Emeldah Delisiwe Simelane, and my grandmother, Mrs. Getrude Simelane, who against all odds made it possible for me to be who I am today.



My lovely wife, Hlengiwe (Lele) Mncube, and to my four lovely daughters, Lindelwa, Zoe, Mayenzeke, and Obaliwe Mncube, also made positive contributions to this work through their understanding, patience, and encouragement even when I could not find time to attend to all their various social needs as I was far away from them.

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Psalm 37:5 (NKJV)

Commit your way to the LORD, trust also in Him, And He shall bring it to pass.

RELATED PUBLICATIONS

Mncube, L.S., Tanner, M., & Chigona, W. (2021). The commodification of open educational resources by academics in an ODeL institution. *IFIP Working Group 9.4: Implications of Information and Digital Technologies for Development*. Available: <https://www.mn.uio.no/ifi/english/research/groups/is/ifip-94/>

Mncube, L.S., Tanner, M., & Chigona, W. (2021). The contribution of information and communication technology to social inclusion and exclusion during the appropriation of open educational resources. *International Journal of Higher Education*, 10(6), 245-258. Available: <https://doi.org/10.5430/ijhe.v10n6p245>

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ABSTRACT

Problem Statement: The emergence of open educational resources (OER) has gained popularity and acceptance in higher education institutions and beyond the basic education sector. This has brought a persistent shift in tuition and research provision. Higher education institution management and curriculum instructors are praising the existence of the OER initiative. In such a situation, the social capital has a role in promoting the adoption, development, and dissemination of OER. The institutional expectations concerning OER are met because they are relying on academics employed by the open distance e-learning (ODEL) institution. The social capital demands must be achieved through willing academics as they are expected to eventually deviate from their traditional methods of tuition and research because they have to utilise OER in their academic spaces. It is not known, however, how academics accept, feel about, perceive OER, and what skills, opportunities, challenges exist in terms of the domestication of OER.

Purpose of the study: The main purpose of the study was to establish how ODeL academics domesticate OER in fulfilling tuition and research provision. This was necessary because the ODeL academics have diverse backgrounds such as study fields, teachings, research interests, and demographics. The ODeL institutions have no uniform guidelines or tools in place for the domestication of OER. In the absence of guidelines and policy, the diverse academics may have different strategies of domestication or may do nothing concerning OER.

Research methodology: To investigate the essential perceptions and knowledge about OER as the main artefact the study adopted the exploratory approach guided by the interpretivism paradigm. The study employed Domestication theory as a guide and lens to understand and determine the domestication of OER as a main study phenomenon. This was achieved by the adoption of a heterogenous single case study, which is an ODeL. In the process of domestication, the study gathered qualitative data from academics to establish how they were domesticating OER for tuition and research practices. That was done in an in-depth investigation by relying on semi-structured interviews, focus group interviews, document analysis, and actual artefact analysis.

Key findings: The study found that the majority of academics play a role in the domestication of OER besides the minority who were unable to do so. The lack of experience and prior knowledge were found to be a factor hindering the domestication process. Besides that, the lack of OER policy was found to be a main contributing factor leading to non-appropriation and dis-appropriation of the artefact. ODeL was found to be a relevant space for OER intervention, and such institutions play a role in the promotion and adoption of OER. The ICT infrastructure was recognised as the main artefact to be considered in the domestication of OER and was found to be an enabler and disabler in the domestication process.

Originality or contribution: This study has made a positive impact as a contribution to the world of knowledge in theory and practice. From the knowledge perspective, the study suggested eight theoretical propositions answering how academics domesticate OER for tuition and research. These findings may be significant in an ODeL institution or any South African higher education institution and beyond. A contribution to theory emerged from the utilisation of domestication theory, which helped to understand the phenomenon. This led to the recommendation of two additional phases of domestication which are non-appropriation and dis-appropriation. This might be relevant in the field of information systems for the investigation of artefacts in any dual context. Also, the study recommended the actual process of adoption and development of OER. This guideline can be adopted by higher education institutions by infusing them in policy development or for general guidance in actual adoption and developments.

KEYWORDS: Open educational resources, domestication theory, open distance e-learning, academics, information and communication technology, South Africa, higher education institution

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LIST OF ABBREVIATIONS AND ACRONYMS

4IR	Fourth industrial revolution
ADB	Asian Development Bank
AI	Artificial intelligence
AIS	Association for Information Systems
CAES	College of agriculture and Environmental sciences
CAS	College of Accounting Sciences
CC	Creative Commons
CCL	Creative Commons licence
CE	College of Education
CEMS	College of Economics and management science
CFL	Chinese as Foreign Language
CGS	College of graduate studies
CHS	College of Human Sciences
CL	Collage of Law
COD	Chair of Departments
COL	Commonwealth of Learning
CET	Community Education and Training
CSET	College of Science engineering and technology

DHET	Department of Higher Education and Training
EDUCAUSE	Education College and University Systems Exchange
HEI	Higher education institutions
ICT	Information and communication technology
IITPSA	Institute of Information Technology Professionals South Africa
IPMS	Integrated Performance Management Systems
IR	Institutional repository
IS	Information Systems
ISSM	Information Systems Success Model
IT	Information technology
LIASA	Library and Information Association of South Africa
LMS	Learning management systems
MIT	Massachusetts Institute of Technology
MOOC	Massive open online course
MTA	Model of Technology Appropriation
NDP	National Development Plan
NOLA	National Open Learning Agency
NQF	National Qualifications Framework

OA	Open access
ODeL	Open Distance e-learning
ODL	Open distance learning
OECD	Open Economic Cooperation and Development
OEPS	Opening Educational Practices in Scotland
OER	Open educational resources
OERC	Open educational resources champion
OERU	Open educational resources Universitas
OPL	Open Publication License
ROER4D	Research on Open Educational Resources for Development
RU	Rhodes University
SAHE	South African higher education
SA	South Africa
SAQA	South African Qualifications Authority
SDG4	Sustainable Development Goal 4
SETA	Sector Education and Training Authorities
SIT	Shadow information technology
SMS	Short message services
ST	Structuration Theory

SU	Stellenbosch University
TAM	Technology acceptance model
TPB	Theory of Planned Behaviour
TVET	Technical and Vocational Education and Training
UCT	University of Cape Town
UFH	University of Fort Hare
UNESCO	United Nations Educational, Scientific and Cultural Organization
Unisa	University of South Africa
URL	Uniform Resource Locator.
USA	United States of America
WPSET	White Paper for Post-School Education and Training

GLOSSARY OF TERMS

Academic	A lecturer or facilitator who is employed to offer training in any South African institution of higher education and training
Adoption	To select and use existing OER as suitable to the module
Appropriation	In this context this term describes the process of adoption and development of OER by academics.
Apps	This is referring to any application stored in a smartphone to access and use OER.
Basic education	Refers to South African schooling from grades R-12, which are classified as follows: R-3 foundation phase; 4-6 intermediate phase; and 7-12 senior and FET phase.
Commodification	This is the process of gathering the user's prior knowledge, experience, behaviours and perceptions about the artefact (OER) in a higher education domain.
Conversion	This describes how academics convince other academics to adopt and develop OER.
Dis-appropriation	This term means that academics or users are not guaranteed to carry on utilising and adopting OER. This refers to the causality to decide to stop using.
Dissemination	This is the process of sharing OER among academics and students.
Ecosystem	All systems and OER developed within ODeL context for tuition and research

End-user support	A person responsible for providing technical assistance in resolving ICT issues related to OER
Induction	This refers to the OER training provided by the institution management to equip newly employed academics.
Integration	This is the process of infusing the open educational resources with the existing content
Module	This is a course or subject taught in South African universities.
myUnisa	Learning management system used in an ODeL for administration, tuition and research
Non-appropriation	This relates to many hindrances which cause academics to not start adoption or development of OER.
Storage	A dual space where OER are kept for usage and development
TAB	A space created in the university library portals and given the name OER
Tuition	This term is used to describe both teaching and learning.
Uniform Resource Locator	The address leading to a website that contains OER
Virtual platforms	Online spaces used to store and access OER

CHAPTER 1: INTRODUCTION

1.0 Introduction

“The open provision of educational resources, enabled by information and communication technologies (ICT), for consultation, use and adaptation by a community of users for non-commercial purposes” (United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2002:24).

Globally many sectors are dependent on ICT (Heinrich, 2014; Walsham, 2017). This includes the education and training sectors which are continuously changing and relying on ICT in provision of tuition and research (World Bank, 2012; UNESCO, 2015). Higher education institutions (HEI) fulfill an important function in the promotion, distribution and use of knowledge using ICT (Mercader & Gairín, 2020). In this context, ICT initiatives are significant in helping organisations offer services to supplement and automate the processes they engage in to achieve strategic efficiency (Utulu & Ngwenyama, 2017).

This thesis focuses on the domestication of open educational resources (OER) by academics in the developing country context. These educational resources enabled by ICT developments require unique skillsets from academics, including digital literacy skills and ICT literacy and communication skills to facilitate improved collaboration in the academic domain (Alt & Raichel, 2020; Anthonysamy, Koo & Hew, 2020). This chapter provides insights into the background to the study; the problem statement; the purpose, the primary and secondary questions formulated for the study; research approach; motivation for conducting the research; contribution of the study; and overall structure of the thesis.

1.1 Background of the study

The education sectors rely on Information Systems for the provision and management of teaching, learning and research. A mandate of HEI is to facilitate access to information that meets the tuition and research needs of the institutions' communities (Jones, Rubel & LeClere, 2020). This relates directly to emerging trends, such as open access and OER. Higher education institutions must recognise the importance of open access which ensures that anyone in higher education can access and use educational resources (Massachusetts

Institute of Technology (MIT) OpenCourseWare, 2006; Organisation for Economic Co-operation and Development (OECD), 2007; Yuan, & Powell, 2013).

South African HEI have also recognised the importance of global open access which is a movement concerned with the free dissemination of knowledge worldwide (Cape Town Open Education Declaration, 2008; Higher Education in South Africa (HESA), 2016). For instance, there are desires to increase the visibility of research output on the African continent and in the rest of the world (Ani, Ngulube & Onyancha, 2014; Trotter & Kell, 2014). Open education is aligned with chapter nine of the National Development Plan for 2030, which encourages ICT innovations in education provision (National Development Plan, 2030, 2012) and which is aligned with Sustainable Development Goal four (SDG4) that ensures inclusive, equitable, quality education and promotes lifelong learning opportunities for all citizens (Croso, 2018; Hanemann, 2019). As part of the promotion of accessibility and open access in higher education institutions, the study recognises the relevance of OER. OER constitutes an important teaching and learning initiative in the academic context to be explored and implemented.

1.1.1 Conceptualising the OER phenomenon

OER was introduced in 2002 in the UNESCO forum which aimed to provide free access to educational resources on a global scale (UNESCO, 2002). The term ‘OER’ was put forward to promote knowledge and make it accessible in public domains through technology and the internet. Such an endeavour provides an opportunity for everyone to share, use, and re-use knowledge (Wiley, 2014). Using ICT, OER can enable access to courses, course materials, modules, textbooks, streaming videos, tests, software, and any other online tools, materials or techniques (William and Flora Hewlett Foundation, 2008). Therefore, OER has the potential to expand access for lifelong learning opportunities, achieve quality in education, and establish legal and political frameworks that promote social justice (Ossiannilsson, 2019; Brahim, Khribi, Jemni & Tlili, 2020). This shows that OER has the capabilities to afford free educational resources to anyone who desires knowledge. The discussions regarding OER are centred on the notion of “free” resources. In particular, the process of engaging with OER is, in fact, not free, as users are expected to have internet access which is not free. Moreover, in

some parts of the world, the issue of internet connectivity remains a challenge (Arinto, Hodgkinson-Williams, King, Cartmill & Willmers, 2017).

OER includes all digitised educational resources that are accessible freely and openly for academics and students to perform their tuition and research (Glennie, Harley, Butcher & Van Wyk, 2012; Bethel, 2020; Todorinova & Wilkinson, 2020). Over the last decade, the OER has evolved and has attracted considerable attention, particularly concerning the accessibility and cost of education (Goldberg & LaMagna, 2012). They further indicate that OERs are digital learning objects that are freely and openly offered to academics, students, and self-learners to use and re-use for teaching, learning, and research purposes.

OER has encouraged the increase of multi-media learning resources on digital platforms. This brings opportunities for institutions to use OER in the provision of learning and research (Hylén, 2006; Willems & Bossu, 2012; Ek & Mukuru, 2013). However, while OER is part of open access, many institutions do not have policies in place to manage and coordinate OER (Cox & Trotter, 2016). An example of the few institutions who have implemented an OER policy is situated in Indonesia, a developing country. The policy, issued by the Directorate General of Higher Education - a division in the Ministry of Education and Culture - stipulates that every lecturer who supports the promotion of OER must provide the address of their scholarly works on a website which is the institutional repository (Farida, Tjakraatmadja, Firman & Basuki, 2015). Nonetheless, even where open-access policies are in place, not all academics have taken advantage of adopting and developing OER due to a lack of administrative and financial support (Cox & Trotter, 2016), and other hindrances.

1.1.2 The contextualisation of the study

The study context is set in South Africa. South Africa is one of the African countries located in the most southern part of the African continent (Commonwealth Secretariat, 2021). It is surrounded by countries such as Namibia, Botswana, Zimbabwe and Eswatini. Moreover, Lesotho is located within South African's borders (see the South Africa map in Appendix 13). South Africa political transition is known as one of the most remarkable political feats of the past century (World Bank, 2021). This country is considered as a democratic country that achieved democracy in 1994. It is also considered to be a developing country (OECD, 2021). South Africa remains a dual economy with one of the highest, persistent inequality rates in

the world (World Bank, 2021). In relation to education South Africa is still characterised by many challenges including poor ICT infrastructure, high costs, a diverse student body, and lack of equitable access to education as well as learning opportunities (Weber, 2019).

The Department of Higher Education and Training (DHET) in South Africa announced the new government's intention to open learning and remove barriers to education including those individuals who were previously disadvantaged by South Africa's policy of apartheid (Mzangwa, 2019). Many people in South Africa, including those who were oppressed by the apartheid government, started taking advantage of the new opportunities to enrol at institutions of higher education. As a result, all twenty-six South African universities HEI including the University of South Africa (Unisa) are experiencing challenges in accommodating all qualifying post-school students because of insufficient spaces (Njoko, 2018).

The DHET aims to create opportunities to promote the development of a flexible learning system which is based on distance education and resource-based learning, built on open learning principles (DHET, 2017). This initiative might alleviate the challenges inherent in the increasing number of students enrolling in higher education in the South African context. The main purpose of the DHET's initiative is to promote open access to education and learning. In addition, the National Open Learning Agency (NOLA) was formed to work with and support the Department of Education to promote open learning in education and training; develop an open learning system for South Africa; and explore "the capacity of existing institutions which form part of the national open learning system" (DHET, 2014b:12).

There is a need to recognise the impact of ICT as a tool for education provision at universities and to support "the creation of an enabling environment for appropriate integration of ICT, and the expansion of distance education provision in an orderly manner in which access and quality issues are at the forefront" (DHET, 2014b:11). As such, in support of open and distance learning the DHET (2017) encouraged the promotion, development and use of OER in HEI – an important move because OER are accessible to students provided they have reasonable internet access.

The main study context is University of South Africa (Unisa) which is also known as an open distance e-learning (ODEL) university for South Africa. The significance of ODeL as a

suitable case study is appropriate and relevant to fulfil the country's agenda which is "to promote access of OER" (DHET, 2017). A concern that needed attention is that all DHET documents and policies that were reviewed are not identifying Unisa as an ODeL institution. Appendix 12 shows the DHET classification of universities (DHET, 2011; 2014a; 2019) as follows: eleven traditional academic universities; eight comprehensive universities; and six universities of technology. Unisa is classified as a comprehensive university. However, Unisa can be considered as an ODeL, as is confirmed by the University council (Unisa Annual Report, 2013).

Unisa as an ODeL, adheres to DHET policies and initiatives of openness and distance learning provision. ODeL offers study opportunities to about 400 000 students from across South Africa, Africa and other parts of the world (Unisa Website, 2021). Unisa plays an important role in open distance e-learning provision and encourage the use of OER (Unisa Annual Report, 2013). This Information Systems study is interested in establishing how academics domesticate OER (an artefact) in an ODeL. In South Africa there is one ODeL which is called Unisa (Unisa Annual Report, 2013). ODeL offers tuition and research in a virtual mode (Mncube, Dube & Ngulube, 2017). The ODeL framework is premised on the assumption that every student enrolled in an ODeL institution can be supported by modern electronic technology and other digital facilities (Ngubane-Mokiwa, 2017; Chiarini, Belvedere & Grando, 2020). It was for these reasons that Unisa was deemed most suitable as the main context for this study. More details are discussed in the study context chapter (Chapter four).

1.1.3 The domestication process

A framework to investigate how social contextual factors influence the way in which people use and benefit from the IT artefact is offered by the Domestication Theory (Silverstone, Hirsch & Morley, 1992; Haddon, 2006, 2011). The concept of domestication has been used in various disciplines such as Media and Communication Studies, Sociology, Technology, and many more. This concept has been developed to describe and analyse the processes of technology acceptance, rejection, and usage (Berker, Hartmann, Punie & Ward, 2006). Domestication is not only about adopting technology by people; it is also about people creating an environment that is mediated by technology (Berker et al., 2006). In the context

of higher education institutions, ICT potential may only begin to materialise when users, such as academics, adopt technology as a tool for tuition and research or they can decide to reject technology. Therefore, domestication theory by Silverstone and Haddon, (1996) is the main theoretical underpinning of the study. This theory consists of three phases, namely commodification, appropriation, and conversion. For further enhancements, the appropriation phase of domestication theory was replaced by the Model of Technology Appropriation (MTA) by Carroll, Howard, Peck and Murphy (2002). More detailed justification is unpacked in Chapter three.

The value of domestication in this study is influenced by Chigona, Chigona, Kausa and Kayongo (2010) who describe domestication as the process of technology adoption into everyday life. In the context of the study, academics use OER with the support of ICT to provide tuition and research daily. This creates opportunities for further investigation of how academics in a developing country like South Africa domesticate OER within an ODeL. It must be noted that the domestication of OER in higher education is not a fixed initiative or process. It seemingly occurs differently for individuals in different phases and levels and could not be assumed to be a uniform approach.

1.2 Problem statement

OER involves a high degree of interaction with ICT systems (Tlili, Zhang, Papamitsiou, Manske, Huang & Hoppe, 2021). Hence, it cannot be assumed that all academics are able to adopt, develop and disseminate OER for tuition and research. Nonetheless, academics are expected to engage with OER in the provision of tuition and research. On the African continent and in the South Africa OER initiatives are a fairly new phenomenon. However, little research has been undertaken on the development of OER by the academic community, specifically within the African context (Percy & Van Belle, 2012; Pawlowski & Bick, 2012; Duan, & Liao, 2019). Although the use of OER in higher education is encouraged, these resources are still not widely used and progress in the large-scale adoption and development of OER in most universities has been slow (Annand & Jensen, 2017; Appiah, Essel & Amankwa, 2020), possibly due to many contextual challenges.

Indeed, many researchers have noted that there are challenges related to opportunities, adoption and development of OER (Wiley, Bliss & McEwen, 2014; Arinto, Hodgkinson-

Williams, King, Cartmill & Willmers, 2017). Some of these challenges and opportunities have not yet been explored within the broader context of an ODeL. An ODeL, is a significant place for OER adoption because tuition and research are conducted in a virtual mode. However, academics must rely on formal and informal technological support within the workplace to perform their functions effectively (Birkland, 2013).

There are quite a few studies on domestication that have contributed to the world of knowledge. The output has been recognised in different research contexts such as domestication in transforming the business sector (Kerr & Koch, 2014), domestication of ICT environments (Wheelock, 1994; Habib & Cornford, 2002; Birkland, 2013); domestication in education and society (Chigona, Chigona, Kayongo & Kausa, 2010; Shekar, 2009) and any other contexts. However, the title has been recognised specifically on the domestication of OER within the spheres of higher education institutions. It would be interesting to know how academics in an ODeL institution perceive OER in terms of adoption, development, access, usage, and dissemination to meet the purposes of tuition and research. In such an event, the domestication of OER can be recognised as one of the significant IT artifacts. For example, ICT tools and skills are substantial for the use of OER (Tlili et al., 2021). It might be possible that not all academics are knowledgeable or equipped with relevant skills to domesticate OER. In addition, literature provides little evidence of whether academics are domesticating OER.

The above-mentioned gaps point to a significant need for further scientific investigation concerning the domestication of OER by academics in an ODeL. The study could lead to a better understanding of how academics integrate, access, use and disseminate OER and how institutions expose them to these initiatives. Studies which investigate this small niche are limited and not particularly situated in developing countries, such as South Africa.

1.3 The aim, objectives, and research questions

It is not known how academics from ODeL adopt and develop OER to meet the purposes of tuition and research. In addition, there is little to no evidence in literature of how academics are domesticating OER in an ODeL. This study aims to establish **how academics from ODeL institutions domesticate OER for tuition and research in the South African context**. While investigating this question, the study unpacks the different processes used by

academics to support adoption, development, and dissemination of OER to enrich tuition and research.

The formulation of the secondary research questions is based on the phases of the domestication theory, namely commodification, appropriation and conversion (Silverstone & Haddon, 1996). Moreover, the research questions are aligned with the purpose of Information Systems studies, namely, to provide an understanding of the Information System context, and the process whereby the information system influences and is influenced by its context (Goldkuhl, 2012).

1.3.1 Research questions

The main research question is formulated as follows:

- How do academics from open distance e-learning institutions domesticate open educational resources for tuition and research in South Africa?

The study sub-questions resulting from the primary questions are specified below:

1. How can open distance e-learning institution academics commodify open educational resources for tuition and research in South Africa?
2. How can open distance e-learning institution academics adopt and develop open educational resources for tuition and research in South Africa?
3. How can open distance e-learning institution promote the use of open educational resources to academics in South Africa?
4. What is the role of information and communication technology in the domestication of open educational resources by open distance e-learning institution academics in South Africa?

1.3.2 Objectives of the study

The objectives of this study were:

1. To establish how can open distance e-learning academics commodify open educational resources for tuition and research in South Africa.

2. To find out how can open distance e-learning academics adopt and develop open educational resources for tuition and research in South Africa.
3. To determine how can open distance e-learning promote the use of open educational resources in South Africa.
4. To investigate what is the role of information and communication technology in the domestication of open educational resources by open distance e-learning academics in South Africa.

1.4 Research approach

The study adopted both a deductive and inductive reasoning approach. The qualitative researcher can adopt both inductive and deductive processes: “as evaluation fieldwork begins, the evaluator may be open to whatever emerges from the data, a discovery or inductive approach. Then, as the enquiry shows patterns and major dimensions of interest, the evaluator will begin to focus on verifying and elucidating what appears to be emerging, a more deductive approach to data collection and analysis” (Patton, 1991:194).

The relevance of a deductive approach is based on the need to rely on existing theories to explain the study phenomenon (Eriksson & Kovalainen, 2008; Wilson, 2010). A deductive approach is needed in qualitative research because it represents an important step towards validating opinion in qualitative research findings (Hyde, 2000).

In contrast, inductive reasoning is a theory building process, starting with observations of specific instances and seeking to establish generalisations about the phenomenon under investigation (Fereday & Muir-Cochrane, 2006). For this study, inductive reasoning was relevant in the interpretation and discussion of the findings. In so doing, the study was influenced by Gregor (2018) who postulates that there is a need for an Information System researcher to rely on more than one logic of inquiry. Therefore, relying on both deductive and inductive reasoning enabled the researcher to investigate the phenomenon, leading to the extension of the domestication theory. In other words, the study was able to suggest theoretical propositions through the use of deductive reasoning, while inductive reasoning led to the theoretical extension of the domestication framework.

The study was guided by an interpretivism philosophical position that focuses on how individuals interpret and understand social events and domains (Eriksson & Kovalainen, 2008). Interpretivism philosophical assumption claims a qualitative approach as its relevant method of inquiry (Eriksson & Kovalainen, 2008). Therefore, the qualitative method was used to pose questions to obtain relevant in-depth results for the study. The methodology for this study was a strategy of conceptualising and conducting an inquiry to construct scientific knowledge (Cecez-Kecmanovic, 2005). Furthermore, the plan behind the choice and use of specific methods informed the inquiry on what, when, where and how data should be collected and analysed (Scotland, 2012).

The study participants were drawn from a South African ODeL heterogeneous schools, colleges and academic departments. The study population consisted of 52 participants who were purposively targeted to participate in the study. The sample was comprised of 42 academics in semi-structured interviews, two focus group interviews, five OER champions and one librarian. The key informants were academics as the main stakeholders expected to domesticate OER for their tuition and research. The study employed multiple methods of data collection to ensure a rich data set. The methods used included semi-structured interviews, focus group interviews, actual artefact observations, documents analysis and field notes. More details about study methodology are discussed in Chapter five.

1.5 Motivation for conducting research

Universities play a significant role in providing core academic services that include tuition and research (Jongbloed, Enders & Salerno, 2008; Jones et al, 2020). Many studies deal with recent ICT developments aimed at improving the role of HEI (Bala, 2018; Mohamed & Ahmad, 2019). It was deemed necessary to undertake an in-depth investigation into how OER are domesticated so that they are accessible, used and disseminated by academics. It was believed that the findings would yield positive results on how OER are domesticated for use in the activities of academics in institutions. Although challenges are encountered that hinder OER access and usage, deploying and maintaining relevant systems is imperative in promoting the use of information in academic contexts. Hindrances include the fact that some institutions have inadequate knowledge about how to expand and improve their ICT services (O'Neill, 2017). This could be the result of many factors, such as budget constraints (Denda

& Hunter, 2016; Lo, Cho, Law, Chiu & Allard, 2017), insufficient policy development, inadequate goal setting, insufficient mandate, and inadequate infrastructure (Mwashashu, Muli & Mwawasi, 2020).

ICT systems may contribute to the lowering of academic standards in university systems. Academics, as users in an ODeL, are reliant on online systems for adoption, development, accessing, using, and disseminating OER that can promote academic rigor. Therefore, if those ICT systems are not well maintained, it will have an impact on accessing electronic resources, including OER (Tøndel, Foros, Kilskar, Hokstad & Jaatun, 2018). As HEI change how they store and distribute information, academics are compelled to change how they integrate, access, use and disseminate resources (Salem Jr, 2016). These changes are associated with the relevant ICT systems used for hosting and accessing OER and whereby academics can access relevant information in the new digital age of tuition and research. This study, therefore, attempted to contribute to an existing body of knowledge by conducting an in-depth investigation into how academics adopt, develop, and disseminate OER - particularly in an ODeL.

Concerning the expansion of educational offerings, the utilisation of digital platforms to provide access to OER is important. Expanding access to education is needed as well as improved quality and affordability, increased diversity and provision of educational resources (DHET, 2014a). For this to be achieved, access to OER becomes imperative (Education College and University Systems Exchange (EDUCAUSE), 2017); it motivated the application of domestication processes to discover how academics could be encouraged to domesticate OER for their daily tuition and research activities.

1.6 Contribution of the study

This study on the domestication of OER by academics in South Africa attempted to make a meaningful contribution to the fields of Information Systems, Computer Science, ICT and any other disciplines - all academics departments that provide tuition and conduct research – as well as others that use, or are associated with, IS. In terms of the significance of its contribution, the study focused on the following components: theoretical and practical.

1.6.1 Theoretical contribution

The study provided an insight into appropriate measures to adopt, develop and disseminate OER within higher education, particularly in developing countries where it would benefit not only ODeL environments but also other institutions in South Africa. This study is also important on a theoretical level. The theoretical contribution emerges from operationalising domestication theory and MTA to study the domestication of OER as the main phenomenon. The study was able to extend the domestication theory with two additional phases, the non-appropriation and dis-appropriation phases (see 7.7). The proposed theoretical constructs are based on the theory of explanation that provides an explanation of “how, why, and when things happened, relying on varying views of causality and methods for argumentation” (Gregor, 2006:619). These constructs in the theory will enable the researcher to explain and discuss how and why non-appropriation and dis-appropriation occur in the domestication process. Furthermore, the study contributes by the formulation of theoretical propositions that emerged when answering how academics domesticate OER in an ODeL context (see 7.1).

1.6.2 Practical contribution

Practically, the study contributes to the key elements of higher education institutions, namely tuition and research. South African universities are facing the challenge of trying to accommodate a large number of students for enrolment in HEI (HESA, 2016). The study might benefit the country, particularly the DHET, by helping it to look for more opportunities to support ODeL initiatives in the future. In addition, the findings of the study inform ODeL and HESA of the most appropriate and effective domestication processes of OER to help enhance universities’ tuition and research. Ideally, one uniform set of guidelines of adoption and development of OER need to be provided to academics for the domestication of OER. These guidelines might be of significance to all higher education institution who commit to the use of OER, particularly in the South Africa context and beyond. The findings further suggest appropriate guidelines for adoption and development of OER. These guidelines also articulate how OER may be embedded in academics’ daily routines of tuition and research (see Appendix 10). Additionally, this study makes recommendations to policymakers and any other professional organisations to strengthen or amend their policies concerning OER.

1.7 Structure of the thesis

This thesis consists of eight chapters as set out in the following table.

Table 1.1: Structure of the thesis

Chapter	Content
Chapter 1: Introduction and Background	This chapter contains an introduction to the background of the study as well as the thesis structure. It presents a problem statement, the aim and objectives of the research, a short description of the research approach and the contribution of the study to the existing body of knowledge.
Chapter 2: Literature Review	Chapter 2 reviews the relevant available literature related to the domestication of OER in an ODeL to identify the existing gaps in the body of literature which justifies the study phenomenon.
Chapter 3: Theoretical Framework	In a discussion of the main theoretical framework of the study, the domestication theory and MTA are presented to show how they were most suitable for this study. The adoption of Information Technology (IT) is explored as well as the four theories which could be relevant to the study: Technology Accepted Model; Theory of Planned Behaviour; Information Systems Success Model and Structuration Theory (see Appendix 17).
Chapter 4: Contextual Setting of the Study	In this chapter, the contextual setting is described and the contexts in which the universities are located within the broader Higher Education context of South Africa are explored. It outlines the necessity to study South African policies related to open education and establish the selection of the main case study, i.e., an ODeL.

Chapter 5: Research Methodology	In this chapter, the research methodology of the study on domestication is given in terms of its logic, starting by addressing the philosophical assumption ‘interpretivism’. The research design, population, sample and sampling techniques, data collection and analysis, ethical considerations, reliability, and validity are discussed – as well as the methodological limitations and challenges.
Chapter 6: Presentation of findings	This chapter focuses on data analysis and the presentation of the findings. In the presentation of the results, it categorises the analysis into three sets: the first is for the domestication of OER by academics and the other two sets are for OER Champions and Librarians. It validates whether academics get support during their adoption of OER. Data obtained from the OER champions and Librarians are analysed and presented to determine what role they play in the domestication of OER by academics in an ODeL.
Chapter 7: Discussion and Interpretation of Findings	This chapter inductively discusses the findings. The purpose of the discussion is to interpret and describe the significance of the study findings considering what was already known about the research problem, and to explain any new understanding of domestication of OER. Also, the new insights about the study problem are taken into consideration. The discussion tries to connect to the introduction regarding how the research questions were posed and to identify the literature gaps comparing the empirical findings that enabled us to produce new knowledge of the study.

Chapter 8: Conclusions and Recommendations	Chapter 8 revisits the research questions and the contribution of the research in terms of theory and practice. It states the limitations, makes suggestions for further research, and it reaches conclusions and makes recommendations.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter provides an overview of existing literature reviewed on the main study artefact, namely the domestication of OER by academics in an ODeL. In reviewing the literature, the study was guided by the research objectives and questions. The study conducted a thematic literature review and focused on the key themes as illustrated in Figure 2.1. This enabled the study to identify the literature gaps which allowed the formulation of research sub-questions.

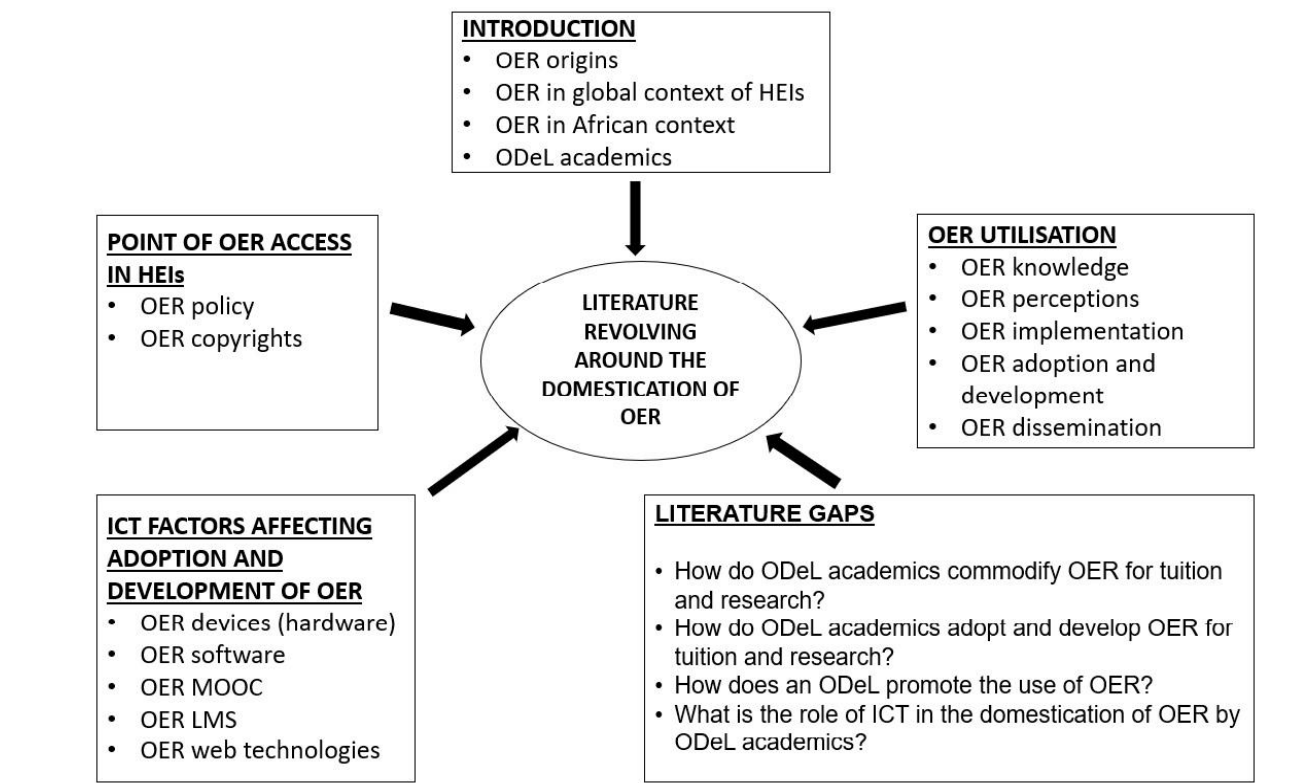


Figure 2.1: Literature review map

The literature review describes, summarises, evaluates, and clarifies the research topic within the context of current literature to shed light on the research phenomenon and context (Hart, 2008). The chapter attempts to identify gaps in the literature by identifying and following one specific major problem to be investigated throughout.

2.1 Origins of open educational resources

OER was introduced and promoted in 2002 by UNESCO to provide free access to educational resources on a global scale (UNESCO, 2002). OER was one of the ideas put forward to promote the world's knowledge, making it accessible in public domains through technology and the internet. The aim was to provide an opportunity for everyone to share, use, and re-use knowledge (Wiley, 2014). OER is accessed through ICT and facilitates collaborative, flexible learning, and the open sharing of teaching practices (Cape Town Open Education Declaration, 2008).

OER is an emerging phenomenon in many sectors of education including tertiary institutions in both developed and developing countries. It is gradually getting recognition in the education sectors. Walz (2015) and the William and Flora Hewlett Foundation (2015) mention that, in the context of higher education, OER may relate to a course outline, study guides, images, illustrations, case studies, lessons developed for a learning management system, interactive exercises, practice problem sets, recorded lectures, assessment tools or any other interactive tutorials. Mostly all resources that are considered as OER are accessible through the internet, search engines, website, Blogs and in any other digital platforms. Table 2.1 shows the types OER and their platforms.

Table 2.1: The different types of open educational resources

TYPES OF OER	DELIVERY PLATFORM
Curriculums	• Open courseware. • Online tutorials. • Digital learning objects
Learning modules	• Open textbooks. • Online tutorials
Lab experiments	• Streaming videos. • Online tutorials.
Simulations,	• Streaming videos. • Online tutorials. • Digital learning objects
Course videos	• Streaming videos • Online tutorials

Discussion prompts	• Learning modules • Digital learning objects
Library guides	• Open access journals
Assessments	• Learning modules • Online tutorials • Digital learning objects

2.2 Open educational resources in higher education

Globally, HEI are the primary sources of adoption and development of OER, attesting to the vast potential of OER for global transformation in education. The Ministerial Statement by UNESCO (2017:301), which was adopted during the Second World OER Congress held in Slovenia, states that: for OER to reach its full transformative potential for supporting the realisation of SDG4, OER needs to be more integrally a part of educational policies and practices from early childhood education to post-secondary, technical vocational educational training and in higher education (UNESCO, 2017). This is an indication of the significance of OER in education, which not only involves the higher education sector but all phases of education.

Higher education institutions are advancing in teaching and learning innovation. However, in the global south, unequal access to education, and more specifically to higher education, continues to be a major challenge (UNESCO, 2015). This shows that, in most developing countries (global south), the imbalance in higher education has not yet been properly addressed. For instance, even though the ICT is commonly used in developing countries, it is still a challenge in the context of OER (Hinostroza, 2018). Moreover, HEI in developing countries, such as in Asia and Africa, are still facing a challenge of a shortage of qualified academics, although the enrolment numbers are immensely high (Asian Development Bank (ADB), 2011).

The better-resourced universities often function in line with international standards, whereas in poorer regions the educational system tends to be dysfunctional on multiple levels (UNESCO, 2015). This may be caused by unequal access to education, variable quality of educational resources, inadequate teaching and poor student performance, and the increasing

cost and concern about the sustainability of education (Cox, Masuku & Willmers, 2020). The situation requires serious attention. A study conducted in Latin America suggests that stakeholders, government entities, academics, administrators, and researchers should commission research that demonstrates the development of open policies within HEI employment of OER, and open access (Toledo, 2017).

Student enrolments and student numbers have been continuously growing in the global south (World Bank, 2013). For example, in sub-Saharan Africa tertiary education enrolments have increased by 9.4% every year from 1990 to 2018 which is double the global average (World Bank, 2020). This is an indication that many countries are recognising the significance of education, which, in turn, results in an immensely increased demand for higher education (Teferra, 2013) and, because of the high demand, costs may rise as well.

Developed economies, such as New Zealand, Canada and the United Kingdom, have been associated with high access to quality education (Biswas-Diener & Jhangiani, 2017). The situation is the opposite in developing countries like South Africa. Therefore, there is a need for South African higher education institutions, government and other stakeholders to consider possible ways of easing access to education. The provision of different open education institutions could help traditional universities in terms of accommodating large numbers of students. This situation opens the way to argue in favour of ODeL as a solution to the provision of quality education (Nipa & Kermanshachi, 2020), as well as its OER initiatives.

2.3 Open educational resources in the African context

Africa as a developing country is still lacking in innovative development and provision of education due to societal inequalities and insufficient resources. Delivering OER cost-effectively and sustainably is critical to the successful mitigation of the education divide (Jenkins, Sánchez, Schraedley, Hannans, Navick & Young, 2020). OER brings new opportunities for innovation in higher education that will allow institutions and academics to explore new online learning models and innovative practices in tuition (Yuan & Powell, 2013). OER can foster high-quality content development (Atkins, Brown & Hammond, 2007). This improvement not only benefits the developed countries but will also benefit the

developing countries, which are still struggling with relevant and quality material to improve their education (Neary & Davis, 2020).

Although the idea of OER is thriving, it is necessary to consider challenges such as the following: academics' lack of awareness issues, how to assure quality in open content and how to sustain long-term OER initiatives (Hylén, 2006; Cox, 2016; King & Bunce, 2020). It is of interest to consider the above-mentioned issues holistically and to factor in societal influences such as culture, skills, finance, politics, and numerous other relevant aspects. In some developing countries, particularly in the African context, there are structural and cultural factors that limit the use of OER (Wolfenden, Auckloo, Buckler & Cullen, 2017). At the same time, countries in sub-Saharan Africa are still faced with the challenge of accessing high-quality resources because of scarcity (UNESCO, 2002; Stein, Hart, Keaney & White, 2017; Huang, Liu, Tlili, Knyazeva, Chang, Zhang & Holotescu, 2020).

Based on the foregoing information, it is possible to conclude that despite their potential for improvement, there are still gaps and inequalities involved in the use of OER. For example, one cannot expect a similar level of quality and development of the OER phenomenon in a developing country as in the developed world. Past studies have established that in the case of developing countries OER is still a relatively new concept in the education system (Karunanayaka & Naidu, 2017). OER is a relatively new initiative and many institutions have not yet well infused the content into their programmes, which is a wake-up call for academics to enhance their knowledge of the proper use of OER (Goodier, 2017; Mays, 2020). To achieve that, governments and institutions must work collaboratively to build and support academic staff's capacity in the following three key areas: developing digital literacies and digital capabilities; supporting individuals in navigating tensions between privacy and openness; and increasing open and networked society (Cronin, 2017).

2.4 Open distance e-learning university academics

Unisa's academics have four key performance areas: tuition, research, community engagement and academic citizenship (Swartz, Ivancheva, Czerniewicz & Morris, 2019;

Unisa, 2019). The main interest of the study was to focus on two academics key performance areas, tuition and research.

Academics are responsible for tuition and research in an ODeL just as in any other higher education institution. The difference is that those who work in an ODeL are expected to be technologically knowledgeable and familiar with e-learning or online learning (Gervacio, 2011). E-learning facilitation is conducted on various digital platforms in media using software applications as well as many other resources (Leibold & Schwarz, 2015; Mncube et al., 2017).

Academics enjoy the freedom afforded by technology to access a variety of information sources for tuition and research (Huang, Backman, Backman, McGuire & Moore, 2019). However, many ODeL institutions are faced with challenges as not all their academics or instructors are technologically oriented and comfortable with exploiting technology (Ramdass & Masithulela, 2016; Watty, McKay & Ngo, 2016; Abugre, 2018). One reason for this may be that all academics have different backgrounds and exposure. Therefore, any newly appointed academic might be required to learn about and understand ODeL teaching because tuition and research in an ODeL environment require the adoption of technology (Estes, 2019).

Rapidly evolving developments in the e-learning domain demand that academics undergo continuous training at ODeL institutions. Training programmes for academics should aim to develop a comprehensive range of ODeL skills systematically and coherently (Arinto, 2013). Effective tuition and research in an online environment necessitates more than technology-related skills (Muljana & Luo, 2019); besides technology, academics need to know the relevant strategies that may be used to teach in an online or blended-learning environment (Philipsen, Tondeur, Roblin, Vanslambrouck & Zhu, 2019). They also need continuous skills related to content development, learning activities, teaching strategies and assessment (Arinto, 2013; Allan, Crough, Green & Brent, 2019). With adequate training, the identified gap may be filled and challenges regarding the exploitation of relevant tools and systems for student retention or output may be resolved (Cohen & Holstein, 2018; Friðriksdóttir, 2018; Stone & O'Shea, 2019). At Unisa there are initiatives to support academics in terms of

providing them with ICT skills for tuition, research and innovation and to improve the institutional impact and student success (Unisa Annual Report, 2013).

2.5 Point of access to OER in higher education institutions

The user access is an important point before the adoption and development of OER can occur in education sectors. It is associated with many factors that contribute to the existence of OER. OER is accessible in many different virtual platforms, devices, clouds, amongst others. Libraries, particularly academic libraries, have been recognised as the most sensible place for accessing OER (Okamoto, 2013; Jensen & West, 2015; Chisita & Chiparausha, 2020). Academic libraries have powers and structures in place to promote access for developed OER projects (Kleymeer, Kleinman & Hanss, 2010; Mncube, 2020).

OER as any other tuition and research resources that are developed within the higher education institutions, can be stored in the institutional repository which is found within the institutional academic library. The first access point is the institutional repository as it is officially assigned to host institutional property produced within the vicinities of any higher education institution (Lynch, 2003). This is done to promote open access by showing the world what the institution has academically produced (Chisita & Chiparausha, 2020). Also, academic libraries together with institutional repositories can promote, evaluate, preserve, curate, and maintain access to collections (Okamoto, 2013) of OER.

While academic libraries can be the main point of access to OER, not all academics rely on libraries for accessing and storing OER. Some use other platforms to create, access, store and disseminate OER. There are multiple storage strategies which can be used by academics for hosting OER (Bueno-de-la-Fuente, Robertson & Boon, 2012; Choi, Moon, Do & Lee, 2020). For instance, OER can be accessed and stored on various virtual platforms and modern distribution channels to support e-learning (Burgos & Corbí, 2018) like social media and academic digital blogs.

The Research on Open Educational Resources for Development (ROER4D) suggests that access to OER (which includes access to reliable and useful learning resources) in the global south is not yet correctly practised (Arinto et al., 2017). For example, in their study of OER access in six East African institutions, inadequate access to relevant tools or devices, such as

laptops and desktop computers, and the lack of internet connectivity, were identified as constraining factors to academics' exploration of OER, particularly in some HEI (Wolfenden, Auckloo, Buckler & Cullen, 2017; Cox & Trotter, 2017; Kinyua, 2019). Also, the inadequate technical infrastructure is another hindering factor to access. Inadequate technical infrastructure is also one of the reasons for the low level of digital literacy which, in some instances, is the main factor limiting access to and use of digital resources (Mwashashu, et al., 2020). Lastly, two aspects contribute to hindrances and enable accessibility, including adoption and development of OER, and those concern policy and Creative Commons (Hodgkinson-Williams & Arinto, 2017).

2.5.1 *Open educational resources policies*

OER are gradually gaining popularity in different spheres of education and there is a need for active policies (Hylén, 2021). This generated a new opportunity to promote openness; however, without a policy in place, confusion concerning adoption and utilisation may occur from both academics and institution. To overcome any confusion, there should always be a policy as a guideline concerning OER (Judith & Bull, 2016; Huang et al., 2020).

In higher education institutions, the policy is considered as an important guide for academics to develop and access relevant resources for tuition and research (Reed, 2012; Lesko, 2013; Janssen, Jelgerhuis & Schuwer, 2014). Operations without a proper policy in place may lead to inappropriate procedures, such a non-compliance with OER standards. Therefore, the policy should be enforced in all structures of academia to promote the best processes in the distribution, access, utilisation and dissemination of OER. This is in line with the OER Global Report of the Commonwealth of Learning (COL) (2011:57) which states:

- Despite lack of OER policies at the national level, many educational institutions have adopted OER policies.
- Adoption of institutional OER policies could strengthen the OER movement by focusing on teachers and students as major stakeholders.
- This will also improve the challenges related to equity and quality of OER.

A policy helps to safeguard the best interests of the institution, academics and students when accessing or mainstreaming OER (Abeywardena, 2017). It is therefore important for institutions to develop their policies to suit their context. To comply with policy initiation, institutions must have comprehensive policy statements on definitions, policy declaration, policy statements, policy objectives, scope and applicability, copyright and licensing, quality assurance and review system, liability, and institutional arrangements (Abeywardena, 2017).

Many African institutions have been challenged by the lack of OER policies, and there has recently been a paradigm shift concerning the formulation of such policies (Butcher, 2012; Chikuni, Cox & Czerniewicz, 2019). The universities which are guided by policies seem to have a focus and reliable strategies for accommodating OER. For example, the policy and regulatory framework in universities in Kenya are now beginning to be more conducive to mainstreaming ODeL provision and integrating OER (Adala, 2016).

This aligns with Thabo Mbeki's response at the 9th Annual Africa Day lecture (2018), where he emphasised that, in Africa, and particularly in South Africa, the policy as such is not the problem: the actual issue is policy implementation. This signifies that it is not easy to start policy implementation: not only in the case of OER but also for any other initiatives proposed by the legislation of the country.

Besides the OER policy, many South African institutions are relying upon other existing policies such as tuition or intellectual property policies. In the South Africa context, intellectual property rights have a profound impact on the types of policies currently in force in South Africa universities (Cox & Troller, 2016). They further indicate that South African universities interpret intellectual property as the copyright of their academics.

Among the 26 South African universities, there are only a few universities that have an OER policy in place (Trotter, 2016; Owolabi, Ames, Anthony, Muhire, Mojaddam & Bekele, 2020). The existing policies or strategies differ from each institution. For example, the University of Cape Town (UCT) relies on its Open Access Policy which promotes the sharing of knowledge and the creation of open education resources (UCT, 2014). The University of Fort Hare (UFH) relies on its intellectual property policy which relates to "the ownership of all intellectual property devised, made, or created by persons employed by the University in the course of their employment" which includes "works generated by computer hardware or

software owned or operated by the University" and "films, videos, multimedia works, typographical arrangements, field and laboratory notebooks, and other works created with the aid of University facilities" (UFH Intellectual Policy (IP), 2010:5). Unisa has an approved OER strategy (see Appendix 16). However, Unisa and UFH academics do not have permission to share their teaching resources publicly as they belong to the university (Cox & Trotter, 2016). This is not in line with the OER, since OER content should not be limited to a particular institutional ecosystem and should instead be openly accessed globally (UNESCO, 2002; Wahid, 2020; Lambert, 2020).

2.5.2 *Open educational resources copyright*

In 1998, David Wiley coined the term *open content*, to which the principles of the open-source free software can be applied (Caswell, Henson, Jensen & Wiley, 2008). This movement helped the creation of the first widely adopted open license for content called Open Publication License (OPL) (Wiley & Gurrell, 2009). In 2001, Larry Lessing and others founded the Creative Commons (Commons, 2009; New Jersey Institute of Technology, 2019) and released a flexible set of licenses that improved the Open Publication License's structure. In the context of OER, one of the roles of Creative Commons is to increase the credibility and confidence in their legally superior, much easier-to-use licenses brought to the open content community (Wiley, 2010). As shown in Figure 2.2, there are currently four legal options that allow for further display, reproduction, performance, adaptation, etc. of third-party materials: 1) using public domain materials; 2) obtaining permission or license rights for use of copyrighted materials, 3) identifying an exempt/fair use under US Copyright law, or 4) using openly licensed materials (Walz, 2015; Fischer, Belikov, Ikahihifo, Hilton, Wiley & Martin, 2020).

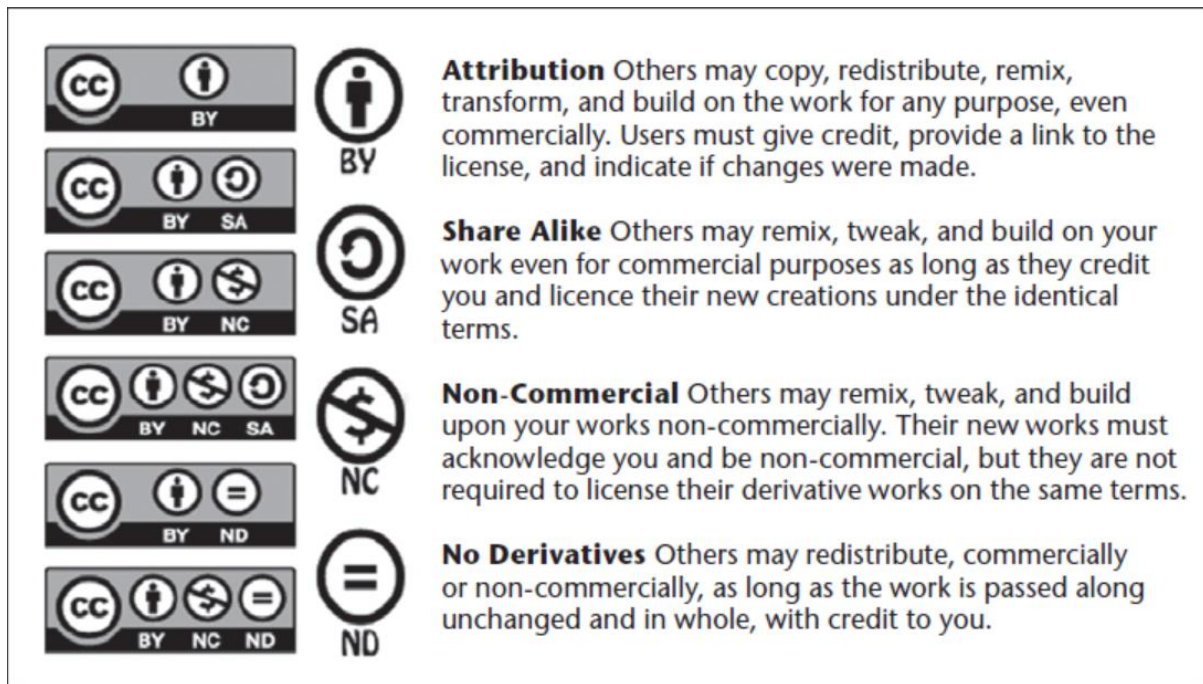


Figure 2.2: Four legal options of the Creative Commons (Macon East Library Projects, 2018:5)

Creative Commons (CC) provides the licensing tools for permitting free use and repurposing. Hewlett considers the Creative Commons Attribution (CC BY) license to be the license of choice, allowing for maximal reuse and repurposing of copyrightable educational resources, while still acknowledging the creative work of the developer (Hagedorn, Mietchen, Morris, Agosti, Penev, Berendsohn & Hobern, 2011). The term ‘open content’ describes any copyrightable work (traditionally excluding software, which is described by other terms like “open source”) that is licensed in a manner that provides users with free and perpetual permission to engage in the 5R activities (Wiley, 2015:6) and they are as follows:

- 1 *Retain*: The right to make, own, and control copies of the content (e.g., download, duplicate, store and manage)
- 2 *Reuse*: The right to use the content in a wide range of ways (e.g., in a class, in a study group, on a website, in a video)
- 3 *Revise*: The right to adapt, adjust, modify, or alter the content itself (e.g., translate the content into another language)

- 4 *Remix*: The right to combine the original or revised content with other open content to create something new (e.g., incorporate the content into a mashup)
- 5 *Redistribute*: The right to share copies of the original content, your revisions, or your remixes with others (e.g., give a copy of the content to a friend)

Contrary to any other South African universities, UCT academics are allowed to own the copyright of their teaching materials and, thereby, turn them into OER (Cox & Trotter, 2016). They can do this with the guidance of the UCT Intellectual Policy, which states as follows: “UCT automatically assigns to the author(s) the copyright in study or course materials, with the provision that UCT retains a perpetual, royalty-free, nonexclusive license to use, copy and adapt such materials within UCT for teaching and research” (UCT, 2011:15). This affirms that, as developers or creators of OER, the academics have full authority in deciding on the suitable type of copyright to assign to the content. However, this decision cannot be based on an individual choice and, therefore, the South African Qualifications Authority (SAQA) must be considered. SAQA is the South African organisation that is responsible to create a single integrated national framework for learning achievements for South African qualifications in adherence to the National Qualifications Framework (NQF) Act No 67 of 2008 (SAQA, 2014).

The institutions that own intellectual property must stipulate guidelines in terms of copyright authorisation. Although some institutions, such as UCT, have assigned powers to the creators (i.e., academics), they still have to protect both the institution and the academics concerning the processing and assigning of copyright laws and regulations (UCT, 2011). Hence, academics and institutions may together uplift the level of trustworthiness and reliability of OER. The use of and engagement with OER creates collaboration amongst and ease of access for academics and any stakeholders involved in the domestication of OER. OER have become protected, in that they are guided by certain clauses involving the legal reuse, sharing, modification and curation of the resources (Arinto et al., 2017).

The literature affirms that globally many academics are still facing challenges with the assigning of copyrights (Hodgkinson-Williams & Arinto, 2017; Fischer et al., 2020; Yang, 2020). This is associated with the knowledge of initiation CC as seems to be not always clear how they apply to specific CC (Gulley, 2013). The main disadvantage of this approach is

that it is not user-friendly and is not suitable for all purposes (Koscik & Savelka, 2013). Therefore, it can be concluded that knowledge about OER and CC plays a major role in limiting OER growth (Miao, Mishra & McGreal, 2016).

2.6 Utilisation of open educational resources

Some users adopt OER for formal or informal educational purposes. Besides that, others consider it to perform their daily life activities. The utilisation of OER varies among individuals within HEI (De Hart, Chetty & Archer, 2015), although the academics and institutions should recognise the common purpose of using OER. The utilisation of OER depends on the digital platforms that are in place in HEI (Oates, Goger, Hashimi & Farahmand, 2017).

The issue of utilisation of OER not only involves the institution and academics, but also the students. In most cases, OER is developed by academics to benefit the students as the final users. However, not all academics and students enjoy and have reliable access to computers or the internet (Dettling, Goodman & Smith, 2018). Therefore, all teaching materials must be printable and deliverable through the post, so that all registered students receive the same quality of education. Some OER can be printed, but if academics want to use them digitally (the optimal medium for many OER, such as videos), these can only be offered as "additional" and "optional" materials (Cox & Trotter, 2016). Hence, institutions should establish the preferred delivery mode of their students. It must be noted that in developing countries, the level of utilisation may be hampered by the shortage of relevant infrastructures and enabling OER systems (Mahlangu, 2020; Mwashashu et al., 2020).

The literature review on the utilisation of OER was partially influenced by Rogers (2003), who identifies the following phases of innovation diffusion: knowledge (awareness), persuasion (interest and perceptions), decision (evaluation/benefit), implementation (trial) and confirmation (adoption). Opting for such a framework helped to obtain the reach and relevant literature related to utilisation.

2.6.1 Academic knowledge of OER

Lack of OER knowledge can have a negative impact on utilisation of OER. That becomes a hindrance that inconveniences academics when they want to adopt OER suitable for tuition and research (Mtebe & Raisamo, 2014; Ujakpa, Kiana, Ejehiohen, Iyawa & Mchombu, 2020). Being knowledgeable implies that in any given situation influences utilisation any kind of artifact (Silverstone & Hirsch, 1992; Rogers, 2003). Therefore, if one is knowledgeable about OER might not be about to develop or adopt. Literature still affirms that globally the knowledge of OER is still minimal (Karunanayaka & Naidu, 2017; Karunanayaka & Naidu, 2018; Appiah et al., 2020). Therefore, it is not surprising that there are low levels of OER utilisation especially in developing context like South Africa. OER has been declared as an emerging phenomenon (Nascimbeni, Burgos, Spina & Simonette, 2020), and many organisations including HEI are still learning about OER.

2.6.2 Persuasion of OER

Generally, different users have different perceptions about IT artefacts. It is therefore expected that different academics and institutions would have different opinions about OER. Literature shows that, for the most part, academics and institutions share positive views about the use of OER for teaching and learning (Nipa & Kermanshachi, 2020). This is evident from the fact that provision for the use of OER resources for tuition and research in different formats has increased (Todorinova & Wilkinson, 2020). This allows academics to choose what is relevant for their content. OER appears to be as good as or better than traditional textbooks to achieve quality and engagement (Ikahihifo, Spring, Rosecrans & Watson, 2017). In particular, OER in video format is known to be the most attractive option for academics and students (Harsasi, 2015).

Globally, OER is recognised as a great initiative to increase access to affordable education. Currently, textbooks are not affordable for all students and OER has been identified as a solution to the high costs of traditional course materials (Abramovich & McBride, 2018). OER is commended for cost savings and for producing similar or better outcomes in terms of grades (Clinton, 2019). The literature affirms that the academics and teachers perceive that the use of OER leads to an improvement in student performance (Ozdemir & Bonk, 2017).

That is why many academics and teachers have a positive attitude towards OER and are motivated to use and share their resources (Panda, 2017).

OER may benefit education in all HEI. In the modern days teaching and learning are prioritised and thus encouraging open access (Bossu, 2017; Kapur, Byfield, Del Frate, Higgins & Jagannathan, 2018). By the virtue of open access, OER benefits the users such as academics and students (Ossiannilsson, 2018). This may be an indication of freely accessible and usable education resources that may enable visibility of OER resources. Visibility becomes an enabler to individuals who cannot afford to purchase teaching or learning resources (Marshall, 2018).

Users must develop an interest in OER that will lead to utilisation. This creates a need for HEI to take initiatives to attract potential users. Besides, academics must consider the new strategies of marketing and enforcing OER in the curriculum (Becker, Cummins, Davis, Freeman, Hall & Ananthanarayanan, 2017). The interest can be created by developing a user-friendly and easily accessible OER (Beaven, 2013). This way, a gradual interest may be perpetrated.

On the other hand, not all academics have a positive attitude towards OER. Literature indicates that some academics feel demotivated and disempowered by top-down pressure from managers enforcing the utilisation of OER (King & Bunce, 2020). There is constant pressure from HEI to use OER without considering the challenges faced by academics, namely the lack of knowledge about OERs or how they can be integrated into teaching and learning (Madiba, 2018). Lastly, the issue of accessibility and usability remains a challenge to many HEI and academics (Grossman & Simon, 2020). Therefore, such imbalances in terms of perceptions about OER may continue to perpetuate the problems in utilisation of OER.

2.6.3 The role of OER during the Covid-19 pandemic

Globally, OER has been recognised as a useful method of teaching and learning during the global pandemic (Covid-19) which emerged towards the end of 2019. The Covid-19 era forced the education sector to comply with lockdown to avoid or limit the spread of the virus (UNESCO, 2020). OER has the potential to support social distancing because learning resources can be distributed online in various formats including full courses, course materials,

modules, textbooks, videos, assessments, software, tools, materials, and techniques used to support access to information (El Firdoussi, Lachgar, Kabaili, Rochdi, Goujdami & El Firdoussi, 2020). In promoting OER during the Covid-19 pandemic era, some organisation such as OER Africa's website provides information on understanding OER, how to access OER, links to OER initiatives, and actual OER that can be used by academics, teachers, and learners (OER Africa, 2020).

The literature concurs that OER can facilitate tuition and research processes during the educational disruption due to the Covid-19 outbreak (Huang et al. 2020). OER can play a pivotal role in supporting education during a pandemic and can provide opportunities for practical learning as well as ideas for educators to implement (Van Allen & Katz, 2020). However, in developing countries, challenges still remain such as poor infrastructure, inadequate pedagogy, lack of resources, as well as poor assessment, quality assurance, student support system, technology, culture, and best practices (Owolabi, 2020).

Many students were expected to carry on learning in poor living conditions. Under such circumstances, the use of OER remains challenging in developing countries. For one to learn using OER, one needs to be connected (Basilaia, Dgebuadze, Kantaria & Chokhonelidze, 2020) and most countries in Africa and any other developing countries still experience lack of connectivity. Many students who are expected to participate in learning using OER in the pandemic era are still victims of hunger, which is known to contribute to a lack of education (Giebel, Ivan, Burger & Ddumba, 2020; Ekholuenetale, Tudeme, Onikan & Ekholuenetale, 2020). Therefore, the study recognised the gaps and lack of literature about issues of access, anxiety, and hunger caused by the Covid-19 pandemic.

2.6.4 *Implementation of OER*

In many HEIs, planning and conceptualisation can take place but implementing can become a challenge. An important phase which leads to OER utilisation is that of implementation. In the Information Systems domain, implementation takes place when an individual puts an innovation into use (Rogers, 2003:20). Implementation cannot happen without consultation with the university and a thorough investigation, which includes a situation analysis and an investigation into the impact of OER on the current society. In most developing countries, all these new education innovations are extracted from the global north (Louw, 2010; Rodríguez,

Pino & Hernández, 2018). But there is a need to also consider the status, knowledge, and nature of the people (Marchezini, 2020). If these factors are not considered, it may result in a decline in OER utilisation. For example, before implementation, one should consider the influencing factors, such as the fact that the majority of citizens in developing countries are not yet well equipped in the use of the latest technologies and pedagogical skills (Pandey & Rizvi, 2018; Oke & Fernandes, 2020) which further impacts on the use of OER. The above-mentioned points make it clear that the implementation of OER has to be revisited or revised so that the implemented resources suit the current contextual setting and enhance utilisation.

2.6.5 The adoption and development of OER

This is the final stage of OER development. Once the users have gained the knowledge about the artefacts, they become comfortable to start adoption or development. The essence of adoption is the integration OER into the existing module content. The adoption of OER in teaching and learning involves the responsibility of infusing the most appropriate resources to support effective education within institutions (COL, 2011; Serrano, Dea-Ayuela, Gonzalez-Burgos, Serrano-Gil & Lalatsa, 2019). The developers or integrators of OER must be guided by the relevant course outlines to align them with the course requirements. One limitation hindering the wider adoption of OER is the current inability to search and locate relevant and usable OER from a diversity of sources (Miao, Mishra & McGreal, 2016). The search process may contribute to the adoption of OER because the online search process requires a particular knowledge and skill level.

In any HEI the users are expected to either adopt or start developing their own OER. The process of OER adoption and development in any course content must be guided by the open pedagogy model (Huang et al., 2020; Owolabi, 2020). The integration of OER into teaching and learning creates new opportunities for enhancing education, which provides more resources to users because integration allows for the infusion of supplementary sources (without additional costs) that can be useful to anyone (Goodier, 2017; Mino, 2020). In countries such as South America, sub-Saharan Africa and south-east Asia, the influence of OER adoption and development relate to great access to educational resources, the quality of teaching and learning and some of the costs of education provision in the 21st century (Arinto et al., 2017; Fischer et al., 2020; Magro & Tabaei, 2020).

Higher education promotes open access, because, once the adoption and development are completed, it creates more opportunities to ease learn education content. It also promotes collaboration and online visibility in a global sphere (Condruz-Bacescu, 2020). Still, developing countries cannot be compared to European countries which are more advanced in digital connections. They also have institutional policies and support and rewards for academics engaging in the integration and use of OER (Jung & Lee, 2020).

The collaboration in HEI and among academics is relatively common and usually takes place in many developing countries, such as South Africa (Czerniewicz, Deacon, Walji & Glover, 2017). The challenges remain in the OER process of development, as academics are still faced with the lack of knowledge, limited skills, time constraints, technical barriers and other obstacles (Naidu & Karunanayaka, 2017; Nascimbeni, Burgos, Spina & Simonette, 2020). Based on these hindering facts, academics and educators feel that a third party needs to do the development of OER on their behalf (Walz, 2015). Despite the challenges and obstacles, it is important for academics to adopt and develop OER into their practice, content or subjects, to build understanding and develop an awareness of what OER is and how they can be used (Hood & Littlejohn, 2017).

2.6.6 Dissemination of OER

When OER has been adopted and developed, the process of dissemination must start. The academics must publicise what has been developed so that they can be made available to the public domain, in line with the purpose of OER (Hodgkinson-Williams, 2018; Wahid, 2020). Apart from being continuous, dissemination is a process that occurs daily – particularly if the digital space is involved. Once OER gets into virtual spaces, they start a circulation chain, as they are shared openly. Institutions and academics are responsible for the dissemination of OER so that they can be shared among other institutions globally (Arinto et al., 2017; Lambert, 2020).

The dissemination of OER is done differently from country to country. For example, in Afghanistan some education institutions outsource to OER developers, such as non-governmental organisations to produce teaching and learning resources (Samady, 2013). Because of limited knowledge and the absence of a culture of sharing materials openly, these organisations tend not to disseminate their materials (Oates et al., 2017). The use of a third

party in OER development is often associated with numerous obstacles because academics or educators are still in the dark in terms of the practical dissemination procedures of their institutions (Littlejohn & Hood, 2017).

The literature opined that the dissemination of OER can be done through technologically-supported strategies including institutional repositories and websites, subject-specific repositories, sites for sharing specific types of content (such as videos, images, ebooks), and general global repositories (Barker & Campbell, 2016; Burgos & Corbí, 2018), although it is still a problem to be more specific about determining the exact systems used for the dissemination of OER in other countries. This may affirm that the existence of OER is new across the globe (Annand & Jensen, 2017), but it also serves as a wake-up call to developed countries, because they are exposed to many different OER dissemination facilities. In the South African context, it cannot be assumed which one is the most preferred OER dissemination form. All institutions use different forms of OER dissemination, which creates an obstacle to users, in that they do not know which platform, systems, and channels are used to visualise published OER. There is a serious need for investigation into the dissemination of OER to accommodate all users' preferences because it is done differently by academics at different institutions. The different types of devices and platforms that use dissemination are reviewed in Section 2.7.

2.7 ICT factors affecting adoption and development of OER

The adoption, development, and distribution of OER relies on ICT systems. ICT enables users to gain access to various information resources for information sharing, collaboration and personalisation of knowledge (Oke & Fernandes, 2020; Xin & He, 2020). Therefore, ICT is vital to the use of OER. Many universities have implemented ICT for knowledge management and research development (Umukoro & Tiya miyu, 2016; Tudor, 2020) and open education is dependent on ICT to distribute information and resources (Toledo, 2017; Burgos & Corbí, 2018). ICT is necessary for open access because it allows for access to databases, e-journals, e-books, institutional repositories (Ware & Mabe, 2015; Ternenge & Kashimana, 2019). Therefore, one can posit that ICT encourages the open access initiative by assisting ODeL academics to adopt, develop, access, use and disseminate OER and obtain access to information anytime and anywhere.

From a global perspective, to bridge the digital divide, countries must consider the development of an adequate ICT infrastructure – in particular, affordable broadband connectivity, widespread mobile technology, and reliable electrical power supply (Pawlowski & Hoel, 2012; Kinyua, 2019). Although ICT seems to be appreciated for information provision, in developing countries, such as Afghanistan and any other African countries including South Africa, the infrastructure involves challenges such as limited electricity and poor internet access (Oates et al., 2017). ICTs can “play a role in disenfranchising people from their right to gain access to, and apply, information essential to their leisure and working lives: that they many completely transform deeply culturally embedded notions of individual privacy; and that they may exclude people from a social and economic activity if they are unable to access and to use the network and services available to others” (Mansell & Silverstone, 1996:4).

There is a need for a shift from conceptually viewing ICT as empowering to empirically understanding how ICTs are being used (Birkland, 2013). This may be an indication that there are many levels and skills of utilising ICT in a particular domain. ICT support should facilitate the mainstreaming of OER by ensuring that academics have access to devices that can be used to access the latest digital content (Abeywardena, 2017). To know how academics are using ICT for OER, it is important to understand software, application and systems used in an ODeL. This study explores the relationship and use of multiple ICTs in an ODeL. Therefore, such ICT infrastructure are devices, software, MOOCs, LMS, and the fourth industrial revolution (4IR).

2.7.1 Devices as an enabler for OER

The access to ICT devices as well as connectivity are fundamental to the adoption and development of OER. In the absence of ICT devices, there is no guarantee of an effective use of OER. The use of OER relies on ICT infrastructure; a device that is not connected to the internet would not be very useful (De Oliveira, Neto, Pete, Daryono & Cartmill, 2017; Gupta & Gupta, 2020). The initiation of OER has drawn attention to hardware devices that can be used to carry, process, store and transmit information. Moreover, literature indicates the types of devices that academics use to access the internet affect their OER use (Ericsson, 2014). De Oliveira et al. (2017) state that devices used in the global south are similar to other countries

and do not contribute to utilisation factors. The preference varies among individuals in terms of context usage, as some prefer desktops, laptops, and handheld devices. For example, in the context of tuition, students prefer tablets, computers and smartphones to consume OER for learning content through the process of optimisation for the delivery of educational resources (Hunsinger, Poirier & Feldman, 2008; Llamas-Nistal, & Mikic-Fonte, 2017).

In the current digital age, some academics can hardly transform and engage in tuition and research if they do not own the necessary devices. Since the beginning of the 21st century, governments around the world (e.g., Thailand, Turkey, India, Singapore, United State of America and Brazil) have been supporting the initiatives towards the large-scale deployment of computers, such as tablets, in public schools (Farias, Ally & Spanhol, 2018). This seems to be a great initiative for students' ownership of devices for engaging with digital platforms to access tuition. Many European national policies launched between 2010 and 2015 focus on equipping students in each school, regardless of class or age group, with portable devices such as laptops, netbooks, tablets, or smartphones for enhancing learning purposes (Conrads, Rasmussen, Winters, Geniet, Langer, Bacigalupo & Punie, 2017). Compared to one-on-one learning initiatives, this yields a highly positive effect in terms of facilitating a student-centred educational environment (Balanskat, Bannister, Hertz, Sigillò & Vuorikari, 2013).

In the South Africa context, HEI may take care of the provision of personal devices for their academic staff members. This is done so that they can perform their daily duties in the workplace. The literature indicates that many academics in HEI are provided with devices to adopt and develop educational resources (Okai-Ugbaje, Ardzejewska & Imran, 2020). Therefore, the challenge persists for enrolled students since it is not known if they are fully provided with necessary devices. If students are provided with all tuition necessities such as devices, it will improve the throughput rate and reduce the level of frustration from academics in higher education (Cox & Trotter, 2017). When students are not provided with personal devices as is the case in the global north, they are disadvantaged (Conrads et al., 2017).

There is an ongoing need to provide personal devices to all registered students, particularly in rural places where the majority of residents still live in poverty and confront infrastructure inequities. This could help to solve one of the issues related to social exclusion caused by a

lack of access to necessary technology (Mncube, Tanner, Chigona, 2021b). However, there are numerous internet concerns and challenges associated with using the given devices. Given that OER are suited to assist self-learning, academics and students need to be coached on new types of learning through these resources (Huang, Tlili, Chang, Zhang, Nascimbeni & Burgos, 2020).

2.7.2 *Software role in OER*

ICT systems or devices used in processing OER require certain software (e.g., application or operating systems software). Software is described as an instruction that enables the computer to perform or accomplish any given task (Williams & Sawyers, 2015). That qualifies software to be an enabler in the provision of OER. Different types of operating systems (such as Windows, Mac OS and Linux) as well as free and commercial applications can be useful in the development of OER (Llamas-Nistal & Mikic-Fonte, 2017; Zhang, Tlili, Nascimbeni, Burgos, Huang, Chang & Khribi, 2020). For instance, the Linux operating system, the Apache Web server and the OpenOffice desktop application are proven world-class software in the operation of OER (Kurshan, 2006). Therefore, the developers of OER must make sure that computers and devices used during the development of OER and all the above-mentioned operating systems or software are installed.

Software cannot be operated without proper hardware and the dependence of software on hardware impacts the integration, access, utilisation and dissemination of OER provision. In support, there is the necessity for software to be used differently for producing OER to make tuition and collaboration possible (Hylén, 2006; Pawlowski & Markus, 2012). Software can support the development, use and dissemination of OER in various ways. For example, some universities in the United States use software for collaboration while creating a collection of integrated, open-source learning tools currently known as Sakai, which is a learning management system (Walz, 2015).

OER can be disseminated in various ways. Once academics have developed the OER, these must be disseminated to the university's institutional repository or an OER repository, such as MERLOT, OER Commons, Jorum, or any other channels (Walz, 2015). Also, OER can be disseminated in print or digital formats. In terms of printed text vs digital format there are discrepancies in results and preferences among users (Al-Sulaimi & Al-Shihi, 2017). There is

a need for using multiple dissemination channels for making OER use convenient for learners and for creating scope for accommodating the popular knowledge bases (Dobrowolski, Kobylarczyk, Wagner & Mazur, 2018).

Once the processing, development, or selection of OER has been done, academics and institutions must decide on the platform of hosting. Therefore, the following sections focus on the relevant platforms that make it possible to host OER for tuition and research. In higher education institutions, numerous platforms are used to act as intermediaries between the lecturer and students to create their teaching activities OER, including learning management systems (LMS), MOOC platforms and educational social media platforms (Halimi, Salzmann, Gillet & Saliah-Hassane, 2018).

2.7.3 *Massive open online courses*

The provision of education is gradually changing its direction from traditional to an online offering. In academic domains all over the globe, there are a vast number of e-learning platforms that have drawn attention to OER (Rai & Chunrao, 2015; Hoque, Asgor & Islam, 2021) and these have broadened opportunities for open education (Czerniewicz et al., 2017). One of the most popular platforms in OER provision is MOOCs (John, Thavavel, Jayaraj, Muthukumar & Jeevanandam, 2016; Hidalgo & Abril, 2020). MOOCs have become an OER-enabler to the most well-known universities in the world, such as Harvard University, Stanford University, MIT and the University of California at Berkeley (John et al., 2016). This platform is significant as it allows millions of students to make use of free, open online tools and resources for their tuition (MacDonald, 2015; Rathee & Bhardwaj, 2018).

When academics are implementing OER worldwide, it is recommended that they consider MOOC, the main reason being that the initiative is based on established web-based technology platforms and has accumulated large volumes of quality resources that are being shared openly (John et al., 2016). However, the authors remark on the negative side of MOOC, in that some students are often unable to identify with the material that is needed, useful and required at their level. This is an indication of a clear need for understanding the platform and OER so that the content provided becomes relevant to all targeted users. Furthermore, it becomes difficult for potential users to find the content they need in repositories and portals for open content (Dichev & Dicheva, 2012). To address these

obstacles, the Paris OER Declaration (2012:17) mentioned the need for more research in this area and to “encourage the development of the user-friendly platform to locate and retrieve OER that are specific and relevant to particular needs”.

The widespread use of OER and MOOCs is not only evolving in developed countries. In 2014, UCT launched its first MOOC development programme, the UCT MOOCs Project (Czerniewicz et al., 2017). This was the first MOOC initiative from a developing country to cater for OER particularly. All the MOOCs created at UCT have a strong focus on Africa in terms of content. The broader study also had an interest in exploring whether an African university producing MOOCs increases regional participation in MOOCs (Czerniewicz et al., 2017).

Universities in the global south have been experiencing a limited capacity to develop online courses, support more flexible forms of learning and engage in OER adoption activity. Institutions in the global south have only recently begun to engage with MOOCs. There is an awareness of the pedagogical and geopolitical implications of MOOCs emanating only from the developed world to be received by those in the developing world (Czerniewicz et al., 2014).

MOOCs have proven to be part of the incorporation of OER as a way of providing exciting opportunities for educational provision – particularly in the developing world (Patru & Balaji, 2016; Julia & Marco, 2021). Universities in the global south produce only a fraction of OER and MOOCs worldwide (Czerniewicz & Naidoo, 2013), which suggests that developing countries have been receivers and users rather than producers of OER (Nti, 2015). Arguably, both OER and MOOCs could provide opportunities for universities and academics in the global south to rebalance the skewed global networks (Nkuyubwatsi, 2013; Adam, 2020).

2.7.4 *Learning management systems (LMS)*

Around the globe, the existence of LMS is recognised and appreciated for their value in education, tuition and research. Numerous HEI – particularly ODeL – rely on LMS for the provision of tuition and research (Islam, 2015; Cigdem & Ozturk, 2016; Cobb, 2020). This has been encouraged by the arrival of ICT in education, which is gradually pushing institutions to take the LMS route. The use of ICT to support a lesson can enhance academic

or pedagogical practices by providing more efficient ways in terms of lecture, time and management content (Matussin, Abdullah & Shahrill, 2015). At the same time, the use of LMS enables institutions to comply with e-learning requirements.

E-learning has been widely adopted in the educational environment to improve the teaching and learning process and management (Anshari, Almunawar, Shahrill, Wicaksono & Huda, 2017; Lambert, 2020; Wahid, 2020). The initiative has become essential for academics, students and institutions, as it attracts larger student enrolments and has possibilities to increase throughput rates. In the eighties, LMS was recognised in an ODeL. During the 21st century, there has been a drastic change, when different higher educations started recognising the blended learning mode, where tuition is offered online and in the traditional mode, with the two delivery modes complementing each other (Cordie, Witte & Witte, 2018; Owolabi, 2020).

LMS has been developed as part of digital technologies and they have become integral to the future of university education around the world (Henderson, Selwyn & Aston, 2017; Serrano et al., 2019). Both developed and developing countries are subscribing to LMS, although there is a variation in the domestication of LMS. For example, the level of engagement in developed countries is high, because institutions enable structures and systems to be put in place to keep up with the development and utilisation of LMS. With the initiation of LMS, the users (i.e. academics and students) are provided with the necessary technologies used for engaging with LMS (Farias, Ally & Spanhol, 2018).

As a developing country, South Africa adopted the LMS initiatives, but could not afford to supply students with relevant resources. The framework to support the use of LMS has a low level of maturity (Machika & Dolley, 2018). This creates a continuous problem because one cannot expect the same result from students who are groomed in a developed and developing country. The problem can be elicited from the discrepancies in terms of ownership of devices and systems to use when engaging with LMS for OER in developed and developing countries. Universities should focus more strongly on providing devices and assisting academics to overcome the barriers in tuition and to solve technical issues on LMS usage (Yusof, Kuljis, Papazafeiropoulou & Stergioulas, 2008).

2.7.5 Web technologies for OER

The development of tuition is advancing due to the existence of the fourth industrial revolution (4IR). 4IR has evolved with the provision of tuition and learning with different stages of web developments: web 1.0, web 2.0, web 3.0, and web 4.0 (Kasza, 2019). All these four web developments have their role in the transformation of OER as web 1.0 (read-only, company focus, connected information, home page), web 2.0 (read-write, community focus, connected people, social media for example blogs and wikis, etc), web 3.0 (read-write execute, individual focus, connects knowledge, live-streams, intelligent agents, semantic webs) and web 4.0 (read-write-execute concurrency web, connects intelligence, symbiotic web: convergence of humans and the machines, knowledge networks) (Kasza, 2017).

Web 2.0 and 3.0 have most been recognised in the adoption and development of OER. Web 2.0/Web 3.0 tools and applications are reliable for educational systems and universities (Imeida, Santos & Monteiro, 2013). These technologies are facilitating intellectual advancement, improving the acquisition of generic intellectual capabilities as needed for lifelong learning in the information society (Ohei & Brink, 2019). Therefore, the review of literature related to web 1.0 and web 4.0 is purposively ignored. Web 1.0 is considered outdated (Lingel, 2020) because it entails technologies that place students in a less intellectually stimulating situation in terms of internet knowledge compared to more recent and more evolved web technologies (Dumitrescu, 2015). Web 4.0 is the latest and most advanced, especially for a developing context (Da Silva, Kovalski, Pagani, Silva & Corsi, 2020), and is developed through digitisation and robotics. Education 4.0 tends to combine information available in the real and virtual world (da Motta Reis, Costa, Espuny, Batista, Francisco, Gonçalves & de Oliveira, 2020). This has not yet been well tested in the development of OER in HEI, especially in the developing world.

Academics in higher education institutions, particularly in the ODeL environment, have also been changing the way they teach and supervise students since they started using web 2.0 and web 3.0 as part of lecturing. The initial development of web 2.0, and web 3.0 was intended for social networking and informal communication (Sultana & Momen, 2017; Chapman & Greenhow, 2019) to promote the sharing of individual experiences, social and personal experiences. Gradually, a noticeable change occurred when it started to be used for social

communication and education (Halili, 2018). In the 21st century, Web 2.0 and 3.0 are trending and improving for the purpose of tuition (Brake, 2013; Germain, 2020). Higher education institutions have noticed the significance of these web technologies as capable of supporting their collaborative e-learning activities. The most used tools for tuition are Facebook, Twitter, YouTube, Blogs, Wiki and Podcast, web platforms, cloud storage and others (Halili, 2018; Aljawarneh, 2020). Web 2.0 and 3.0 technologies mark a shift, which points to the use of OER collaboration and interaction on digital platforms (Grosseck & Malita, 2017). This promotes instant interaction between a lecturer and a group of students (Cochrane, 2014; Aboraya & Elkot, 2020). Students seem to prefer the Web 2.0 and Web 3.0 applications to the official prescribed platform for tuition. Other reasons that have been identified for the convenience are usability, user-friendliness (Jamaludin, Aziz, Mariapan, Lim & Lin, 2017; Kayode, Tella & Akande, 2020), graphic user interface and reasonable cost.

In an ODeL institution, web 2.0 and web 3.0 have to be embedded for tuition and research, which may create opportunities for academics to adopt and develop OER (Huda, Maseleno, Atmotiyoso, Siregar, Ahmad, Jasmi & Muhamad, 2018). In the current situation, it is not well known if both academics and students are domesticating these webs 2.0 and web 3.0 technologies to integrate, access, utilise and disseminate OER. Therefore, it will be of interest to note how academics and students adopted web 2.0 for tuition and research.

2.8 Gaps in the literature

To this point, OER has mainly been studied from the perspective of the technologies associated with them. However, to embrace and define the OER phenomenon fairly, the explanation and investigation should look back on the realities of different contexts. There is no evidence of these issues being investigated in the current literature. This gap requires a thorough investigation that focuses on developing countries, particularly those in the African context. For example, there is no active adaptation of OER to suit local contexts and the creation and sharing of openly licensed teaching and learning resources showcasing local knowledge in the relevant language (Arinto et al., 2017).

Therefore, the African researcher must go deeper into the issue of recognising initiatives in the African context, including the issues of the commodification of OER. In the reviewing of literature, there has been little or not much investigation concerning the commodification of OER particularly in an ODeL or in any other HEI. Besides, the other similar studies which generalised in the commodification of education (Naidoo & Jamieson, 2005; Furedi, 2010), still they are focusing on the commodification of IT however not OER artefact. Therefore, the potential of South Africa as a content developer of OER for its context should be investigated. As part of this study, the researcher recognised a crucial need to understand the significance of commodification within the ODeL. One of the contributions identified is that the commodification of OER is a valuable tool to promote African knowledge and content and showcase the contributions of African academics for tuition and research (Mncube, Tanner & Chigona, 2021a).

Many HEI are advocating for the initiation of OER. However, there is a lack of knowledge regarding appropriation strategies. Also, not enough studies have investigated issues around policy concerning updates of OER. For instance, little is known about how long OER should be kept in the online platforms and whether the developers (academics), librarians, or institutions should be responsible for the revision of OER. The significance of OER policy in an ODeL is essential, especially when academics are expected to engage and develop OER (Cox & Trotter, 2016).

In the domestication of any artefact, ICT plays a huge role. This means domestication cannot occur if there is no ICT infrastructure in place. The study recognises the literature gap concerning the use of ICT and LMS in ODeL and face-to-face institutions, not only in the South African context but also from around the globe. There is a significant need to investigate the information systems used for the domestication of OER. That should also yield positive results in comprehending blended learning modes. Currently, the literature could not articulate, categorise and describe the types of information systems suitable for the domestication of OER.

Although the literature indicates that ICT and LMS have had a positive impact on tuition, it has not been proven if it creates obstacles for tuition – particularly in developing countries, where the issue of inequality exists. Higher education institutions recommend information

systems for offering tuition without a thorough investigation about users, particularly those in remote geographic locations. In many developing countries, which are characterised by inequality, higher education can be a burden for low-income families (Toledo, 2017). For example, the other study on ICT for social inclusion and exclusion extracted from this thesis poses that the ICT innovations for OER adoption and development cause the advancement of e-learning if is well managed (Mncube, Tanner & Chigona, 2021b). They further postulated that in the existing inequalities and lack of ICT infrastructure academics and students are all expected to learn using the ICT innovations and systems. Yet, the issues related to ICT affordance are under scrutiny (Meulman, 2021). For example, the issue of ICT ownership in Africa should be thoroughly investigated. This might lead to a better decision on determining the better systems preferred by academics in enhancing the domestication of OER to fulfil the teaching and learning services. There is a need for the researcher to investigate the possible information systems used for tuition at Unisa, including any other formal and informal education.

Lastly, based on the gaps in the literature, the study developed four sub-question to address the main study research question. These sub-questions are as follows:

- How can open distance e-learning institution academics commodify open educational resources for tuition and research in South Africa?
- How can open distance e-learning institution academics adopt and develop open educational resources for tuition and research in South Africa?
- How can open distance e-learning institution promote the use of open educational resources to academics in South Africa?
- What is the role of information and communication technology in the domestication of open educational resources by open distance e-learning institution academics in South Africa?

2.9 Chapter summary

In this chapter, the relevant literature was reviewed, based on the following themes which are considered to be necessary for the study of the domestication of OER. This was done to identify the existing gaps and new concepts in literature, to justify the study and to validate the research motivation. The study managed to identify a variety of significant gaps

associated with OER, particularly in developing countries. As part of reviewing the literature, key themes associated with the technology that is used in an ODeL were unpacked and clarified.

CHAPTER 3: THEORETICAL FRAMEWORK

3.0 Introduction

This chapter presents the theoretical frameworks of the thesis. The study discusses the domestication theory as a main theoretical underpinning of this study. The Model of Technology Appropriation (MTA) was also employed to substitute the appropriation phase of domestication theory. To start showing the distinction from other relevant theories, section 3.2 discusses the adoption of technology in general because the opted theories and other related theories fall under the category of technology adoption.

Section 3.4 provides discussion of the main theory (domestication theory) and the relevance of its phases. Section 3.4 also provides insights into prior studies that also opted for domestication theory in studying different artefacts in different contexts. Section 3.5 discusses the criticism of domestication theory whereas, section 3.6 provides the justifications and relevance of domestication theory. Section 3.7 deals with the MTA and its relevance. Lastly, section 3.9 discusses all other associated theories which were not used in the study (see Appendix 17). The logical application of adopted and related theories is shown in Figure 3.1.

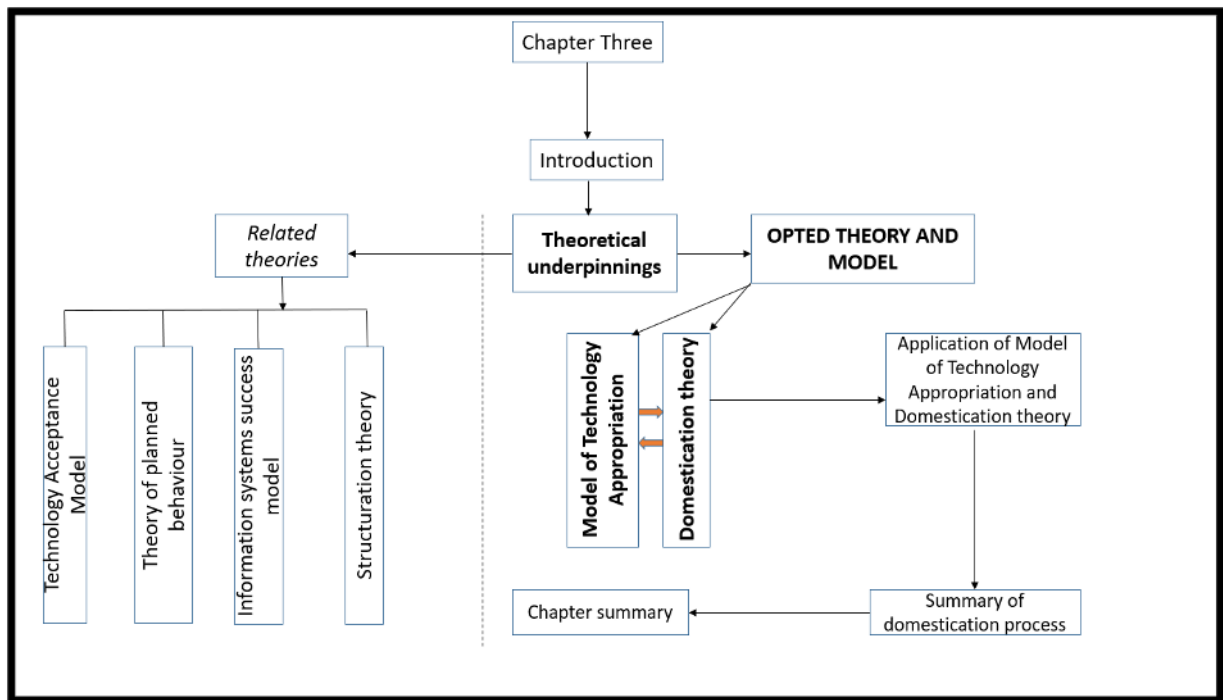


Figure 3.1: Chapter layout

3.1 The theoretical framework exploration

The exploration of theories is important in the Information Systems and Social Sciences disciplines because it provides the context for setting the rationale for research that is to be conducted. It also provides a framework within which social phenomena may be understood and the research findings may be interpreted (Bryman, 2012; Flick, 2014). This study opted for Domestication Theory (Silverstone & Hirsch, 1992) and the MTA (Carroll et al., 2002). Related theories were reviewed to assess their relevance for the study; they include: the Technology Acceptance Model (TAM) (Davis, Bagozzi & Warshaw, 1989); the Theory of Planned Behaviour (TPB) (Ajzen, 1991); the Information Systems Success Model (ISSM) (DeLone & McLean, 1992); and the Structuration Theory (Giddens, 1984) (see Appendix 17). In reviewing the theories, the study found that the domestication theory and the MTA were relevant theoretical lenses for the study that would produce relevant findings. The other theories were not deemed applicable and the rationale for this perspective is provided in this chapter.

3.2 Adoption of Information Technology (IT)

The domestication process starts with adoption and, hence, there is a need to explore this concept. The starting point was to discuss the adoption of IT in general and narrow it down to the main study phenomenon (OER), which pertains to IT artefacts. In addition, the adoption of IT was expected to provide a clear picture of how the reviewed and opted theories were chosen for the study. It was found that several studies have investigated the benefits of adopting IT in different contexts (Rad, Nilashi & Dahlan, 2018). IT has been showed to benefit many different environments as an enabler of knowledge and production (Bruque & Moyano, 2007; Hung & Tang, 2008; Díaz & Bonilla, 2019). It also plays a role in improving business processes and promoting efficiency (Búrca, Fynes & Marshall, 2005; Lu, 2018; Zhang, 2019). The adoption of IT seems to include a wide spectrum of services delivery. In the higher education environment, such as an ODeL, there is a reliance on IT adoption for both research and teaching (Zeng, Chan, Pawar & Aickelin, 2018).

Since technology adoption is one characteristic of domestication, the study explored the TAM, the TPB and the ISSM. These models were deemed relevant to the study because they allow for facts to be unpacked concerning how technology is adopted. It was considered necessary to discuss these theories because they are recognised IT adoption theories (Rad et al., 2018). However, the study did not only seek to understand how academics adopt technology alone. The aim was also to establish phenomenal knowledge, such as integrating, accessing, utilising and disseminating OER by academics. These IT adoption theories were, therefore, limited as they do not cover such a spectrum of investigation.

IT adoption occurs in a particular domain where different structures exist (Giddens, 1984, Walsham, 1993, 2002; Rad et al., 2018). Considering IT adoption in isolation was not sufficient and, therefore, one additional theory was explored, namely: the Structuration Theory. This theory pays more attention to the structures of the organisation where IT adoption takes place. The structures affect the behaviour of academics when adopting technologies and this study was not only concerned with the structures but also focused on how academics implement, develop, access, utilise and disseminate the OER. However, the structuration theory has limitations in covering aspects of usage and adoption in a complex academic behaviour on the domestication of the OER. After exploring the cited IT adoption

models, the researcher was afforded the opportunity to select the most appropriate models for this study. In terms of IT adoption, the domestication theory and MTA combined were deemed to be best for the study. These two were considered as they complement one another; they are both used in ‘process research’ and enable a study to investigate the structures, use, non-use, adoption and non-adoption of technology in a broader context or changing domain. The application of theories is outlined in Figure 3.3.

3.3 Domestication theory

Domestication focuses on the development of meaning for users and non-users; indicates how technology is integrated into their daily lives; and what technology comes to represent for individuals (Silverstone & Hirsch, 1992). In addition, domestication concepts describe an analytical tool which helps to illuminate the process where users make technology their own and it becomes a process where both technology and its users change (Berker et al., 2006). Domestication researchers are generally interested in the types of use of technologies, as well as symbolic meaning and personal attachment to ICTs (Lie & Sørensen, 1996). The study context proposed that OERs are introduced into the lives of academics. In line with domestication, an artefact is introduced to individuals by creating routines of use, and then meaning is developed for the individuals about the artefact (Silverstone & Hirsch, 1992; Silverstone & Hirsch, 1994; Silverstone, Hirsch, & Morley, 1994; Silverstone & Haddon, 1996).

The domestication theory maintains that technologies go through a series of stages as they develop from an idea to something newly acquired, to being part of the mix of other objects of everyday life, and to being part of the users themselves (Campbell, Ling & Bayer, 2014). It is a process through which material and symbolic artefacts are created, opened up to the influence of the consumer, and sold in the formal market economy (Lees & Sexton, 2012).

The domestication theory has been used mainly to understand the utilisation of ICT in homes (Silverstone et al., 1994) with a few studies examining professional groups (Saetnan, 1996) and the introduction of computers in the work environment (Sørensen et al., 2000; Pierson, 2006) which is particularly relevant to OER and domestication. Although most domestication studies explore the use and meaning of single ICTs in the family context (Habib & Cornford, 2002; Wheelock, 1994), the application of this theory enables researchers to do an in-depth

investigation of OER within a single case, such as the ODeL. In particularising the theory, this study proposed a new term, ‘domestication of OER’ which is related to academics or lecturers and other educators employed in the higher education sector as they should take cognisance of OER in terms of their work situations. The domestication of OER should be considered because in an ODeL institution the delivery of tuition and research occurs by means of ICT.

The domestication theory suggests that the use and meaning of certain phenomena cannot be understood in isolation from other ICTs (Birkland, 2013). Since the domestication theory was developed there has been a variation in edited and modified phases. The original theory by Silverstone and Hirsch (1992), Berg (1996), Lie and Sørensen (1996) and Silverstone and Haddon (1996) has four phases or processes: a) **appropriation**, b) **objectification**, c) **incorporation** and d) **conversion**. Other phases which were later introduced and which relate to “making the technology one’s own are: **commodification**, **appropriation** and **conversion**” (Silverstone & Haddon, 1996:61-5). This study opted for two phases of domestication theory: the application of domestication based on “**commodification**” and “**conversion**” and a third variable, “appropriation”, that would be supplemented by the MTA (Carroll et al., 2002).

It was believed that this would allow the research to cover a wide range of various concepts of appropriation factors which contribute to the adoption and non-adoption of technology as stipulated in the MTA (Carroll et al., 2002). The appropriation stage consists of two sub-stages: namely, objectification and incorporation (Berker et al., 2006). The incorporation of the domestication theory and MTA is discussed later in this chapter.

3.3.1 *Commodification phase*

Commodification refers to how a technological product is designed and marketed to the users (Berker et al., 2006; Chigona et al., 2010). At this stage, symbolic and functional claims about the product are noted (Chigona et al., 2010). This stage “encompasses the various activities that transform new or unfamiliar commodities into objects that have the potential to raise interest in the mind of their potential users” (Habib & Sønneland, 2010:87). Different approaches can be used to determine or notice details about the commodity. For example, factors such as experience, actions, and signs can contribute to showing knowledge about the

commodity (Lyons, & Karimzad, 2019). Therefore, in this study, the commodification process is framed within the experience of the artefact, informants, and perceptions of an artefact (OER). Furthermore, an artefact like OER is marked with a specific function and identity within the ODeL. Section 8.8.1 delves into the significance and applicability of commodification.

3.3.2 *Appropriation phase*

Appropriation involves integrating the technological product into the lives and routines of users; it involves bringing the technological product from the market into the users' lives (Carroll, et al., 2002). This phase decides the acceptance or rejection of the technology (Silverstone & Haddon, 1996). A technology gets appropriated when it is purchased, and then owned by an individual in an organisation or in a household. Furthermore, the appropriation phase can be used to describe the process of how individuals react to new, wild and strange technologies (Silverstone et al., 1992).

The study took a different approach by including a different framework to unpack the concept of appropriation in more detail which is the MTA (Carroll et al., 2002) (see more details in section 3.7). The MTA appropriation enabled the study to undertake an in-depth investigation into how systems and technology-in-use affect and contribute to the domestication process. In particular, it was thought that MTA may highlight more complexity in the appropriation of OER by academics in an ODeL. The complexity of appropriation in the MTA depends on what role the existing systems play in the usage and adoption of OER in an ODeL, for example, institutional systems used for OER. This was deemed important in the appropriation process because designed or existing systems are the determining filter of appropriation and dis-appropriation criteria (Carroll et al., 2002). Therefore, it was necessary to discuss and particularise all appropriation variables within the MTA as they were used in this study (see section 3.7).

3.3.3 *Conversion phase*

The conversion phase concerns the display of an acquired artefact which links with the outside world (Pierson, 2005). It involves resistance, refusal and transformation at the point where cultural expectation and social resources meet the challenges of technology, system

and content (Silverstone, 2005). This is particularly relevant to academics because they are the ones who are domesticating OER and who are expected to show the new opportunities which will lead to increased usage of OER in teaching and research. However, the obstacles which cause academics to refuse to utilise OER should also be outlined.

It must be noted that there is a tension between the technological and social environments that needs to be resolved at every level (Silverstone, 2005). Designers and manufacturers as well as policy-makers construct their technologies and functionalities with ideal users and optimum conditions of use in mind. Technologies are designed to be robust, functionally effective, and with an awareness of social consequential factors. Users also want the perfect fit in terms of the enhancement of the quality of their everyday lives without destabilisation, tension of personality and power without disruption of identity; freedom from the constraints of community and without a complete dislocation from the moral order of society (Silverstone, 2005). In Section 8.8.3, the application of conversion is described in depth.

3.4 Studies opting for domestication theory in their context

Several domestication studies have been conducted in different contexts, including the home or family, leisure, advertisements as well as unspecified contexts (Birkland, 2013). This study reviewed studies in the relevant available literature which used the domestication theory (see Table 3.1). The review enabled the researcher to differentiate existing phenomena of investigation; it identified five contextual settings where domestication is applied: business, education, ICT infrastructure as well as societies or communities. This investigation enabled the researcher to understand the application of domestication theory and to identify gaps. It was noted that there were only a few studies that used domestication theory in studies of education institutions, such as schools and universities. In terms of education, this study employed the domestication theory in relation to an ODeL that tends to differ from any other education institution as it relies mostly on ICT in providing teaching and in research. Therefore, the uniqueness of this study was in the domestication of OER in an ODeL.

Another aspect that arose during the review of related studies was that most of them were conducted in Information Systems, Computer Science, Information Science, and ICT, generally. All these fields rely on computer and telecommunications technology for the collection, storage, retrieval, reproduction, processing, diffusion and transmission of

information (Bosworth & Triplett, 2000; Brynjolfsson & Hitt, 2000; Swierczek & Shrestha, 2003) which is an indication that they are involved in engaging a similar phenomenon with common IT artefacts. The existing technology studies approach domestication with an emphasis on the analysis of any specific ICT artefacts (Aune, 1992; 1996; Berg, 1996; Hapnes, 1996). Table 3.1 shows the related domestication studies.

Table 3.1: Identified domestication studies and their contextual investigation

Source	Phenomenon of Investigation	Contextual Investigation
Al-Haidari (2017)	Use of social media	Business sector
Harwood (2011)	The domestication of online technologies by smaller businesses and the ‘busy day’	Business sector
Kerr & Koch (2014)	A creative and useful tension? large companies using “bring your own device”	Business sector
Cantrell & Visser (2011)	Factors influencing the integration of technology to facilitate transfer of learning processes in South Africa	Education sector
Chigona et al. (2010)	ICT in schools in disadvantaged communities	Education sector
Shekar (2009)	Domestication of the cell phone on a college campus	Education sector

Trauth & Howcroft (2006)	Social inclusion and the Information Systems field: Why now?	Education sector
Birkland (2013)	Meaning of ICTs	ICT infrastructure
De Ridder, Vesnić-Alujević & Romic (2016)	Challenges when researching digital audiences: Mapping audience research of software designs, interfaces and platforms	ICT infrastructure
Frissen, & van Lieshout (2006)	ICT in everyday life	ICT infrastructure
Stewart (2003)	Social consumption of ICT insights from research on the appropriation and consumption of new ICTs in the domestic environment	ICT infrastructure
Vuojärvi, Isomäki & Hynes (2010)	Domestication of a laptop on a wireless university campus	ICT infrastructure
Ask & Sørensen (2019)	Domesticating technology for shared success: collective enactments of World of Warcraft	Society
Chigona, Mudavanhu, Siebritz & Amerika (2016)	Domestication of free wi-fi amongst people living in disadvantaged communities in	Society

	the Western Cape Province of South Africa	
Hargreaves, Wilson & Hauxwell-Baldwin (2018)	Learning to live in a smart home	Society
Liste & Sørensen (2015)	Domesticate website technology and configure their users	Society
Mascheroni & Holloway (2019).	Introducing the internet of toys	Society
Monteiro (2018)	Living with technology	Society
Rosales, Fernández-Ardèvol, Comunello, Mulargia & Ferran-Ferrer (2017)	Older people and smartwatches, initial experiences	Society
Sujon, Viney & Toker-Turnalar (2018)	Domesticating Facebook: The shift from compulsive connection to personal service platform	Society
Willett (2017)	Domesticating online games for preteens—discursive fields, everyday gaming, and family life	Society

The related studies reflected in Table 3.1 show some variation in the relevance of the domestication theory as it is used in different contexts and in investigating different phenomena. All the studies yielded significant results and extended the existing knowledge using the domestication theory. In the process of reviewing these studies that opted for the domestication theory illustrated how theory was applied. The studies in Table 4.1 were listed according to the various categories: business, society, education, ICT infrastructure and

research approach; each category is discussed separately below except the research approach which is dealt with in the methodology section of the next chapter.

3.4.1 *Domestication in businesses*

The domestication theory has been used in studies focusing on the business context, such as that on the impact of social media in conducting business. The study identified several factors, including a lack of business experience, stringent requirements for business registration, financial restrictions, judgement by society, privacy and security, poor communication and access to clients (Al-Haidari, 2017). This suggests that the use of domestication theory within a business context has the potential to expose the different challenges, opinions, perceptions and experiences faced by stakeholders.

In the 21st century, technological innovations have moved and transformed many businesses. The existence of technology creates opportunities for promoting the market for the purpose of doing business. Domestication in businesses allows employees to undertake their tasks or duties - even on their mobile devices (Kerr & Koch, 2014). Business owners benefit because their employees can work wherever they are and in their own time (Dunn, 2020). This creates a high retention rate in the market from a global perspective because it enables digital access in terms of collaboration and globalisation (Luo, 2021). In addition, it is supported by the domestication of ICT in business (Grošelj, 2021).

While the successful domestication of technologies promotes business growth (e.g., identification of clients), it also introduces challenges (e.g., increased number of enquiries which need to be answered; the need to be unique; and issues of trust) (Al-Haidari, 2017). However, it has been found that not all online small businesses that domesticated technology succeed (Harwood, 2011). Based on these findings, it may be concluded that domestication discloses both positive and negative procedures in organisations that enables the improvement and reshaping of businesses in terms of better provisioning. The study recognises the element of relevance and all business studies in Table 4.1 were conducted in organisations or societies where the structure of business was present. Even where there is no profit involved, there are services required by humans and, generally, users request or use services by interacting with technology.

3.4.2 *Domestication in society*

The domestication theory enables researchers to understand the possible contradictions and discrepancies between the perception of user needs and behaviour in the early stages of adopting technological innovation and the actual social practices of users in which innovations must find its place (Frissen, & Van Lieshout, 2006).

In society, digital technology focuses on specific reasons why people use digital media and the satisfaction that may be experienced as well as specific problems encountered, such as cyberbullying. Cyberbullying is the use of the internet to spread unethical messages and any other anti-social behaviour (De Ridder et al., 2016). It is perpetrated by members of society who have easy access to cell phone utilities and other digital devices (David-Ferdon & Hertz, 2007). The domestication process establishes formality and practice that allows individuals to subvert institutional rules when using their cell phones (Shekar, 2009).

It is important to focus on the context in which people experience digital media. Context should be considered when investigating affordability, the digital media, and when dealing with self-representation and identity (De Ridder et al., 2016). A challenge for digital audiences is to not prioritise media as only material objects, but to allow room for the semiotics and contexts in which people as individuals or groups experience digital media (Livingstone & Das, 2013).

3.4.3 *Domestication of IT infrastructures*

The domestication theory contributes to the universal body of knowledge concerning ICT adoption and it is precise on how technology becomes domesticated (Chigona et al., 2010). This affirms that all domestication studies focusing on ICT should consider the issue of infrastructure, without which the domestication process cannot take place. Furthermore, domestication processes are more concerned with how ICT is embedded in human life on a daily basis (Silverstone, 1992).

Rosales et al. (2017) are of the opinion that while studying domestication one can unpack the different devices and software domesticated in a particular setting. Wi-fi seems to be the main ICT infrastructure to support accessing and retrieving information online. Businesses and individuals rely on wi-fi to access information through the internet. According to

Chigona et al. (2016), wi-fi has largely been used for research; people also use it to access social media and download updates for computers. This suggests that wi-fi plays a significance role in accessing the internet, particularly in developing countries where not all households and students can afford it. From a hardware perspective, another study concerning older people's use of smart watches showed that they are used differently for different purposes; the most common use is to manage messages and to keep track of sporting activities (Rosales et al., 2017).

3.4.4 *Domestication in the education sector*

The domestication theory has also been used in the education sector. One study on higher education practice recommends that all higher education institutions should provide sufficient social support for students who need assistance with their laptops (Vuojärvi, Isomäki & Hynes, 2010). Other studies explored the kind of assistance that resulted in a successful pedagogy and domestication which enabled students to integrate the use of computers in their learning experiences. Based on the findings of previous studies, it seems that fruitful domestication allows artefacts to become more than just tools for learning, but also an integral part of an individual's existing media environment.

In terms of basic education many South African schools and educators appreciate the benefits of adopting ICTs in their teaching. However, there are several factors that impede the integration of ICTs in teaching and learning (Chigona et al., 2010). Teachers may not have domesticated the new technologies in their teaching and learning and, therefore, they may not be ready to teach using digital tools (Chigona, 2015). A lack of domestication of ICTs is influenced by instructions teachers receive during pre- and in-service education (Chigona, 2015). It is significant that these factors affect South African education, and it is the main reason that the researcher opted for the domestication theory which was deemed to be more appropriate in an ODeL institution that uses technology to drive tuition and research.

3.5 Limitations and criticism of domestication theory

Few studies have critiqued the application of domestication theory. Therefore, it may be assumed that the interrogation of domestication theory is minimal, and many researchers simply apply this theory in preference to other theories. This could lead to the misinterpretation of the theory and may create confusion for novice researchers in that the process of domestication contains four core dimensions: appropriation, objectification, incorporation and conversion (Silverstone et al., 1992). However, Habib (1998) and Frissen (2000) maintain that it has three dimensions or stages: commodification, appropriation and conversion.

The domestication theory is a process. While studying domestication, it is important to unpack when domestication can take place; what the subsequent way forward is; and how many times domestication can take place in a particular domain. In most cases the domestication theory addresses issues concerning how ICTs are embedded in people's lives. Once successful domestication has occurred, it is not always clear what the way forward is; for instance, it is said that "once de-domesticated, the same tool can be re-domesticated, integrated once more into the everyday life of a person or group" (Watulak & Whitfield, 2016:183). In addition, domestication alone does not give an insight into what causes technology to be non-appropriated. It does not have the flexibility to filter whether the user wants to appropriate it or not. The application of domestication should have a defined period and justified reasons for its use. Domestication research has a tradition of only using qualitative approaches to understand the process of technology uptake from the perspective of users (Bakardjieva, 2010).

3.6 Justification for domestication theory

The decision to use the domestication theory as the main theoretical framework for this study was influenced by Hynes and Richardson (2009) who claim that the theory was essentially about giving technology a place in everyday life. The domestication theory not only includes use but also the way users experience technology; what technology mean to them; and how technology plays a role in their daily lives (Haddon, 2003). Overall, this theory helped the study focus on the development of meaning for user-academics. This relates closely to the

purpose of the study which aimed to discover how academics domesticate OER for integration, access, use and dissemination in tuition and research.

The acceptance of new technologies into the sphere of everyday life, both in public and private is called ‘domestication’ (Silverstone, 2005) which has emerged as an important dimension of the information society (Silverstone & Hirsch, 1996; Lie & Sorenson, 1996). It has shown flexibility and growth as, in the past, it was more concerned with households but now it has moved to institutions that make new technology their own and integrate them into their daily lives (Silverstone, 2005). The domestication initiative embedded itself in human beings and forced them to accept new modalities of technology and domestication and they should learn skills and practices to deal with ICT in their environments (Silverstone, 2005). This current study was more concerned with processes and the domestication theory which enables such inquiry. This theory is one of the only theoretical approaches that explore the complex processes of adoption and, more especially, the use of technology in everyday life (Hynes & Richardson, 2009). In opting for the domestication theory in this study it was necessary to understand how academics in an ODeL make OER part of their everyday lives and how it becomes part of their tuition and research. The domestication concept can be used effectively in Information Systems research as it provides a framework to contextualise studies and it is a tool to understand the perspectives and environments of empirical data (Richardson, 2009).

3.7 Model of technology appropriation (MTA)

The MTA was developed by Carroll et al. (2002). The model is related to the domestication theory as it is concerned with how technology is adopted and incorporated into people’s daily lives (Silverstone & Hirsch, 1992; Carroll et al., 2002). Variation from the domestication theory is based on the fact that there is a concern about how systems are designed and lead to adoption and non-adoption before the appropriation process can take place. Moreover, the MTA includes making use of technology for purposes beyond the original intention of the designers (Salovaara & Tamminen, 2009). The development of the MTA had a great impact on the structuration theory (Giddens, 1984) and the domestication theory (Silverstone & Hirsch, 1992).

The motive behind technology appropriation is that it involves non-linear interaction between users' situated competences and technological applications that are built on the structuration theory (Dey et al., 2018). The 'appropriation' initiated by Silverstone and Hirsch (1992) and later Carroll et al. (2002) strengthened the 'appropriation' variable so that it became a model. The model has broad levels and variables to cover most of the issues involved when investigating how technology becomes a part of individuals on a daily basis. The appropriation concept was well known in the field of information systems even before it became a model (Carroll et al., 2002; Dey et al., 2018). Some studies have used 'appropriation' as a term to examine the use of technology in organisations (DeSanctis & Poole, 1994). The MTA in Figure 3.2 (Carroll et al., 2002:53), shows all the designed variables and levels of transformation of technology in use, including the dynamic nature of the adoption, use, adaptation, rejection of, and resistance to technology in the MTA (Carroll et al., 2002).

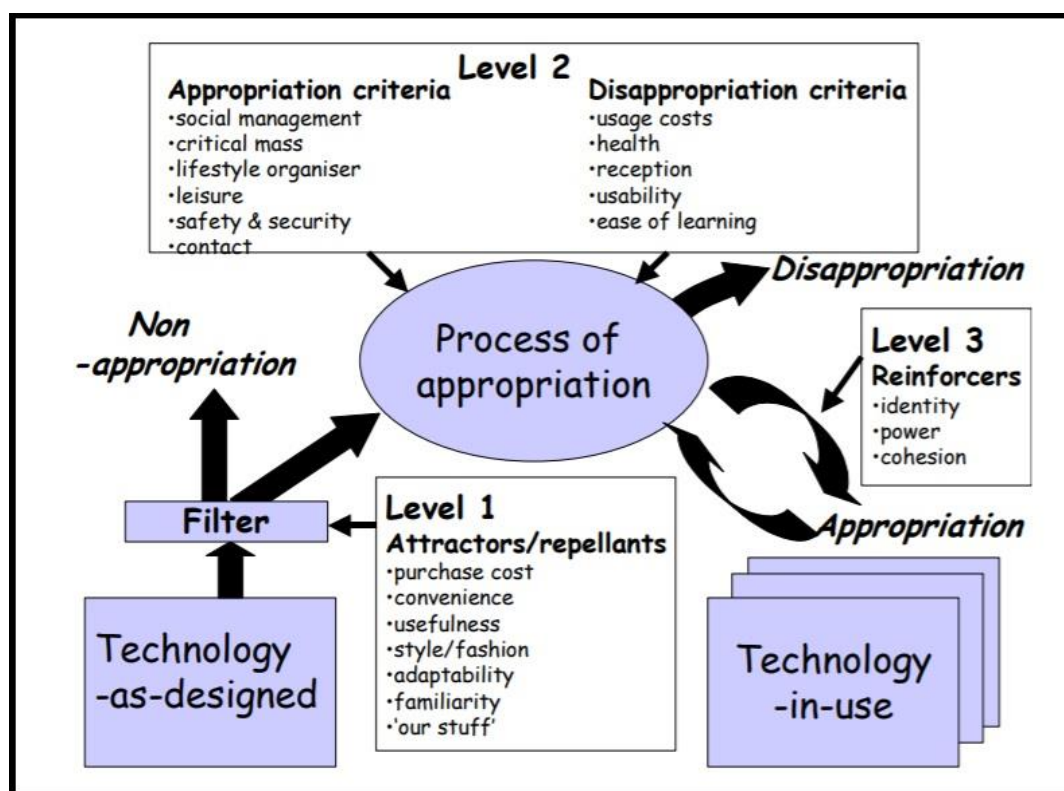


Figure 3.2: The model of technology appropriation (Carroll et al., 2002:53)

Figure 3.2 highlights three main variables: technology-as-designed, technology-in-use and process of appropriation. It also shows the process through which the initial technological

artefact is adopted and transformed - the process of appropriation (Carroll et al., 2002) which has three representative components of a change process: “a set of starting conditions (the technology as it is envisaged by its designer), an end point or state (the technology as it is currently used) and an emergent process of change” (Van de Ven, 1992:80). The significance of MTA variables is discussed in the following section, and the application of variables is explained in Section 8.8.2.

3.7.1 Technology-as-designed

The initial artefact “technology-as-designed” refers to a technological artefact that has been designed for, and supplied to, a target audience (Carroll et al., 2002). The aim of designers in creating new technologies is to assist in solving identified organisational problems (Hevner, March, Park & Ram, 2004). This study is not concerned with designing new technologies for the domestication of OER but, rather, with current systems and technology that are enabling or relevant in terms of adopting and utilising OER. In this study this artefact was a starting point as the researcher’s interest was in how academics domesticate OER. It was thought that before the domestication process occurs it would be necessary to find out what systems were used when designing OER. Once that had been established the study needed to establish what resources were required to host the OER so that it could be accessible to students. During the initial exposure to the technology, a series of influences shape users’ evaluation and decisions on whether or not to adopt the technology (Fidock & Carroll, 2006).

On the same level and as part of technology adoption, Carroll et al. (2002:53) list the crucial repellents/attractors that should be considered: “purchase cost, convenience, usefulness, style, adoptability, familiarity and concern staff.”

3.7.2 Process of appropriation

The process of adapting or reshaping an innovation is called the process of appropriation. Carroll et al. (2002) associate the process of appropriation with the Diffusion of Innovation Theory (Rogers, 1983) which describes the process in which the decision to adopt an innovation occurs.

On this level, users or academics evaluate technology more thoroughly by exploring and using it (Herszfeld, Carroll & Howard, 2003). They learn how technology can support their

practice of domestication through the provision of functionality (Fidock & Carrol, 2006). It has been found that as academics explore and learn about the technology, they enhance their skills associated with technology as well as the technology itself.

3.7.3 Technology-in-use

Technology-in-use describes the way that user groups use a technology (Carroll et al., 2002). It is an outcome of the process of appropriation where the technology has been evaluated, adapted and embedded in academics' everyday routines in their tuition and research. In this artefact the use of a new technology has become natural when domesticating OER. At this stage the design may be said to be fixed, although it may not be permanent (Mendoza, Carrol & Stern, 2005). Overall, this level becomes an outcome of the process of appropriation which means that the technology has been evaluated, adapted and integrated into the users' everyday routine (Carroll, Howard & Vetere, 2001). It is at this point that Carrol et al. (2002) suggest that reinforcers such as identity, power and cohesion take place.

3.7.4 The studies opted for the model of technology appropriation

Since the MTA was initiated in 2002, this model has been used and Table 3.2 reflects the variation in terms of contribution. This model has proved to be a relevant application in different contexts as it provides clarity and knowledge concerning design practice and system integration (Carroll, 2004). It has shown to be relevant in theorising around different types of innovation behaviour (Gaskin, Berente, Lyytinen & Rose, 2018). It also enables the exploration of cultural identity through the use of appropriation of technology (Dey et al., 2018). Moreover, the MTA illustrates a general contribution to the world of knowledge (Carroll, 2004; Aricat, 2015; Aricat, Karnowski & Chib, 2015).

The MTA has the capability of producing two types or sets of data concerning appropriation and dis-appropriation. The study on the use of wi-fi found that the MTA has grown steadily but that the use of display has declined (Ylipulli et al., 2014). The MTA has enabled researchers to establish why academic appropriate and dis-appropriate technology (Carroll et al., 2001) would, it was thought, empower the study to seek out information on the appropriation and dis-appropriation of technology when domesticating OER.

This model has proved to be relevant in developing or extending new concepts and theories; Isika et al. (2015) developed a social support theory and a model of technology after undertaking an investigation of patients with chronic illnesses with the purpose of sharing knowledge. The MTA not only provides a theory or conceptual framework for a study, but it also contributes to a policy framework. There has been a study related to policy on the use of mobile phones in a work domain and in schools (Al-tabatabaie, 2018). Based on the contribution of the study presented in Table 3.4, the MTA became relevant to this study. The MTA was used to substitute ‘appropriation phase’ within the domestication theory as it provided further opportunities to explore many variables compared to ‘appropriation’ in the domestication theory. It was important to amalgamate the MTA and the domestication theory. Based on its multi-levels, it provided an insight into how technology-as-design, the appropriation process and technology-in-use play a role in the domestication of OER by academics. Apart from opportunities to explore new knowledge, it also enabled the study to recommend two additional phases in domestication theory such as non-appropriation and dis-appropriation. Table 3.2 show the different studies that opted for MTA.

Table 3.2: Summary of studies that opted for the model of technology appropriation

The Main Contributors	Conceptual Investigation	of Contribution to Knowledge
Al-tabatabaie (2018)	Adoption and appropriation of mobile phone on the Iraqi Society.	“...provide a significant contribution to the theoretical understanding of mobile phone use from the information system perspective with the use of adoption and appropriation model.”
Al Zubaidi-Polli and Verdezoto (2018)	Learning from appropriation practices: Towards the next generation of e-participation environments enabling collaborative writing in-situ and ex-situ.	“Potential design improvements for future collaborative writing e-environments that facilitate location-agnostic participation, and improvements that enable successful technology appropriation are

		presented.”
Aricat (2015)	Is (the study of) mobile phones old wine in a new bottle? A polemic on communication-based acculturation research.	“The paper critiques the research trends in migrant acculturation and mobile phone communication and suggests a possible alternative that goes beyond the “transcendental teleology” that underpins discourse and practice” (Aricat, 2015:7).
Aricat et al. (2015)	Mobile phone appropriation and migrant acculturation: A case study of an Indian community in Singapore.	“Contributes in understanding of effects of mobiles on migrants’ population” (Aricat et al., 2015:23).
Dey et al. (2018)	Selfie appropriation by young British South Asian adults: Re-identifying, endorsing and reinforcing dual cultural identity in social media.	“The study details a new quadripartite framework for analysing young British South Asian adults’ acculturation that leads to the formation of their dual cultural identity and presents a dynamic model that explicates how cultural identity is expressed through the use and appropriation of technology” (Dey et al., 2018:12).
Gaskin et al. (2018)	Innovation among different classes of software development organisations.	“...study suggest that the knowledge-based dispositions of different SDO innovator classes impact how they innovate. Overall, the study involves theorizing around different types of innovation behaviours and associated knowledge-based factors

		that influence the way SDOs innovate” (Gaskin et al., 2018:14).
Carroll (2004)	Completing design in use: closing the appropriation cycle	“The study signifies the attention to the role played by users’ actions in completing the design of a technology innovation and to its implications for designers, managers, trainers and IS professionals” (Carroll, 2004:10).
Fidock and Carroll (2006)	The Model of Technology Appropriation: A lens for understanding systems integration in a defence context.	“The contribution of this paper is the application of a model that provides a lens for understanding the process through which the design of a technology is completed by humans embedded in a particular organisational context, and which provides insights into how to improve design practices associated with systems integration” (Fidock & Carroll, 2006:2).
Dey, Newman, and Prendergast (2011)	Analysing appropriation and usability in social and occupational lives: An investigation of Bangladeshi farmers’ use of mobile telephony.	“...presents an original conceptual diagram that combines the concept of usability and appropriation” (Dey et al., 2011:1)
Dey, Binsardi, Prendergast and Saren (2013)	A qualitative enquiry into the appropriation of mobile telephony at the bottom of the pyramid.	“The paper argues that technology appropriation, being a result of the mutual shaping of technology, human skills and abilities and macro-environmental factors, enables users

		to achieve desired outcomes which may not always be the ones envisaged by the original designers” (Dey et al., 2013:5).
Isika, et al. (2015)	Appropriation of social media by patients with chronic illness to share knowledge.	They propose that “Social Support Theory and the Model of Technology Appropriation could explain the determining factors both the enablers and barriers that drive appropriation and knowledge sharing behaviours of patients on social media platforms” (Isika et al., 2015:1).
Ylipulli et al. (2014)	Appropriation of new technology in public urban spaces.	“Reveals that while the use of the Wi-Fi network has grown steadily, the use of the displays has been declining” (Ylipulli et al., 2014:1).

3.8 Application of the model of technology appropriation in domestication theory

Section 3.5 discussed the limitations and criticisms of the domestication theory. It was suggested that the domestication theory alone does not allow researchers to unpack reasons for non-appropriation and dis-appropriation; in contrast, the MTA enables the study to give answers on both elements. It was thought that adapting appropriation may afford the study an opportunity to further investigate all three phases of appropriation: technology-as-designed; technology-in-use; and the process of appropriation. The study also explored and discussed other candidate theories that were not deemed appropriate in this study (see Appendix 17).

Combining the domestication theory and the MTA allowed the study to yield rich results and it was able to propose an extension to domestication theory. Figure 3.3 illustrates the final research framework utilised for the study and its contextualisation.

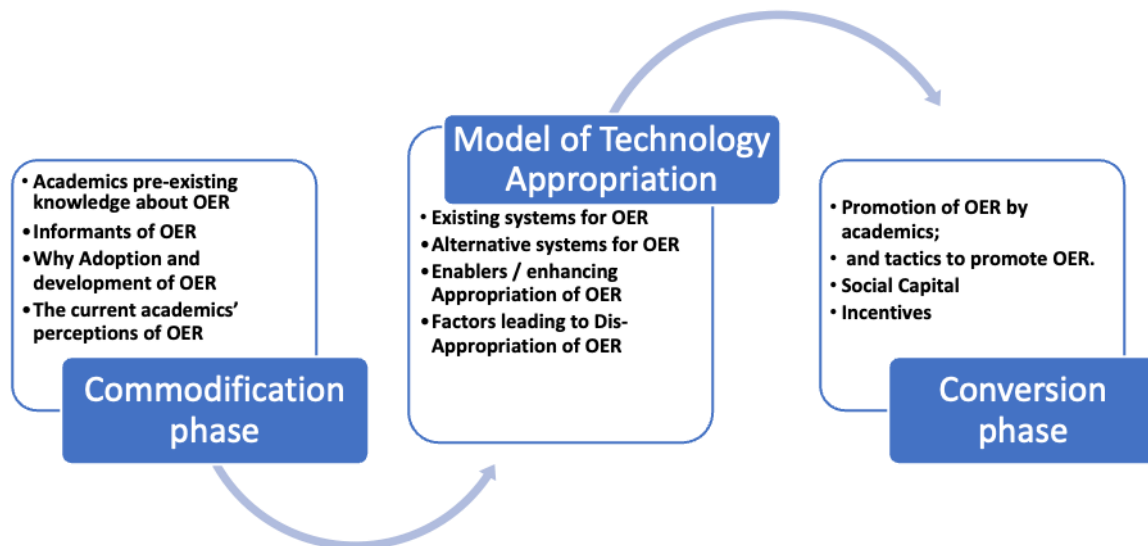


Figure 3.3: Domestication of open educational resources (Source: Author)

8.8.1 The commodification of OER

In relation to Section 3.3.1 which delve on justification of commodification and Figure 3.3, the study followed four fundamental strategies for obtaining the user information, which were previous experience, artefact knowledge, the decision of usage, and general views about OER (Mncube, Tanner & Chigona, 2021a). This is in line with Habib and Sønneland (2010) as they affirm that commodification is the process that encompasses the various activities that transform a new commodity into objects that have the potential to raise interest to potential users. Thus, to gain such user interest, the study adhered to all elements of commodification. Figure 3.2 shows how users' perceptions are formulated within the commodification sphere.

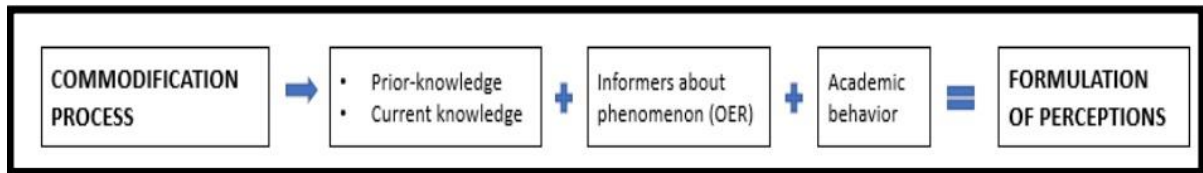


Figure 3.2: Guidelines for formulation of user perceptions (Mncube et al., 2021a:782)

The application of the commodification process enables the researcher to determine the user's work experience, educational background, and personal history and that helps to shape the learning process (Tusting, 2012). Prior knowledge emanates from users' experiences and can shape the commodification process by contributing to the formulation of perceptions by the artefact researched. Experience can be considered as a significant initial step of determining prior knowledge before the commodity is made known to the targeted audience (Mncube et al., 2021a). Starting with the gathering of users' prior knowledge assists the individual or institution to recognise the gaps before initiating the training, marketing, and publicising the commodity to the targeted audience. Indeed, commodification is a process that consists of multiple framing moves that knowledge entrepreneurs use to make sense based on the artefact that is researched (Heusinkveld & Visscher, 2012). The knowledge which a consumer has about the product or related product influences their image of the product and their expectations of the product. To gather data relating to the commodification phase, the researcher posed the following key interview questions:

- What are the academics' prior knowledge about OER?
- How did the academics know about the OER?
- Was there a need for OER to be developed and adopted for tuition and research?
- What are the perceptions of the academics in an ODeL about OER?

8.8.2 The appropriation of OER

This study used this phase to establish the existing systems; alternative systems; enablers of appropriation; and possible factors leading to dis-appropriation of OER as recommended by Carroll et al. (2002). The existing and alternative systems were investigated to determine whether they were enabling in development and the adoption of OER in an ODeL. Once the system were evaluated it becomes important to establish what technology-in-use was relevant

in the appropriation of OER by academics in their tuition and research. The appropriation process enabled the interrogation of the abandonment of technology during the domestication of OER. All these attractors were relevant in the investigation of the adoption of technology during the domestication of OER by academic staff members.

At this stage appropriation is also associated with adaptation. Fidock and Carrol (2006) maintain that there are varieties of influence that serve to encourage or discourage appropriation. Figure 4.3 shows that on this level are two opposing occurrences: appropriation criteria where social management, critical mass, lifestyle organiser, leisure, safety and security and contact occurs, and dis-appropriation criteria which include usage cost, health, reception, usability, and ease of learning (Carroll et al., 2002). This variable enabled the study to provide answers to the following interview questions:

- Are there any specific features that you would recommend about OER?
- How are IT systems used differently to how they were designed for OER?
- What are the motivating factors affecting you in adopting or developing OER?
- What are the hindrances affecting you in the adoption or development of OER?
- What are the things you do not do when adopting or developing OER and why?

8.8.3 The conversion of OER

This phase of domestication enables the study to determine the way in which academics demonstrate their use of new technology for OER in the context of ODeL. The conversion phase “involves display, the development of skills, competences, literacies as well as discourse and discussion, the sharing of pride of ownership, as well as its frustration” (Berker, et al., 2006:234). In the conversion phase, the academics demonstrate to others that they are consuming the product; they talk about the OER to others and “show[s] off” their mastery of the product (Habib, 2010). Other than showing off to their colleagues, they also inform students as the main consumers of OER. In this phase, the study sought to obtain answers for the following interview questions:

- Whom do you encourage to adopt or develop OER?

- What are the good or bad things about OER?
- What procedures or tactics do you take when marketing OER in an ODeL?

3.9 Chapter summary

This chapter has provided a detailed discussion on the theories utilised in the study, namely domestication theory and MTA. An overview of the relevant theories which could have been used in the study are shown in Appendix 17. A thorough justification on why they were not used is provided; the reason for doing so is to provide other researchers with opportunities and information to opt for these theories if and when they decide to conduct a similar study. The domestication theory and its three phases were explored. The relevant available literature suggests that there are several studies that have opted to use this theory in Information Systems, but the evidence indicates that the domestication theory is under-utilised (Silverstone & Hirsch, 1996).

CHAPTER 4: THE CONTEXTUAL SETTING

4.0 Introduction

Information Systems research is characteristically situated in a particular context which is necessary for “authors, editors and reviewers to help ensure that both the research context and scope of validity are adequately communicated and understood” (Davison & Martinsons, 2016:247). Therefore, this chapter discusses the context of the study. Unisa has not yet been recognised by the DHET as an ODeL business model - as it was approved only by the Unisa Council (Unisa Annual Report, 2013). Unisa is still classified as a comprehensive institution; however, the DHET may, in future, consider this institution to be the first of a fourth category, an ODeL, as the focus of its operational mode is the business model (Unisa Annual Report, 2013). The main context of this study was narrowed down to ODeL for the purposes of in-depth investigation. In discussing the ODeL context the study focuses on the following: South African universities; the origin of ODeL at Unisa; and clients of ODeL.

This chapter contains eight sections: section 4.1 (South African HEI), section 4.2 (Unisa history), section 4.3 (Unisa as an ODeL), section 4.4 (Unisa academic structures), section 4.5 (ODeL clients), section 4.6 (Unisa OER strategy), and 4.7 (chapter summary).

4.1 South African context: South African higher education institutions

South African has 26 recognised public universities (see Appendix 12). This study was conducted in a South African context where twenty-six recognised universities provide higher education. The universities in South Africa are classified as follows: Academic universities, comprehensive universities and universities of technology (DHET, 2019). All these HEIs provide education and training opportunities to:

“... all individuals who have left school; for example, education and training for out-of-school youth, institutions offering second chance learning, Technical and Vocational Education and Training (TVET) colleges, Community Education and Training (CET) colleges, and education and training offered by the Sector Education and Training Authorities (SETA), universities of technology and universities, private providers and other training colleges and institutes” (DHET, 2017:8).

From 2010 to 2015 there has been a steady growth in the total number of first-time undergraduates entering higher education institutions in South Africa (DHET, 2018). One of the reasons for the increased university enrolment in the country is that after 1994 many more people in the country were granted access to education as the Constitution of the Republic of South Africa, Act 108 of 1996, emphasises that everyone has the right to further education.

To address issues of access in higher education the DHET implemented its 2015-2020 Strategic Plan which was informed by the vision adopted in the National Development Plan (NDP), the Medium Term Strategic Framework (2015-2019) and the White Paper for Post-School Education and Training (WPSET) (DHET, 2014a). It identified the expanded access to education and training opportunities and diversified provision based on open-learning principles to improve learning across the WPSET sector. Open learning was considered a new approach that would support institutions that introduced open learning practices as a practical way of addressing crucial issues of widening access to affordable, quality learning opportunities (DHET, 2017).

4.2 The history of the University of South Africa

Unisa is the biggest institution in South Africa and Africa. Its origins may be traced back to the University of the Cape of Good Hope in 1873 that operated an examining body in the country (Unisa Annual Report, 2013; Unisa Website, 2021). The first location of the institution was Cape Town. In 1916 the institution changed its name to Unisa. In 1918 Unisa became a federal university and in 1946 the institution became one of the world's first public universities to provide distance education (Unisa Website, 2021). The university relocated to Pretoria in 1918 where the current main campus is based (Unisa Website, 2021). Table 4.1 shows Unisa's history.

Table 4.1. The Unisa historical timeline

Year	1873	1916	1918	1946	2001	2013 - 2021
Location	Cape Town	Cape Town	Pretoria	Pretoria	Pretoria	Pretoria
Name	University of the Cape of Good Hope	Federal University	Independent universities	Distance Learning	Merge to: ODL	ODeL

Unisa has more than 130 regional offices in South Africa and has spread its influence around the globe (Unisa Website, 2020). Appendix 13 indicates Unisa's offices in South Africa. Besides these South African regions there are many more around the globe. The institution has students from all nine provinces in South Africa as well as abroad. Unisa provides a service to more than 400 000 students from all over the world (Unisa Website, 2020). This affirms the ODeL nature of the university where the provision of tuition is blended and mostly provided utilising an online platform (Kumar, Kumar, Palvia & Verma, 2019; Smith & Hill, 2019). Students are not restricted to learning time geographic settings.

4.3 University of South Africa as an open distance e-learning institution

Unisa has moved from being an ODL to an ODeL (Unisa Annual Report, 2013). The ODL mode provides tuition in a distance form with little physical contact between lecturers and students; tuition relies on different methods, including face-to-face, online media, discussion classes and tutorials as well as other blended modes of teaching (Unisa, 2008; Tarhini, Mohammed & Maqableh, 2016; DHET, 2017). Essentially, blended learning involves a mix of traditional and online learning (Arinto, 2016; Buyuk, Kocdar & Bozkurt, 2017; Ossiannilsson, 2018). The ODL mode attracted many students as it was considered best as people who were already working could further their studies and it could accommodate those

who had just completed secondary schooling (Ngubane-Mokiwa & Letseka, 2015). Unisa's ODL model solved the problem of limited access to higher education (Pityana, 2009).

The transition from ODL to ODeL simply means its approach makes full use of online access. The ODeL business model assumes that all student learning can be optimally supported by modern electronic technology and other digital facilities (Ngubane-Mokiwa & Letseka, 2015; Mncube et al., 2017). However, in many developing countries, including South Africa, not all students own the necessary devices and software to engage in online learning (Cox & Trotter, 2017). They established that lecturers at a distance education institution, like Unisa, are concerned about their rural students' lack of connectivity and, therefore, the limited digital materials that they can incorporate into their teaching. To fill this identified gap Unisa committed to providing its students and staff members with the relevant ICT infrastructure to play a significant role in a digital forum (Unisa Annual Report, 2013).

The ODeL environment reduces the cost of offices in buildings as academics are not necessarily required to occupy office space. There are no limits in terms of the teaching context as the process of learning can occur in the comfort of home, coffee shops, airports, restaurants, and any other area with a full internet connection (Alfonso & Garcia, 2016). This promotes flexibility that is designed to accommodate the increasingly diverse learning needs and contexts in which ODeL may take place (Evans & Pauling, 2010; Glennie & Mays, 2013; Blumenstyk, 2015).

Lastly, in open distance learning tuition was offered utilising correspondence; learning material was developed and posted to students and discussion classes were offered once or twice a semester (Unisa Policy, 2011). Discussion classes were not compulsory, but written assignments that students were required to submit to their lecturers were important. The tuition was done through written instructions in tutorial letters, workbooks and course outlines. The tutorial letters refer to the document prepared for each module offered at Unisa for communicating with registered students on issues to do with teaching, learning and assessment (Unisa, 2019). Based on the above, it is possible to conclude that distance education is limited in terms of course delivery. Lecturers and instructors are limited to teaching what is pre-prepared in tutorial letters (Unisa Policy, 2011). In alignment with the assessment policy, lecturers are bound to teach and access material in terms of the course

outline. Despite differences, the study recognises that, in an ODeL academics and administrators do not have the right to prescribe a particular mode of study for students. This is an advantage in meeting the teaching and learning needs of all students in all categories.

4.4 University of South Africa academic structures

Unisa is the largest academic institution in Africa, based on student enrolment, widespread students, and the number of academic staff. Unisa is the largest university in South Africa in terms of the student population; it has over 400,000 students (Africavarsities, 2021). This institution is big in terms of the variety of programmes offered (Unisa website, 2020). Figure 5.1 shows the organisational structure of Unisa. The university consists of eight colleges. Within colleges, there are 18 schools, and under schools there are over 70 academic departments. Besides these academic structures, there are other colleges such as CSBL and other departments which were not counted in Table 4.1 because they do not provide academic services. The full information about Unisa colleges, schools, departments, centres, and institutes is detailed in Appendix 14.

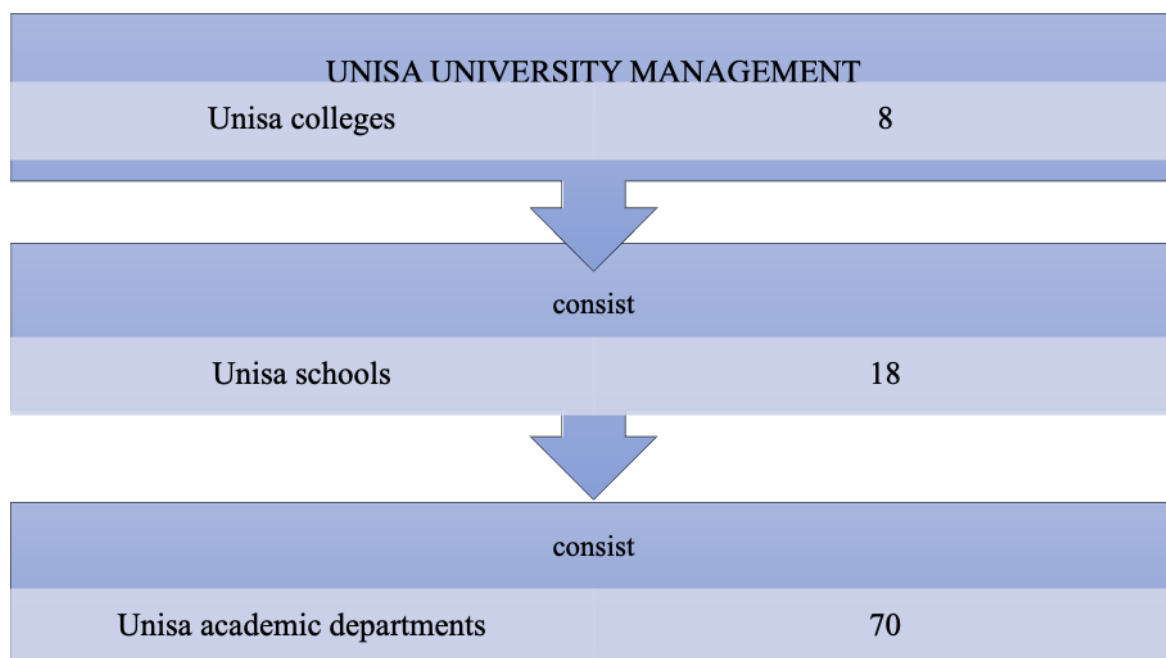


Figure 4.1: Unisa academic organogram

Unisa has eight colleges offering a wide range of academic and vocational programmes with over 1400 academics (Unisa website, 2020). Besides, there is a Graduate School of Business Leadership (SBL), which produces postgraduates mostly specialising in College of Economics and Management Sciences (CEMS). The Unisa academic managerial structure starts with the vice-principal, college deans, school directors, and chairs of the department (COD). In this context, usually, the school reports to the college. A school is headed by an elected director. The departments under the schools are headed by a COD (known as head of department in other institutions). The colleges and schools are mostly academics at managerial levels whereas the departmental levels are where the tuition and research are taking place. Table 4.2 presents the latest profiles of academics per post title at Unisa.

Table 4.2 Unisa Academic profile (Unisa Annual Report, 2019:102)

Occupational levels	Male				Female				Foreign national		Total
	A	C	I	W	A	C	I	W	Male	Female	
Professor	53	7	6	85	24	2	7	75	40	12	311
Associate professor	61	6	10	40	43	2	8	77	31	13	291
Senior lecturer	151	6	10	68	126	11	25	173	26	16	612
Lecturer	164	5	7	38	164	7	23	89	5	10	512
Junior lecturer	33	2	0	3	33	0	3	4			78
Grand total	462	26	33	234	390	22	66	418	102	51	1 804
Actual % representation	25,6	1,4	1,8	13,0	21,6	1,2	3,7	23,2	5,7	2,8	100,0
EAP	42,1	5,4	1,7	5,6	35,3	4,6	1,0	4,3			
Over/under	-16,5	-4,0	0,1	7,4	-13,7	-3,4	2,7	18,9			

Table 4.2 indicates the representation of academics based on their academic ranks from professor to associate professor, senior lecturer, lecturer, and junior lecturer. Other indicated variables such as male, female, and foreign national were not necessary for the study. Instead, the ranks and the total number of academics were important because was where the sample was drawn. The alphabet represents nationality group because South Africa is a diverse country as there are African (A), Coloured (C), Indians (I), White (W) people.

4.5 Clients of ODeL

In this study the clients of ODeL are defined as those individuals who are associated with Unisa; they are categorised as students, academics and administrators. The most important clients in this study were the academics who are more concerned with how they domesticate OER at Unisa to provide a service for the students. The ODeL community is exposed to countless information sources, such as the internet, computers, databases and social media to access OER (Anshari, Alas & Guan, 2016; Casquero, Ovelar, Romo, Benito & Alberdi, 2016; Huda et al., 2018).

4.6 Unisa OER strategy

Unisa was the first institution to initiate OER and sign an agreement with UNESCO in Africa. Unisa has embraced the use of OER initiatives because it is the first institution to have an approved OER strategy (De Hart, Chetty & Archer, 2015). Appendix 14 illustrates the existing institutional strategy. Unisa also signed the Paris OER Declaration and the Berlin Open Access Declaration and formalised a collaboration with the OER *Universitas* (OERu) as a founding anchor partner (Unisa, 2014). However, the Unisa intellectual property policy (2012:5) states that: "Unisa is the owner of all intellectual property created by members of staff within the normal courses and scope of their employment." In other words, the sharing of intellectual property, including study material, is not officialised as open resources at Unisa. Unisa does allow academics to share their own created teaching materials as OER (Cox & Trotter, 2016).

The contradiction in the foregoing information is evident: Unisa encourages the sharing of OER, whereas, at the same time, the policy protects its knowledge property from being openly shared. If Unisa promotes OER, it should create or allow all teaching material, such as course outlines, study guides and simulations, to be accessed in a public domain. In the current situation, the literature shows that intellectual property and OER policy are treated separately and that may need further investigation.

The study recognises the gaps in terms of the alignment of institutional intellectual property, open access, and OER policies, which all play a role in a higher education institution. Institutional intellectual property is an umbrella of protection of all institutional resources,

including OER. If all intellectual properties, open access policies in South African universities are accommodating OER since this is an emerging phenomenon. If the intellectual property policy is not in line with or does not complement the OER policy, it may create a challenge for academics, who are expected to create and adopt OER for their tuition and research.

4.7 Chapter summary

This chapter has discussed the contextual setting where this research occurred; the main study context was Unisa, an ODeL. The discussion covered the differences and functions of all universities and higher education institutions in the South African context to indicate why other institutions were not involved. The ODeL mode of the university, on which the study focused, was unpacked to establish the contextual background for readers and indicate where the data for the study was collected (Davison & Martinsons, 2016). The ODeL, as a study context, proved to be relevant because of relying on ICT artefacts that enable tuition and research to take place.

CHAPTER 5: METHODOLOGY

5.0 Introduction

This chapter discusses the methodological aspects of this study. It includes research methodology and unpacks topics about relevant philosophy of science in general and particularly in an Information Systems context where this research is located. Figure 5.1 indicates the logical sections within the chapter (the chapter map).

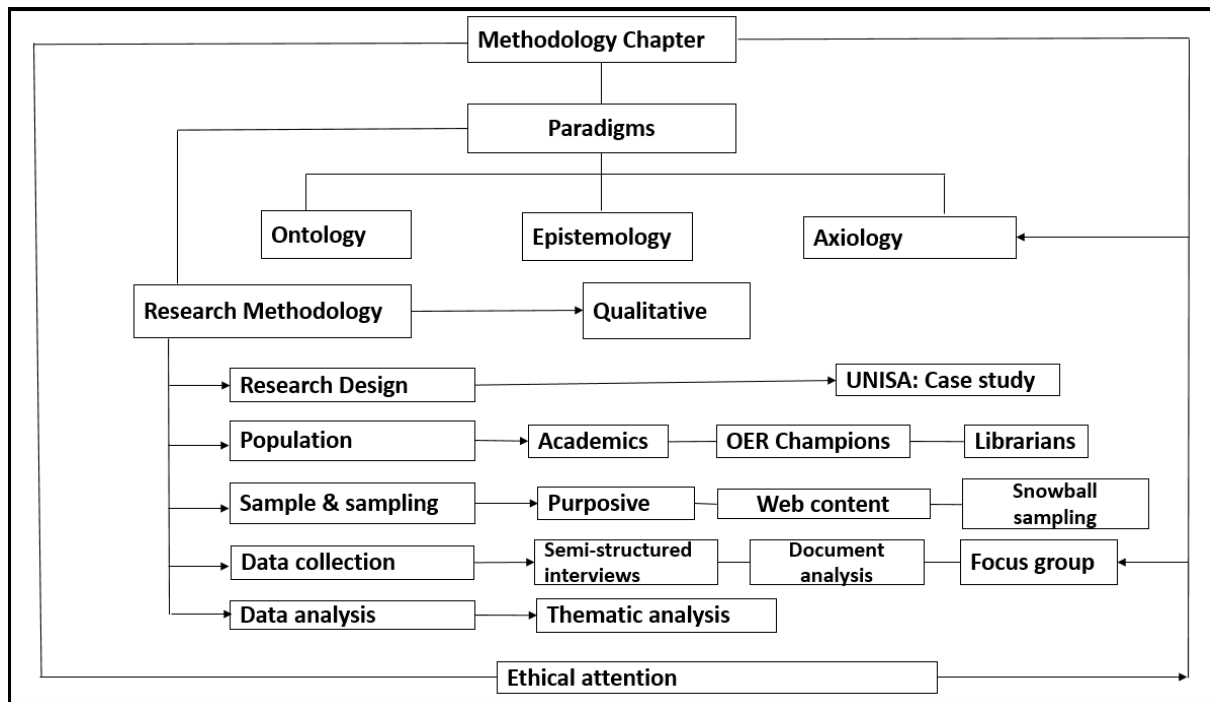


Figure 5.1: Overview of the methodology chapter

5.1 Philosophical assumptions

A paradigm is a model or frame of reference through which to observe and understand sets of beliefs that represent a person's worldview (Rubin & Babbie, 2017). Paradigms as shared beliefs refer to a set of assumptions and practices shared within a community of researchers about a way of viewing reality or appropriate procedures for addressing a research question (Morgan, 2007). The philosophical paradigm is informed by philosophical assumptions (or positions or considerations) about three things: the nature of reality, ways of knowing, and ethics and value systems (Bryman, 2008; Blaikie, 2010; Babbie, 2016). That is an indication of agreement between researchers on how to solve research problems. Within the paradigm of

theoretical constructs, the study discussed three elements: ontology, epistemology, and methodology. The representation of theoretical constructs is outlined in Table 5.1.

Table 5.1: Summary of explanations of philosophical assumptions (Smith & Shaw, 2019:407)

Theoretical Construct	Theoretical meaning (Guba and Lincoln)	Operationalised construct (Mingers)	The pillars of PSMs
Ontology	What is assumed to exist	What is included within a model	System Characteristics
Epistemology	The nature of knowledge	How and with whom is knowledge created	Knowledge and Involvement of Stakeholders
Axiology	Values for problem solving	How to judge the value of PSM research	Values of Model Building
Research Methodology	How to structure enquiry		Structured Analysis

The paradigm inherently consists of the ontological, epistemological, axiological, and methodological strands (Bryman, 2008; Howard-Wagner, Habibis & Petray, 2012; Romm, 2018). The worldview of the researcher determines the meta-theoretical assumptions about the world, which in turn are intrinsically connected to the underlying methodological approach of the research (Knight & Cross, 2012). The worldview of a researcher may be influenced by several variables. These may relate to paradigms as shared beliefs and paradigms as model examples of research (Morgan, 2007).

The research paradigm comprises three elements: a belief about the nature of knowledge, a methodology, and criteria for validity (MacNaughton, Rolfe & Siraj-Blatchford, 2001). Other researchers refer to a paradigm as epistemology or ontology or even research methodology (Neuman, 2000; Cresswell, 2003). Qualitative research can be based on different underlying forms of research epistemology, such as positivist, interpretive and critical, depending on the underlying philosophical position (Walsham, 2017). The framing of the study is guided by the theory used.

5.2 Interpretivism paradigm

The variation of views by different authors shows that there is a relationship between interpretivism and constructivism as these terms are used interchangeably (Bryman, 2008; Eriksson & Kovalainen, 2008; Wagner et al., 2012). These terms focus on how individuals understand and integrate the social events in a particular setting (Eriksson & Kovalainen, 2008). Although there is a variation between the terms, the study is interested in the interpretivism paradigm.

Interpretive research is based more on the subjective view of a researcher as opposed to objective reality. The interpretivists are ‘anti-foundationalists’ since “there is no particular right or correct path to knowledge, no special method that automatically leads to intellectual progress” (Smith, 1993:120). Furthermore, interpretivism does not accept the existence of universal standards for research; instead, the standards guide the research (Smith, 1993). Interpretive researchers do not seek the answers for their studies in rigid ways (Thanh & Thanh, 2015). Instead, they approach the reality from the perspectives of the subjects, typically from people who own their experiences and are of a particular group or culture. The acceptance of multiple perspectives in interpretivism often leads to a more comprehensive understanding of the situation (Klein & Meyers, 1999; Morehouse, 2011).

The value of interpretivism in this study was to interpret how academics in an ODeL domesticate OER for tuition and research. A qualitative approach was suitable to study the phenomenon in the stipulated context. In interpretive research, meaning is disclosed, discovered, and experienced. The emphasis is on sense-making, description, and detail. For the anti-naturalistic interpretive researcher, human action constitutes subjective interpretations of meanings (Anchin, 2008). Therefore, meaning-making is underscored as the primary goal of interpretive research in the understanding of social phenomena.

The interpretivist paradigm predominantly uses qualitative methods (Silverman, 2000; Thomas, 2003; Nind & Todd, 2011). Furthermore, “interpretivists tend to favour qualitative methods such as case studies and ethnography” (Willis, 2007:90). Based on that, opting for interpretivism and qualitative approaches enables a researcher to yield rich descriptions that are necessary to fully understand contexts.

5.2.1 *Ontology*

Ontology refers to the ‘nature of reality, that is, ‘what there is to study’. It can also be perceived as the ‘nature of what is being studied’ or ‘what is knowable’ (Fitzgerald & Howcroft, 1998; Mingers, 2001). There are two main ontological orientations: realism and relativism. A ‘realist ontology’ assumes the existence of hard objective reality (Fitzgerald & Howcroft, 1998). A ‘relativist ontology’, on the other hand, argues that there is no absolute truth and that the nature of the phenomenon under study or reality could potentially vary across diverse socio-economic, political, experiential, and personal or situational contexts (Guba & Lincoln, 1994; Whitehead, 2004). Since decisions and criteria can change in different contexts, relativism was chosen to underpin this research (Gladwin, 1989).

There is no wrong or right view, but the study tried to interpret the current situation to contribute in terms of new knowledge and record new findings. The ontological perspective takes cognisance of different views or opinions of academics. The real nature of the current study is the academic environment.

Ontology concerns the ideas about the existence of and relationship between people, society, and the world in general (Eriksson & Kovalainen, 2008). The ontological assumptions embrace all theories and methodological positions. Several of the qualitative approaches are based on the ontological assumption in which reality is understood as *subjective*. This means that it is based upon perceptions and experiences that may be different for each person and change over time and context (Eriksson & Kovalainen, 2008).

5.2.2 *Epistemology*

Epistemology refers to the ‘*nature of knowledge*’, that is, ‘how we can know about or understand the object of knowledge’ (Birks, 2014). The two main epistemological orientations are positivist and interpretive. The former assumes that exact objectivity is achievable by separating the researcher from the subjects to minimize bias and enhance the generalisability of results (Wildemuth, 1993; Fitzgerald & Howcroft, 1998). On the other hand, interpretive epistemology perceives contextual knowledge about the research phenomenon as a product of intersubjective interaction between the investigator and the informants (Guba & Lincoln, 1994; Walsham, 2006).

At large, epistemology defines how knowledge can be produced and argued (Birks, 2014). Furthermore, in scientific research, epistemology defines and gives structures to what kind of scientific knowledge is available (Varpio & MacLeod, 2020) and what the limits are for that knowledge. Besides, epistemology offers us an answer to the question as to what constitutes scientific practice and process. Hence, there is not just one way of defining the answer for that question, but several different epistemological commitments and directions exist.

5.2.3 Axiology

Axiology seeks to understand the meaning, nature and origins of the notion of value and value judgment (Yilmaz, 2013). Axiology represents and attempts to bring the disparate discussion of values under a single heading, covering a wide area of critical analysis and debate that includes truth, utility, goodness, beauty, right conduct, and obligation (Given, 2008). There is a direct focus on the purported value of matters such as human life, knowledge, wisdom, freedom, love, justice, self-fulfillment, and well-being that relate to the nature of ethics (Mertens, 2007; Neves & Savago, 2019).

Axiology has a direct bearing on the ethical context of research, offers an important basis for making explicit the assumptions of different paradigms of research, and provides the foundation for understanding the process of the addition to knowledge involved in scientific inquiry (Romm, 2018). Axiology encourages researchers to actively pursue social justice as part of research responsibility as “governed by ethics is an open-minded ethics toward necessary change” (Kuntz, 2015:138). In the axiology of the interpretivism study, the research is value bound to and is part of what is being researched (Sahay, 2016). Therefore, the researcher cannot be separated from the research and so may be subjective. The researchers openly discuss values that shape the narrative and include their interpretation in conjunction with the interpretations of participants (Yilmaz, 2013). In adherence to axiology, the researcher valued all research aspects such as ethics, sources acknowledgments, researchers’ arguments treated with good manners, and institutions requirements of conducting research. More value was given to the study context and its people because of the significant contribution to the study. The study could not have yielded the desired results associated with domestication of OER without the context and participants' involvement. All

participants' views were treated with respect and not undermined. However, the researcher interpreted findings to align the participants' views with his own personal experiences.

5.3 Methodology

5.3.1 Research approach

There are three approaches to research - qualitative, quantitative, and mixed-method approaches (Myers & Avison, 2002; Venkatesh, Brown & Bala, 2013). The study opted for a qualitative approach to explore and understand the meaning individuals or groups ascribe to a social or human problem (Venkatesh et al., 2013).

The appropriateness of qualitative research is that the study wants to understand the contexts in which participants addressed a problem (Creswell, 2013). This allowed for the identification of themes based on the adoption, development, accessing, using, and dissemination of OER. The study followed a qualitative approach for three major reasons: (i) the view of the world of the researcher; (ii) the nature of the research questions; and (iii) the practical reasons associated with the nature of qualitative methods (Mertens, 1998). Qualitative research allows for the description of a phenomenon, constructing propositions, and identifying structured interactions between complex mechanisms (Zachariadis, Scott & Barrett, 2013). Based on the above, qualitative research was used to seek an understanding of how academics were domesticating (adopting, developing and disseminating) OER in the ODeL.

Most domestication studies employ a qualitative approach (Liste & Sørensen, 2015) and most reviewed studies (recall Table 3.1) based on domestication theory require lengthy interviews to obtain intended information. Therefore, to be aligned with domestication theory the study followed a qualitative approach.

5.3.2 The research reasoning

There are four logics of reasoning which are deductive, inductive, retroductive, and abductive (Blaikie & Priest, 2019). This study adopted a hybrid approach which included both deductive and inductive approaches (Fereday & Muir-Cochrane, 2006).

The deduction direction is to develop or confirm a theory that begins with abstract concepts and theoretical relationships and works with more concrete empirical evidence (Neuman, 2006). Also, deduction is used to make predictions and attempts are then made to observe the predictions and thus confirm or falsify the hypothesis (Mingers & Standing, 2017). In using deductive lenses, the study relied upon domestication theory.

The study also employed an inductive logic, which can also start with data collection and then produces generalisations from the data to describe social characteristics. This logic is useful in answering “what” type of research questions (Fereday & Muir-Cochrane, 2006). The study used inductive reasoning in the interpretation and discussion of the study findings. This study was influenced by Gregor (2018) who postulates that there is a need for Information System research to rely on more than one logic of inquiry. When the study relies only on one reasoning such as deduction or inductive, there is a possibility of lack of contribution (Gregor, 2018; Siponen & Klaavuniemi, 2020). For that reason, the study relied on both deductive and inductive reasoning. The adoption of more than one logic of inquiry enabled the study to contribute to three areas: the creation of research propositions, expansion of domestication theory, and actual processes of adoption and development.

5.4 Research design

This study opted for a case study research design. There are different types of research designs include case study design, action-research design, experimental design, survey design, and archival analysis (Yin, 1994; Maxwell, 2008; Venkatesh et al., 2013).

5.4.1 A case study

This study employed a case study research method. Empirical in nature, this method is used to investigate contemporary phenomena within real-life contexts, especially when the boundaries between the phenomena and the context are not clearly evidenced (Yin, 2003). The choice of the case study method also particularly suits the format of the research question being posed in this study, namely “how”, “what” and “why” allowing for an understanding of the complexities of the processes being followed (Sheikh, Smeeth & Ashcroft, 2002). Furthermore, the study opted for a case study (an ODeL) because it is an intensive approach to studying individuals, events, domains, or certain environments (Trochim, Donnelly &

Arora, 2015). That is done in the form of discussing the history of a past or current phenomenon drawn from multiple sources of evidence (Yin, 2003; Voss, Tsikriktsis & Frohlich, 2002).

5.4.2 A single case study

The study employed a single case study. A single case focuses on a context and applies a holistic approach to gather in-depth insights from the study phenomena (Walsham, 2006). A single case study is typically used to analyse unique cases and there is much focus on establishing the unit of analysis to demonstrate the uniqueness of the case. Furthermore, a single case sometimes may involve the opportunity to study several contexts within one domain (Creswell, 2013). This allows studying sub-sections within a single case because each sub-case can be analysed to gather more details such as opinions or perceptions about the phenomenon of investigation.

Unisa as a single case consists of different departments. Within a single case, attention is paid to more than one subunit” (Yin, 2009:50). Data emerging from the different sections can be analysed between the sub-units or across the sub-units to improve the quality of the results (Baxter & Jack, 2008; Walsham, 1995). In this case, the study was able to identify the similarities, congruencies, and efficiency from different backgrounds of academics concerning the domestication of OER. In such observation, there were not many differences in the adoption and development of OER. The adoption and development were consistent across the Unisa schools and colleges.

5.4.3 Rationale for opted case study

A case study focuses on experiential knowledge of the case and pays attention to the influences of its social, political (Denzin & Lincoln, 2005; Ledford & Gast, 2018) and any other systems that enable the case to operate or to exist. A case study is presented as an intensive study of a single unit to generalise across a broader set of units (Gerring, 2004).

5.4.4 Unit of analysis

The study unit of analysis were academics who are employed at Unisa. The researchers had access to the participants who made up the study's chosen unit of analysis. As a result, access

is critical; researchers must become familiar with the case study site and work cooperatively with them (Crowe, Cresswell, Robertson, Huby, Avery & Sheikh, 2011). It was necessary to establish the unity of analysis to clarify the phenomena under investigation and provide scope for the study using the case study strategy. The study unit of analysis are closely related to the study context (recall Chapter 4). Without a thorough understanding of the ODeL case, it might be difficult to create and implement a case study (Yin, 2009).

The naturalist inquiries viewpoint was used for this study, and the case for the study was to determine how academics domesticate OER within the study setting. This viewpoint corresponded to constructionism, which tries to comprehend the subjective meaning of reality (Stake, 1999). The study proposed propositions that include answers to questions about how academics domesticate OER in an ODeL. This is reinforced by Miles and Huberman (1994), who argue that the unit of analysis and the case in a case study are the same. Case studies based on naturalist inquiries, on the other hand, treat the unit of analysis and the case as different entities. A case is a subject in this context, and the unit of analysis is the object through which the study is carried out and brightens the case (Thomas, 2011).

5.5 Sampling techniques

Sampling can be probability and non-probability sampling (Rahi, 2017). The study employed non-probability sampling since the study is qualitative and it draws on a large representative population (Neuman, 2006). The main data source was academics as they were the focus of the study. The OER champions and one librarian were chosen given their role in assisting academics with the usage of OER. The study sampling techniques occurred in three different phases:

1. Three interviews with academics as part of the pilot study;
2. Nineteen interviews with both experienced and inexperienced (purposively selected) academics about OER; and
3. Twenty-seven interviews with academics who utilise OER.

Table 5.2 presents how this study implemented purposive and snowball sampling.

Table 5.2: The influence of sampling techniques on data collection

Sampling technique	Phases of data collection	Sample size
Purposive	Representative of academics from different colleges, schools and departments.	• 19 academics
Snowball	Based on referrals from the initial sample.	• 27 academics. • 5 OER champions • 1 librarian
↓		
Eligibility	Phenomenon experience	• 38 academics were exposed to OER. • 8 academics were inexperienced about OER.

5.5.1 Purposive sampling

The study employed purposive sampling techniques. Purposive sampling is based on the judgment of the researcher as to who has potential to provide the best information for the study (Etikan & Bala, 2017). The study was not interested only in those who use the OER. Even those who were new in an ODeL or inexperienced about OER were also included. This was done to generalise from a bigger sample which also helped to get different perspectives of participants about the study topic. The representation of both in the sample were important to establish how their experience contributed to the domestication process. Indeed, both of the different samples contributed to the study.

The case was comprised of a heterogenous institution with eight colleges, 18 schools, and 70 departments. Due to the heterogeneous and large size of the institution, the researcher wrote letters to 70 CODs to request permission to conduct research in their departments. The CODs

responded and provided the names of the possible OER users, developers, and knowledgeable academics within the departments.

After receiving of names of potential academics, the researcher consulted the Unisa staff directory to obtain contact details for participants. The researcher involved all those named by the CODs; the researcher sent them emails requesting permission. Some of the academics (68) responded positively and others (9) declined the invitation, while some did not respond at all.

The researcher organised the physical meetings with those academics who accepted to participate (see Appendix 9 for exact timeframe). The researcher also held the first meetings across the colleges, schools, and departments. That was done to get the first representatives from the entire institution. The participants consisted of junior lecturers, lecturers, senior lecturers, and professors. This sampling technique yielded 19 participants.

5.5.2 *Snowball sampling*

The study employed snowball sampling as the second type of sampling technique. Snowball sampling depends on the principle of “get a case using referrals from one or few cases, and the referrals can be from an individual within the case study” (Neuman, 2006:220). Snowball selection is usually done by using networks or connections (Etikan & Bala, 2017). The participants from the first phase assisted in identifying other participants who were involved in the adoption and development of OER. The researcher approached those individuals.

In the second phase, the study contacted all academics who were recommended by the other academics. Some academics accepted and some declined the invitation; only 27 were able to participate. Some kept on postponing the meetings and ended up not participating. At this point, many academics were working from their homes due to the lockdown coursed by the Covid-19 pandemics.

5.5.3 *Sample size*

The total sample size was 52. The sample comprised of 46 academics (including four who participated in the group interviews) who were using OER and five OER champions and one

librarian. Table 5.3 presents the demographic characteristics of all participants involved in semi-structured interviews and Table 5.4 shows the group interviews.

Table 5.3: Demographic characteristics of semi-structured interview participants

<u>ACADEMICS</u>		<u>OER CHAMPIONS</u>		<u>LIBRARIAN</u>	
Characteristics	No.	Characteristics	No.	Characteristics	No.
<u>Gender:</u>		<u>Gender:</u>		<u>Gender:</u>	
Male	24	Male	2	Male	0
Female	18	Female	3	Female	1
<u>Academic title:</u>		<u>Academic title:</u>		<u>Librarian title:</u>	
Mr	14	Mr	0	Mr	0
Ms	10	Ms	1	Ms	1
Dr	10	Dr	0	Dr	0
Prof	8	Prof	4	Prof	0
<u>Highest Qualification:</u>	-	<u>Highest Qualification:</u>	-	<u>Highest Qualification:</u>	
Honours	3	Honours	0	Honours	1
Masters	20	Masters	0	Masters	0
PhD	19	PhD	5	PhD	0
<u>Work experience (years):</u>	-	<u>Work experience (years):</u>	-	<u>Work experience (years):</u>	
1 – 3	8	1 – 3	0	1 – 3	0
4 – 5	9	4 – 5	0	4 – 5	0
6 – 10	15	6 – 10	0	6 – 10	0
11 – 15	4	11 – 15	0	11 – 15	0
16 – 20	5	16 – 20	1	16 – 20	16

21 – 25	0	21 – 25	3	21 – 25	0
26 – 30	1	26 – 30	0	26 – 30	0
31 – 35	0	31 – 35	1	31 – 35	0
<u>College</u>		<u>College</u>		<u>College</u>	
Accounting Sciences	3	Accounting Sciences	1	Library	1
Agriculture and Environmental Sciences	5	Graduate Studies	1		
Economics & Management Sciences	7	Human Sciences	1		
Education	4	Economics & Management Sciences	1		
Human Sciences	10	VP Teaching and Learning	1		
Science Engineering & Technology	6				
Graduate Studies	3				
Law	4				
<u>Academics ranking:</u>		<u>Academics ranking:</u>		<u>Rank:</u>	
Junior lecturer	3	Junior lecturer	0	Librarian manager	1
Lecturer	20	Lecturer	0		
Senior lecturer	11	Senior lecturer	1		
Professor	8	Professor	4		
<u>Total</u>	42		5		1

The other semi-structured interviews were conducted with OER champions. Out of eight targeted OER champions, only five were interested to participate in the study. It was necessary to interview OER champions from different colleges because they are the ones

responsible for encouraging academics to take initiatives in the adoption, development, and dissemination of OER for tuition and research. It was necessary to establish how academics at Unisa were supported regarding OER to establish the kind of support the academics were getting, the researcher interviewed the OER champions within the institution. Moreover, the study conducted two group interviews. The first one was conducted face-to-face and the second was conducted online. Table 5.4 represents the characteristics of participants of the group interviews.

Table 5.4: Demographic characteristics of group interview participants

Group interview	Gender	Highest qualification	Work experience (years)	College	Duration	Academic rank
Group 1	Female	Masters	5	CGS	45:06	Lecturer
	Male	Masters	5	CGS		Lecturer
Group 2	Male	Masters	33	CEMS	58:03	Lecturer
	Male	Masters	33	CEMS		Lecturer

The first heterogeneous sampling of the representation of participants consisted of professors, associate professors, and a senior lecturer, lecturer, and junior lecturer from each college, school, and department. In data presentation and discussion professors and associate professors were combined into one category, i.e. “professors”. Appendix 8 summarises the academics in the sample by colleges, department, position, modules taught, experience in an ODeL, and dates of data collection.

The question regarding the number of interviews in qualitative research has generated debate in the literature (O’Reilly & Parker, 2013). The number of interviews to be considered adequate in a study depends on several factors, such as availability of financial resources, time, respondents willing to participate in the study, and the nature of the study (Guest, Bunce & Johnson, 2006). All those elements were considered in this study. During the

interviews, the researcher recalled the key constructs from the analytical concepts and related the constructs to the responses from the respondents. Both semi-structured interviews and group interviews were considered to be adequate when new themes were no longer emerging from the interviews, i.e. saturation point was reached (Klein & Myers, 1999). Based on the participants' representation, the sample size considered to be sufficient in the domestication process. Based on the researcher's involvement in transcriptions, analysis, and presentation of data, he was able to recognise the saturation point. Data saturation is reached when there is enough information to replicate the study and when additional new information can no longer be obtained, and when further coding is no longer feasible (Fusch & Ness, 2015).

5.6 Data collection

The data for the study was collected using semi-structured interviews, group interviews, field notes, secondary data sources such as documents and actual artefacts. The use of multiple data collection techniques allowed for data triangulation. In particular, the study was interested in the views of the academics about their usage, adoption, and development of OER within the ODeL.

5.6.1 *Semi-structured interviews*

The study conducted semi-structured interviews with academics (See Appendix 9), OER champions, and with one librarian. The first round of semi-structured interviews with the participants took place before the Covid-19 pandemic and the researcher could conduct face-to-face interviews. These interviews were conducted between March and September 2019. The researcher conducted the second round of semi-structured interviews during the Covid-19 pandemic lockdown between June and August 2020. Semi-structured interviews are ideal for qualitative research because of their flexibility (Gillham, 2005). Furthermore, semi-structured interviews permit in-depth conversations between participants and the interviewer (Ononiwu, 2015). This allows the researcher to probe when interesting themes arise during the interviews (see the relevant research questions in Appendix 5). This encourages the interviewer to be more attentive so they can capture the new emerging lines associated with the phenomenon (Maree, 2007). The in-depth and detailed interviews may lead to rich results, which lie at the core of the study, i.e., to do a proper in-depth investigation.

The final set of semi-structured interviews was conducted with a librarian. The researcher noted that not all librarians were dealing with OER. In establishing the role of the library in OER, the study developed interview questions such as the role of the library in promoting OER; a mechanism to promote OER; challenges faced by the library in promoting OER; the necessity of copyright; social media; and institutional repository (see Appendix 7, Section C). The most relevant actor was the institutional repository manager responsible for the distribution of OER. Therefore, the researcher interviewed only one librarian.

5.6.2 *Group interviews*

The researcher conducted two group interviews. A group interview consists of a single interviewer interviewing multiple candidates at the same time. The group interview is a qualitative technique for data collection and is “a group comprised of individuals with certain characteristics who focus in discussions of a given issue or topic” (Anderson, 1990:241). There are variations in the literature concerning the optimum size for a group interview. Some of the researchers opine:

- one or two participants (Vaughn, Schumm & Sinagub, 1996)
- four and eight participants (Bedford & Burgess, 2001)
- six and ten participants (Cameron, 2005)
- approximately ten participants (Kitchin & Tate, 2013)
- as many as fourteen participants (Pugsley, 2018)

Both group interviews consisted of three participants including the interviewer. These are known as smaller group interviews which are more advantageous when the participants have considerable expertise in or experience of the topic (Krueger, 2006). The number of participants was suitable because all participants involved were more knowledgeable and experts about OER. The other reason for opting for a small group size was that when dealing with a new phenomenon such as OER the group interview should not be too large because this can create an environment where participants do not feel comfortable sharing their thoughts, opinions, beliefs and experiences (Doody, Slevin & Taggart, 2013).

Group interviews constitute the explicit use of interaction to produce data and insights that would be less accessible without interaction found in a group (Wilkinson, 1998). Group interviews were conducted because they could provide more spontaneous communication and data than might be elicited in one-on-one interviews (Onwuegbuzie, Dickinson, Leech, & Zoran, 2009). Group interviews are used as a method on their own or in combination with other methods such as semi-structured interviews and observations (Flick, 2014). This is essential for qualitative data gathering which relies on systematic questioning of different individuals at the same time, regardless of formal or informal setting (Denzin & Lincoln, 2005).

5.6.3 Research instruments

The study developed three different research instruments: for academics, OER champions and librarians. The instrument for the academics was generated from the theories used in the study (Domestication theory and MTA) (see Table 5.5). This was the main instrument because the study aimed to understand how academics domesticate OER (recall Chapter 3).

Table 5.5: Domestication theory concepts that guided research questions

Domestication Theory phases	The formulated research questions
Commodification phase	1. How can open distance e-learning institution academics commodify open educational resources for tuition and research in South Africa?
Appropriation phase	2. How can open distance e-learning institution academics adopt and develop open educational resources for tuition and research in South Africa? 3. What is the role of information and communication technology in the domestication of open educational resources by open distance e-learning institution academics in South Africa?

Conversion phase	4. How can open distance e-learning institution promote the use of open educational resources to academics in South Africa?

The main tool and schedule developed for data collection used for academics, and the same interview schedule used during semi-structure interviews and group interviews are presented in Appendix 5 (Section D). The second tool developed answered how the institution supported academics in the domestication of OER. This was the instrument used with the OER champions (see Appendix 6, section C). Lastly, the study sought to establish how the library supported the academics in the adoption of OER (see Appendix 7, section C). The interviews used were open-ended questions and covered several topics related to the past and current domestication of OER. In this regard, the researcher asked interviewees to express their opinions concerning the user-friendliness and appropriateness of systems and tools used as part of tuition and research. The research instruments were discussed with the supervisors and piloted. Three participants were used for a pilot study. The pilot enabled the researcher to rectify some spelling mistakes and clarify sections that were not clear. In addition, they were involved as part of the study participants.

5.6.4 Interview process

The study conducted the interviews in different contexts and campuses of Unisa. Before Covid-19 the interviews took place at:

- Academic offices
- Unisa cafeterias
- Library research commons
- Public restaurants
- Participants' homes.

During the pandemic era, the interviews were conducted strictly via Microsoft Teams. The interview schedules presented in Appendices 5, 6 and 7 loosely guided the discussion to ensure flexibility in the interview process to adapt to unexpected directions (Neuman, 2007). During the interview process, the study respected the participants' views by giving them a chance to express themselves freely (Rubin & Rubin, 2011).

During the interview, the researcher realised that some academics had used OER, but they did not know that they had used them. Also, some academics, including junior and senior academics, had alluded that they did not know anything about OER but agreed to participate in the interviews. In such an event the researcher clarified to the participants about OER terminology and its usage. Such clarification increased the confidence of the respondents and they started to give more information during the interviews.

The interviews were conducted in English since all participants were able to express themselves in English. During the interviews there were some code-switching into other languages such as Sepedi, IsiXhosa, Swati and IsiZulu due to the diversity of Unisa participants. Later these were translated into English in the transcripts. The study followed the procedures and protocols of interviewing (Creswell, 2013), where the researcher started by recording the following details: the time, date, place, interviewer details, interviewee details, the position of the interviewee, and a brief description about the research project. Thereafter, the questioning started.

The interviews took between 25-60 minutes (see Appendix 5). The researcher took notes during the interviews. Interviews were audio-recorded upon receiving consent from the interviewee. Immediately after the interviews the data was transferred from the tape recorder onto a computer. During the interview process, the researcher collected some notes using a pen and a diary. The researcher transferred the field notes into a Microsoft Word document, and they were part of the data for the study. The audio recordings were transcribed verbatim.

5.6.5 Document analysis

The document analysis was used as one of the methods for data collection in this study. Many existing documents are free and publicly available in the libraries or on the internet (Neuman, 2006). Most of the analysed documents were retrieved from the internet. The essence of

documents analysis is done as part of data triangulation. In the study, there are many OER documents reviewed. The most relevant documents related to the study context such as the OER strategy (see Appendix 16), the Open Distance Learning Policy, and Unisa annual reports for 2013 and 2019 were reviewed, analysed and cited. There are other documents shown by the OER champions related to strategies for infusing OER into tuition and research at Unisa.

5.6.6 Data from artefacts

The study also collected data from the actual artefacts. The researcher consulted the OER library portals within the institutional repository to observe and take some notes about developed OER. Actual artefacts of interest to researchers relate to things that people make and do (Goetz & LeCompte, 1984). The artefact analysis involves the products of human actions where production and usage of artefacts are considered to be mingled with the concrete social context (Schubert, 2014; Reischauer, 2015). This study was influenced by Goetz and LeCompte's (1984:155) guidelines for collecting data in an actual artefact which are "locating artefacts, identifying the material, analysing it, and evaluating it". The artefacts of interest to information systems and educational technology studies are often written or developed. They are relevant in the research because they become the objects of analysis as well. This was done to validate data retrieved from academics and what is already developed about the study artefact.

The second part of an actual artefact analysis was done in association with data triangulation; the actual artefact observation was done during the interviews. Physical signs of behaviours may be recorded and analysed (Savenye & Robinson, 1996). The study noted several actual artefacts during the face-to-face and online interviews. Examples of the artefacts include:

- Several academics showed the OER they developed for their modules,
- Some academics embedded their OER within the LMS (myUnisa),
- Some academics showed their OER blogs for their modules,
- Librarian showed how to assign creative commons,

- Others developed a mobile application and online web platforms for OER.

5.7 Data analysis procedures

The data analysis commenced immediately after the completion of data collection. All analysed data was managed and stored via a database created for this study. The understanding of qualitative data analysis is essential to researchers’ “systematic search for meaning” (Hatch, 2002). Qualitative data analysis is the single most important step in the qualitative research process (Leech & Onwuegbuzie, 2007). It assists the researcher to make sense of their collected qualitative data. The process of qualitative data analysis is “labour intensive and time-consuming” (Lofland, Snow, Anderson & Lofland, 2006:196).

Thematic text analysis and open coding were found to be appropriate data analysis approaches since they matched these criteria of inquiry. The study opted these approaches analysis because it is an appropriate approach to qualitative data analysis (Braun & Clarke, 2006; Vaismoradi, Turunen & Bondas, 2013; Bernard, Wutich & Ryan, 2016). The thematic analysis is possibly the most widely used method of qualitative data analysis (Braun & Clarke, 2013). Its relevance is that it is based on thematic data analysis procedures such as grounded theory, framework analysis, interpretative phenomenological analysis, critical ethnography, and template analysis (Madill & Gough, 2008). This helps to generate thematic fields which the researchers follow to identify all thematic tenants as described by Braun and Clarke (2013). This encompasses the following: transcribing, taking note of items of interest, coding across the entire data set, searching for themes, reviewing themes and their relationships, defining, and naming themes, and finalising the analysis. Table 5.6 shows the steps followed for data handling analysis.

Table 5.6: Steps of data analysis procedures

Stages	Actions
1	Data transcription - to the suitable format

2	Typing of hand notes in Microsoft Word
3	Import data to NVIVO, a qualitative analysis software
4	Creating themes before data was coded
5	Review of merging themes and merging where possible
6	Data was made ready for presentation (see Chapter)

All generated data from audio to Microsoft Word was imported to NVIVO software, a qualitative research software. The transcripts were anonymised and then coded in NVIVO and analysed. Coding as part of data analysis has been used in different approaches which vary in how theory is incorporated into the coding strategy (Coffey & Atkinson, 1996). In the process, the study relied upon formulated codebook entry that should contain “the code, a brief definition, a full definition, guidelines for when to use the code, guidelines for when not to use the code, and examples” (MacQueen, McLellan-Lemal, Bartholow & Milstein, 2008:121). The study relied on a codebook during data collection and in analysis (see Appendix 11). Although some approaches emphasise the role of generating theory from data, others work with codes that are more directly informed by theory. Also, the analysis was guided by different research questions.

The researcher started to code the data according to themes by reading the interviews, re-reading codes, developing NVIVO memos on different issues by going back to the individual interviews, and developing the analysis through further interrogation of the data. The researcher reviewed all the coded data and themes to main themes and relationships. After recognising and merging themes, the researcher started to redefine and rename the final themes and finalised the analysis. Lastly, after following all data analysis procedures, the researcher wrote the data presentation chapter. Throughout the process of data presentation, the researcher kept on visiting the code memo to confirm the participants’ responses. The quotes were included in the presentation of the findings as part of empirical evidence.

5.8 Trustworthiness in qualitative research

This study achieved the trustworthiness of findings based on four construct such as credibility, transferability, dependability, and confirmability as recommended by Guba and Lincoln, (1982). Table 5.7 shows the steps taken to ensure data trustworthiness in this study.

Table 5.7: A summary of the procedures used to ensure the study's trustworthiness

CONCEPTS	EXPLANATION	HOW WAS ACHIEVED
Credibility	Credibility depends on the richness of the data and analysis and can be enhanced by triangulation (Patton, 2002)	The study triangulated data. Besides the academics as the main data source and role players in domestication process. The researcher gathered more data from OER champions, librarians, web contents, documents, and actual artefacts were consulted.
Transferability	It is showing that the findings have applicability in other contexts (Amankwaa, 2016)	Rich detailed description of the context
Dependability	The processes followed within the study are reported in detail (Shenton, 2004).	Peer debriefing, data quality check and explicitly process of documentation
Confirmability	researcher reflexivity and triangulation are some of the suggested techniques for confirmability (Guba & Lincoln, 1982; Amankwaa, 2016;).	Researchers' assumptions, biases, and prejudices are captured using triangulation, which examines competing conclusions.

Firstly, credibility is the first step to determine the trustworthiness, Instead, of using academics as the primary participants in the study, the researchers chose a different group of people who may contribute to the findings. Data gathered from a variety of sources, including academics, key informants such as OER supporters, and librarians. Domestication theory and MTA were used as conceptual framework of the study. This was recommended for credibility of data triangulation and theoretical triangulation (Morse, 1994). As a result, researchers needed to establish procedures to "increase trust that they accurately captured the phenomenon under investigation" (Shenton, 2004: 64). This includes using research methodologies that "accurately" measure the concepts under investigation. Triangulation, methods to assure participant honesty, iterative questioning, debriefing, peer inspection, member checks, and evaluation and comparison of data with past studies are some of the

techniques mentioned (Shenton, 2004). To address the issue of triangulation, the study used a variety of data collection techniques, including in-depth interviews, focus group interviews, observations and field notes, document analysis, and artifact analysis.

Second, the study offered a suitable description of the study context and information in terms of transferability. This was done so that the findings of the study might be applied to a similar situation. The goal was to "demonstrate that the findings are applicable in various circumstances" (Amankwaa, 2016: 121). The researchers address transferability by providing a rich thorough explanation of the context that will paint a detailed picture for the readers and instruct them (Connelly, 2016). This context aids in determining the extent to which inferences can be transferred to a similar situation (Guba & Lincoln, 1982). Since the study was conducted in an ODeL institution and the findings and assumptions are relevant to this environment, it achieves transferability. Therefore, this does not rule out the possibility of other higher education institutions benefiting from the discovery and study context. Higher education institutions have similar sentiments about the use and uptake of OER (Tietjen & Asino, 2021).

Third, dependability is achieved by the use of various data collection strategies. According to Shenton (2004), identical results may be obtained if the study was replicated using the same procedures and in the same context. To address the issue of dependability in qualitative research, the techniques used in the study must be detailed (Shenton, 2004). In some instances, to achieve dependability, Lincoln and Guba, (1985) propose the use of inquiry audits which involves having a researcher who is not involved in the research process examine both the process and product of the research.

Finally, confirmability was addressed once data collection and analysis is done by presenting the study findings to ensure that they matched what was transcribed and coded in true. Audit trails, researcher reflexivity, and triangulation are some of the ways offered to do this (Amankwaa, 2016; Guba & Lincoln, 1982). The purpose of triangulation in this case is to reduce the impact of investigator bias (Shenton, 2004). A detailed researcher's memo was used to monitor interpretation decisions made at each stage of the study, as well as a reflexive field record that tracked assumptions and biases. Members were checked to see if their interpretations of data from earlier interviews were correct (Thomas, 2006).

5.9 Ethical attention in research

The study adhered to the research code of conduct and ethics. The value of ethics has to do with compliance, morality, and faithfulness to the norms of behaviour in the environment and participants being studied (Babbie, 2007). In addition, the research should guarantee voluntary participation, non-deception, the prevention of psychological or physical harm, privacy, confidentiality through informed consent, and a commitment to collecting and presenting accurate findings (Babbie, 2007; Gray, 2008; Panter & Sterba, 2011).

This study was informed by Creswell (2013) that regardless of the approach to qualitative inquiry, the researcher may face ethical issues that surface during data collection in the field and during the analysis and dissemination of qualitative reports. It is necessary to follow ethical procedures such as informed consent procedures; confidentiality towards participants, sponsors, and colleagues; benefits of research to participants over risks; and participants' requests that go beyond social norms (Lipson, 1994).

5.9.1 Ethical processes

There are three processes: procedural ethics (seeking approval from a relevant ethics committee to undertake research), ethics in practice (the everyday ethical issues that arise doing the research), and research ethics (as articulated in professional codes of ethics or conduct) (Guillemin & Gillam, 2004). The study complied with these ethics processes

Since the study was registered with UCT, it was necessary to comply with the ethics research policy of the university (2018:6). The policy states that *“all research that involves the collection of data from or about living people must undergo ethics review before any data collection taking place”*. The application was approved (see the approval letter in Appendix 2). The Covid-19 pandemic emerged during the process of data collection and the researcher applied for new ethical clearance and permission which were in compliance with the pandemic (see Appendices 2 and 3). Consequently, many countries initiated a restriction on movement and how people interacted. This necessitated a modification in the ethical clearance approval. The conducting of physical semi-structured and group interviews were stopped. The study opted for different methods by relying on online applications such as

Microsoft Teams. The researcher obtained a new ethical clearance. Appendix 2 provides the updated ethical clearance.

Since the study population was Unisa employees, the researcher obtained permission to conduct research from Unisa (see Appendix 4). The Unisa Policy on Research Ethics (2016:8) states that “*research involving Unisa employees, students and/or data must comply with the Unisa policy for conducting research involving Unisa employees, students or data*”.

5.9.2 Confidentiality of the study

Anonymity is one of the forms of confidentiality, which consists of not disclosing the identity of the study participants (Saunders et al., 2015). This is necessary since some participants could be members of vulnerable groups and hiding their identity would protect them from harm (Liamputtong, 2007; Surmiak, 2018). Further, the study concealed all participants' information and names because the Unisa research policy clearly requires this of all studies conducted involving its employees and students (Unisa, 2013).

In this study, participants were referred to by their ranks such as Junior Lecturer x, Lecturer x, Senior Lecturer x, Professor x, OER Champion x and Librarian. In this study, it was difficult to anonymise the context of the study since Unisa is the only ODeL in South Africa. The researcher obtained permission to disclose the study context (see Appendix 4).

5.10 Validity and reliability

In this study validity and reliability were tested through data triangulation. The main source of data for the study was academics since they were the ones using the OER. There has been a debate about validity and reliability as some researchers such as Creswell (2003); McMillan and Schumacher (2006) condemn what is done in quantitative research to measure casual relationships between variables. On the other hand, validity and reliability are terms more suitable in the qualitative paradigm as the essential criteria for quality to determine the credibility, confirmability, consistency or dependability, and applicability or transferability and trustworthiness of research (Lincoln & Guba, 1985). Such can be achieved by eliminating bias and increasing the truthfulness of a proposition about some social phenomenon using triangulation (Golafshani, 2003).

To gather more information OER champions, OER librarians, web contents, documents, and actual artefacts were consulted. Indeed, coherence and discrepancies were identified. In qualitative studies, validity and reliability are part of the triangulation approach when the researcher avoids or reduces bias by spending enough time in the field and by opting for multiple data collection strategies to corroborate and evaluate the findings (Lincoln & Guba, 1985; McMillan & Schumacher, 2006; Bashir, Afzal & Azeem, 2008). The triangulation of different data sources of information gives evidence to build a coherent justification for themes (Creswell, 2003).

5.11 Limitations and methodological challenges

In any conducted research there are encountered limitations associated with the opted methodology. Methodological challenges can relate to selecting a field site and acquiring access, recruiting and building trust, maintaining privacy and confidentiality, and being vulnerable as a researcher (Thummapol, Park, Jackson & Barton, 2019). The other aspect that contributes to methodological limitations is the lack of trust in researchers and participants (Suzanne, Vanessa, & Sara, 2008). World dynamics such as global pandemics have contributed to many kinds of research including this study. Three main areas affected the study methodology: study participants, observation, and anxiety of recording.

Participation in the study: The researcher failed to get some of the targeted participants and most of the requested participants did not respond. The researcher followed up on the submitted requests because some participants were not responding. Some were not interested in participating in this study while others agreed to participate but withdrew at the last minute. This also led to an extended period for data collection.

Observation: The element of observation partially faded in the second phase of data collection. It started to be complicated to do observations through online interviews because some participants requested to inactivate their videos during the interviews because they were trying to save their data bundles. Therefore, the observation of their context and seeing what they adopted and developed as OER were not easy to do during the interviews, as the interviewer could hear only what they said.

Participants' anxiety with the recording: At the beginning of each interview, the researcher explained to the participants that they were protected because their identity and information would remain confidential. Still, some participants were not comfortable with the recording process. In the first instance, a few academics were not comfortable and that was observed from their facial expressions. As the interviews progressed, they did not express their feelings and they seemed to be frightened and that caused them to not give full responses. At some point, they responded in one word. Immediately when the researcher finished the interview, he thanked them for their contribution and switched off the recorder. That freed them because that was when they started to reflect on the questions asked. Some started to elaborate more and the researcher started to have lengthy conversations about the research question. Many responses were given. Immediately after the conversation the researcher quickly went back to the computer and captured most of what was said during the conversation. In such a situation some of the rich information could have been lost.

5.12 Chapter summary

This chapter introduced the philosophical assumptions and paradigm that informed the study. The key element discovered during the reviewing of research methodology was that scholars vary in terms of philosophical and methodological views. That led the researcher to take a stand and follow relevant methods in the study. Linking to that, the methodology followed was clearly defined and unpacked to show the study path through its scientific investigation. The qualitative approach proved to be more relevant and therefore all qualitative inquiries were outlined to show “what, how, and why” it was relevant in the study. After the decision to opt for a qualitative inquiry, the chapter investigated a research design. The most suitable methods of data collection were semi-structured and group interviews. Further, the chapter discussed the ethical considerations and processes followed by the researcher in interaction with human participants.

CHAPTER 6: RESEARCH FINDINGS

6.0 Introduction

The aim of the study was to investigate the domestication of OER by academics at Unisa in South Africa. Figure 6.1 shows the chapter layout including the content of the presented findings.

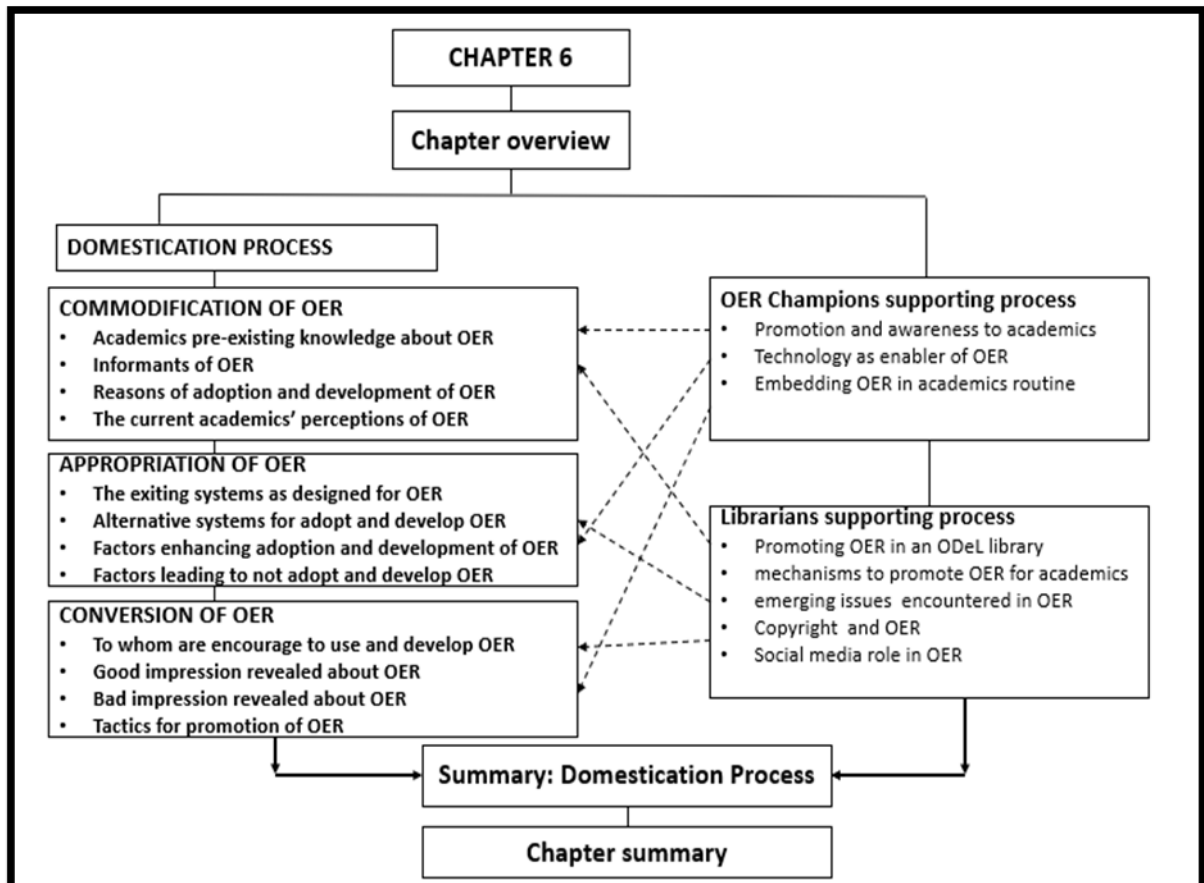


Figure 6.1: The structure of the presentation of findings

This chapter presents the findings of the study based on the phases of the domestication processes. On the right-hand side of Figure 6.1, the pointing arrows show where the support staff (OER champions and librarian) were supported. The majority of the OER champions were passionate about OER and were supporting academics. Three major themes for OER champions were: promotion and awareness of OER, technology as designed for OER, and

embedding of OER in academics' routines (see Appendix 6). The librarian was also passionate in support of academics in the process of OER.

The analysis was done using vignettes to do a thick description in capturing the realities and meaning within the context (Cousin, 2005). Section 6.1 provides an overview of information systems used for OER. Section 6.2 through to section 6.5 describes the domestication of OER based on three categories:

- Commodification of OER
- Appropriation and dis-appropriation of OER
- Conversion of OER

Section 6.7 discusses the interaction and overview of the domestication process applied in this study. A summary of the domestication of OER is offered in section 6.8.

6.1 Information systems used for OER

Academics at Unisa used different information systems to domesticate the OER. Some of the information systems were designed and authorised by the university to be used for OER and other academic activities. Furthermore, academics exercised their rights to use any other systems suitable for their needs concerning OER. That led to the categorisation of information systems into three categories: official institutional systems; alternative systems (not endorsed by the institution); and enabling systems to locate OER. Table 6.1 summarises the different types of information systems.

Table 6.1: Information systems used in the domestication of OER

Systems categories for OER	Types of systems used for OER	Uses of systems
Official institutional systems	myUnisa	• Tuition and research • Administration and management

	Institutional repository	• OER storage
	LibGuides	• Tuition and research resources
	Institutional repository	• OER storage
Alternative system used	Social media platforms (Facebook, ResearchGate's, LinkedIn, WhatsApp, YouTube, Blogs, Behance, etc.)	• Dissemination and storage of OER • Sharing OER • Creation and accessing OER
	Interactive/collaborative systems (Microsoft Teams and Zoom)	• Communications • Meetings • Research and supervision • Sharing OER
	Google Scholar	• Indexing OER • Accessing OER
	OER <i>Universitas</i> (OERU)	• Creation and storing OER
	Cloud storage devices and digital laboratories	• OER storage
	Custom-made OER systems (Weblinks for OER; Short message services; and APPS)	• Any possible activities for OER • Sharing resources

6.1.1 Institutional information systems

The information systems used for the integration of OER that the university sanctioned were myUnisa, institutional repository, and LibGuides. LibGuides are online web pages created by librarians to help academics to place their OER (University of Pittsburgh, 2021).

MyUnisa is the main LMS or platform authorised by Unisa to administer tuition and research. It is integrated into various activities of the institution include the library, finance, human resources and ICT for the general administration of institutional services. In such regards, myUnisa gained popularity in the institution because all academics were expected to use it. Indeed, the majority of academics in the institution adopted it. MyUnisa proved to have positive factors in the domestication of OER. Despite its benefits, MyUnisa had limitations when it comes to the distribution and catering of OER. This LMS is designed only for Unisa academics and students. The access is limited to the registered users. Other potential users who are outside Unisa may not benefit from myUnisa. Further, myUnisa has limitations on file size; it cannot allow sharing large files:

“... we only allowed to upload 10 megabytes per upload ... which is if it was a video ... it would be approximately 10 minutes” (Lecturer 14).

The institutional repository is managed by the academic library and it is the place where they keep all information produced within the institution. The main purpose of the institutional repository is to share the institutional production of intellectual assets. The academics use the institutional repository to market their research and OER outputs. The institutional repositories are used to promote digital scholarship and open access because the content on this platform can be visible in the global domain.

“Academics develop OER and they forward them to me and then I will map to institutional repository collections” (Librarian).

LibGuides were also considered suitable information systems to store OER according to the subject content or module-specific. As part of actual artefact analysis, the study also observed in the library portals that OER LibGuides had been created. LibGuides were used for OER content management for OER sharing. This system is easily navigated through instruction on core and relevant OER in a particular college, modules, and fields of study.

6.1.2 *Alternative systems used for the appropriation of OER*

Academics used the alternative information to domesticate OER. Academics used alternative systems to perform their duties as categorised into five: (i) OER development and storage, ii) teaching, iii) research, iv) supervision, and (v) marketing of OER. Table 6.2 shows the use of alternative systems and different application used for OER.

Table 6.2: Alternative information systems uses for different tasks

Task	Applications used to perform the OER task
OER development and storage	• Cloud storage platforms (Google Drive, One Drive, iCloud) • Internet - openly accessible materials • LMS • OERU • YouTube
Tuition	• Digital laboratories • Google Scholar • Instant chat service (WhatsApp, Facebook) • Interactive and collaborative systems (MS Team and Zoom) • LibGuide • myUnisa • SMSs • YouTube
Research	• Academic social media (LinkedIn and ResearchGate)

	• Cloud storage platforms (Google Drive, One Drive, iCloud) • Google Scholar • institutional repository • Interactive and collaborative systems (MS Team and Zoom) • LinkedIn • myUnisa
Supervision	• Instant chat services (WhatsApp, Facebook) • Interactive and collaborative systems (MS Team and Zoom) • myUnisa
Marketing	• Academic social media (LinkedIn and ResearchGate) • Blogs (Behance and Weebly) • Facebook • Google Scholar • Institutional repository • LibGuide • MyUnisa • YouTube

6.1.2.1 OER development and storage

The OER development involved the creation and storage of content. For the creation of content, the academics used LMS and OERU. The academics used OERU which is an open-source for accessing existing OER content and as a storage of created OER. This open-source converted to the LMS for global courses which ascribe to the OER initiative. OERU is coordinated by the OER Foundation, an independent, non-profit making organisation. It is a network of institutions that offer free online courses for students worldwide (OER Universitas, nd).

For the storage, the academics used Cloud storage and digital laboratories. These platforms had large space for storing the files and had capabilities that made sharing the data easy. The cloud platforms enabled academics to share educational resources according to subject or content.

YouTube was ideal for OER because it allowed the academics to search and locate OER that are relevant for teaching and learning content. Besides retrieval of resources that were already developed, YouTube afforded academics a space to create their own OER. YouTube attracts many viewers globally and has relevant platform for open access. It enables different academics to criticise and comment on the created resources that are available in the online domain. Although YouTube was applauded on a different occasion, it somehow contradicts the Unisa intellectual property.

“Unisa does not allow the posting of its teaching and learning content to the social media” (FG2_Respondent 2).

6.1.2.2 Tuition OER systems

Academics used a variety of applications for teaching and learning. The most used applications were social media like instant chat service applications (Facebook and WhatsApp). Social media allowed academics to infuse different features to accommodate formal and informal teaching and learning content. The academics used these social media for tuition because they were preferred by many students. Academics utilised the opportunity to adopt these applications, based on the assumption that their students will take the initiative

to easily grasp the content. The utilisation of these applications was popular at Unisa even more than the existing institutional system.

Academics used these systems because they were on the agenda of promoting mobile learning. These systems were used for tuition because they were considered to be easy for the administration of learning through using smartphones. The systems were used because they were able to distribute OER contents through smartphones. Academics mention instant service systems because they are more convenient to their students as they are accessible wherever they are, which could even be in public transport, restaurants, or gyms. Having these systems in their phones they do not always require a table, workstation, laptop, or desktop computer to start using OER for teaching and learning.

6.1.2.3 Research systems for OER

Academics used different OER systems to conduct research as many preferred computer applications and software. The use of research systems was based on individual preference depending on the type of research conducted at a given time. They did not subscribe to one particular system and software. For example, some used the Google search engine to access research resources. Others used institutional systems like the library and the institutional repository for resources. Even the printed resources were used for research.

The popular information systems used by academics at Unisa were Google Scholar, interactive and collaborative systems, and academic social media. The use of social media was dynamic because academics used them for data collection and others used them for data analysis. Also, academics preferred Google Scholar to search and retrieve suitable OER for research. Besides relevant sources, academics used Google Scholar to check the different styles of writing research. Academics commended Google Scholar as the main database to index personalised research publications.

6.1.2.4 Supervision systems for OER

From the supervision perspective academics used mostly preferred both academic social media and collaborative platforms. The academic social media systems were considered as academic accolades because all published books, articles, monographs, research manuals, and conference proceedings are kept in a form of OER. The academics were expected to

supervise students based on writing their theses and research papers. In such a process the academics strategised, as they did not start from scratch to develop the research teaching materials; instead, they referred their students either to ResearchGate, Google Scholar, or LinkedIn for relevant resources.

The collaboration platforms, such as Microsoft Teams and Zoom, enabled the academics to share documents, conduct online meetings, and do student supervision without physical contact. These systems were capable of developing the OER which can be reconstituted at a later stage and is sharable among students, lecturers, and the general public. The collaborative platforms gained popularity during the Covid-19 era where academics could not physically meet their post-graduate students and helped to observe social distancing. Engaging with collaborative platforms were commended by academics because they did not feel that there was a difference between meeting students online and in the physical settings. Academics were not limited in using the collaborative realities as they could use them at home, in the office, on the street, and in any other convenient places. These systems were highly recommended because they allowed them to save meetings and share them at a later stage as part of student support.

6.1.2.5 Marketing systems for OER

There are various systems used for the marketing and publicity of OER. Mostly used were academic social media, blogs, Google Scholar, OERU, and instant chat services. Academics decided to market and publicise their OER on these systems so that they could be visible in the global domain. The academics used OER systems because they were able to increase access to knowledge. Some academics were against the high cost of textbook purchases and marketing was considered as the appropriate method to eliminate purchasing of material.

In the marketing of OER, academics' used Behance and Weebly social media platforms to create blogs to personalise and store OER. Behance is a platform that allows website designers to showcase their portfolios of visual work like graphic design, fashion, illustrations, photography, and more (Creative Artisan, 2017). The Weebly platform is where academics were creating their OER websites and blogs related to their OER activities. Weebly for Education is a platform that enables scholars to develop websites for free (Weebly, 2020). These social media platforms enabled academics to continue contributing to

the marketing of OER which are accessible to all information seekers without boundaries. Academics were keen on the marketing of OER because they wanted to be cited by other scholars. Indeed, these platforms enabled academics to advertise their research output and they could populate statics data based on citation and readability including feedback and comments from other scholars.

6.1.3 Factors affecting the choice of the information system

Different factors affected the choice of using information systems. The choice of systems used was influenced by both negative and positive factors. Mostly in this study the choices of systems used were dominated by the positive factors about the chosen information system. The related positive factors associated with the academics' systems choices are as follows:

- Virtual collaboration and usability of systems
- Compliance to institutional requirement
- Cost and efficiency

One of the factors which influenced the choice of systems for OER was ease of use. For example, most academics preferred myUnisa, LibGuide and the institutional repository because they found them easy to use when adopting and developing OER because of their graphical user interface. All these institutional systems were found to be easy to use. Academics used these institutional systems because they are integrated with administration, management and the library and they are able to accommodate OER. Institutional systems are used because of their adaptability and familiarity as they enable interaction with students and can embed various media modalities which are relevant for teaching and learning. No strong ICT background is required to engage with the institutional systems; basic computer literacy is sufficient.

However, the alternative information system used had more functionality and capabilities than institutional systems. Mostly preferred were social media because of their usability, convenience, functions, and the freedom to upload and download the OER content. Academics used social media to accommodate OER because they are cost effective, cheaper and more affordable than any other software applications. The used social media proved to be

user-friendly to academics and students who own smartphones so they can easily access or utilise such platforms. There is no need for social media classes or training because, regardless of the level of education, anyone could just explore and teach himself or herself. Social media were instrumental in the use, dissemination, and promotion of OER because of their simple recognisable graphics interface and little hassle when uploading and downloading the OER content.

6.2 Commodification of OER by academics

Except for five, all the academics in the sample had commodified OER. The commodification process was established based on the following aspects:

- Prior knowledge and experience about OER;
- Perceptions academics had about OER
- academics source if information about OER;
- The reasons which led academics to adopt OER

6.2.1 Academics' prior knowledge and experience about OER

The majority of the academics in the sample (37) had prior knowledge about the OER before it was implemented and most shared similar views about OER. Five academics (from all academic ranks) had no prior knowledge about OER. The factor which affected the degree of prior knowledge was work experience.

Academics' work experience affected their prior knowledge of OER. In general, the academics with more work experience had more prior knowledge of OER than those with less experience. The academics with more work experience had been in the university for quite some time and many initiatives have been in place regarding the establishment of OER. This was different for those who were newly employed at Unisa because they were from the corporate world or had just started their careers as junior lecturers. Further, due to the lack of experience and knowledge, some academics confused the OER phenomenon. This persisting confusion contributed to the lack of interest in the OER artefact. Further, not all academics were interested in OER. The lack of interest contributed to a low level of prior knowledge of OER. In such events, academics had different perceptions or views about OER.

Some academics had relevant prior knowledge which means they might have started using OER or were interested in using them. Academic knowledge could be determined from their views because some could tell that they were knowledgeable about OER. Based on the nature of OER, academics were able to predict that OER has capabilities to create opportunities for content sharing among scholars. Furthermore, OER was previously known as the enabler of education by allowing for an improvement in the subject content, however, they also promoted the shareability of information amongst different scholars across the globe.

6.2.2 The perceptions academics had about OER

The academics had different perceptions and views about OER. They had the following perceptions:

- Freely online available academic content
- An emerging method of teaching for virtual learning and collaboration
- Useful in content clarification
- OER perceived to be of value during the Covid-19 era

Academics knew OER as any electronic or online resource that was relevant for educational purposes. Other academics thought that OER were only found in library portals and such resources were used to fulfil information needs relating to teaching and learning. Some labelled OER as information sources that were freely available in public databases. The prior knowledge and perception about OER were indeed related to the description of OER. However, their prior knowledge could create some confusion because others thought there is no difference between open electronic resources and open educational resources. Both open electronic and open educational resources are found online, and they share the same abbreviation “OER”.

“I thought that open electronic resources and open educational resources are one thing and I didn’t know any difference” (Lecturer 5).

Furthermore, academics knew OER as an emerging and attractive initiative of teaching and learning that keeps academics' jobs fascinating. The academics described the initiative as a

great method that encourages academics to prepare the subject content before starting teaching. OER forces academics to download resources or create new resources and upload them into their LMS as an OER. The other perception of OER was that they offer opportunities to reduce the number of lectures academics conduct. If an academic created and uploaded OER in the LMS, students can access them at any time and can start learning without facilitation. OER enabled the development of study materials that could be used immediately as well as for future lessons.

OER was also perceived as an initiative to supplement teaching and learning. OER was used to supplement other resources as opposed to being the only primary source of information for teaching and learning. Academics opined that they are teaching modern students who are exposed to the digital world and who prefer to learn virtually. As part of supplementing learning, when academics come across relevant OER resources they simply copy and post in the LMS for their students at any given time and context. Academics opined that once the content has been developed it can be posted on an online platform, and that content can be reused at a later stage. There was no need to recreate similar material every time. Hence, academics felt that OER saves time by providing teaching content rapidly.

“OER are efficient because once the academics have created or wish to adopt any OER can instant distribute because everything can occur on the tip of fingers” (Professor 1).

During the Covid-19 pandemic era, academics perceived OER as a suitable initiative for tuition and research. Unisa did not stop teaching and learning during the Covid-19 era. Academics continued to facilitate tuition online using OER. During the pandemic, OER were distributed to students via emails and other virtual platforms. Even the academics who had not used OER for tuition previously were expected to reflect on the new strategies of teaching by using OER during the Covid-19 era.

“We needed to move very cautiously online initiative as Covid-9 created the opportunity where everybody was sort of pushed to embrace OER and technology where online tuition and examinations are considered” (Champion 4).

A minority of academics still had the following negative perceptions about OER:

- OER were not useful for tuition and research because of their bad reputation for “poor quality”.
- OER does not make a good contribution to students.
- OER are unreliable resources, as anyone can simply create and edit and then publish them online without any thorough reviews.
- Academics still rely on hardcopy textbooks for education than any other online resources.

6.2.3 *Informers of academics about OER*

The majority of the academics were informed at Unisa by different stakeholders about the essence of OER, besides the few who claimed that they were not informed about OER. The primary sources of OER informants were as follows:

- ODeL top management
- OER champions and library
- Open and online universities and alumna institution

Unisa's top management was the main informers of OER within the university. They told academics about OER on a regular basis. They comprised the vice-chancellor, Deans of Colleges, School Directors, OER champions and CODs. In addition to informing and alerting about OER, the institution organised regular OER meetings, seminars, workshops, and training about OER. Academics realised the need for using OER when they first received mandates and instructions concerning the development and adoption of OER for tuition and research from the institution management. Academics used and developed OER to fulfil Unisa's agenda of promoting OER. The university affirmed that it is committed to driving the OER initiative with support from both government and institutional top management as evidenced by its approved OER strategy (de Hart, Chetty & Archer, 2015). Figure 6.2 shows the communication flow concerning OER.

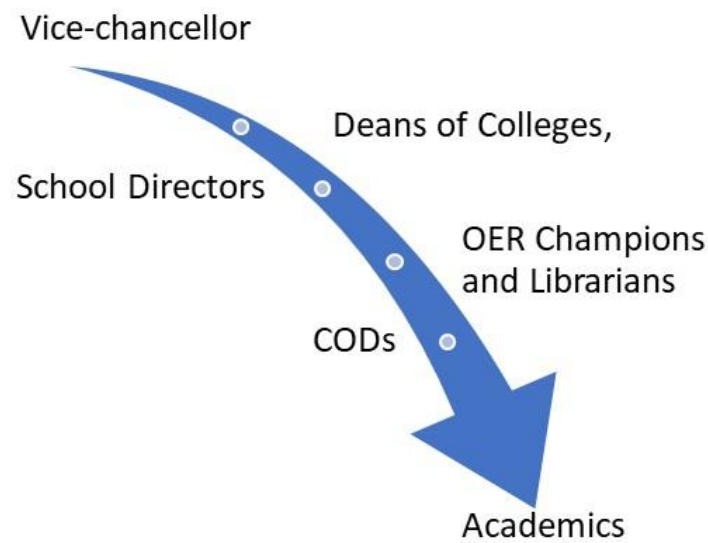


Figure 6.2 Institutional informants about OER

From the vice-chancellor’s office to CODs, they all played the role of informing academics about utilisation of OER. The departments were encouraged by the institutional management to create and utilise OER through various existing digital platforms including myUnisa. OER champions and librarians informed and trained academics about OER. OER champions and librarians deployed curriculum and instructional designers to help academics to develop the study materials and infuse OER in their content. The academics were encouraged and assisted by the institution with the utilisation of OER when developing any study materials for teaching and learning.

“...so we’ve done some training workshops for academics in colleges in various phases...in a form of capacitating academic concerning OER” (Champion 2).

Some academics heard about OER through advertisements such the internet pop-ups or wikis that advertise OER from open universities. They heard about OER from open institutions that are well established in the creation and development of OER as they advertised or produced OER on the internet. The academics mentioned that they heard about OER five years back from visiting academics from the University of Cambridge during their visit at Unisa. Then the University of Cambridge academics trained Unisa academics on the development of

OER. Some academics were exposed to OER in the institutions they had studied. Lastly, the study observed a relationship between the informant and drivers of OER.

6.2.4 *The reasons which led academics to adopt OER*

The factors that influenced the academics to adopt OER were as follows:

- To increase resources through the development of OER
- Decolonisation of content
- Enhance compliance with social distancing

6.2.4.1 *To increase resources through the development of OER*

The academics began using OER for the development of study materials like tutorial letters, module outcomes and study guides for their subjects. The academics saw OER as an opportunity to update and revise study material; they then had no option but to use OER since Unisa was in the process of phasing out the prescribed books for the first-year modules. With the persisting lack of textbooks and other printed materials in many other disciplines, the institution encouraged academics to opt for OER.

“...when teaching Mandarin is difficult to access teaching material written in Mandarin in South Africa and this motivated me to start adopting OER” (Lecturer 3).

The academics began to adopt OER for their teaching because of the high costs incurred when purchasing textbooks. The costs included shipping since some of the teaching textbooks are specialised and are imported from other countries. Even if they could order some of the textbooks online, the turnaround time was lengthy.

The academics were expected to convert their content into videos and audio formats so it could be comprehended with virtual or online realities. Virtual learning allowed for easy interaction between academics and students for better sharing and distribution of OER. The academics had to comply with the Unisa expectation. They were expected to provide teaching, learning, and resources to all students regardless of geographic location. Adopting

OER that are sharable in virtual platforms was one of the solutions. This principle extracted from the ODL policy concurred with the academics' views that OER was a great initiative to support virtual learning as they can reach a wider audience (students):

“...diversify the body of students to provide opportunities for social advancement for historically and socially disadvantaged social groups such as students in rural areas, small towns or those who do not have convenient access to higher education institutions” (Document 2).

6.2.4.2 Decolonisation of content

There is little OER content produced by African scholars in the African context. Therefore, developing OER created opportunities for African academics to increase content that presents African perspectives to further enrich the African students. Some academics valued foreign content and they would still use OER which were developed from any other European or American universities. However, they sought to contextualise their African environments. They realised that OER could contribute to the development of OER which are suitable for the local context by the adoption of OER created from other developed countries. Some academics still used OER developed in other countries, especially the developed world. However, they changed the examples to suit their socio-cultural contexts of learning.

“I make sure that my students are having South African examples if not I simply exclude them” (Senior Lecturer 1).

Some academics began to adopt OER because they wanted to promote African scholarship and Africanisation of content. One academic adopted OER because he wanted to increase African knowledge written in indigenous languages. This academic had already started creating OER in IsiZulu (one of the most frequently spoken languages in South Africa). It was academics' passion to distribute knowledge through OER to fulfil one of the institution's mandates. During the interviews, one could see that some academics were passionate about the promotion of African knowledge through OER and the production of learning materials in local languages. There were also several OER developed by academics in the institutional repository. OER champions confirmed that OER can be used to promote decolonisation of knowledge.

“So, for me, the potential of OER, is that we can prioritise on African knowledge, African ways of doing, I thinking decolonisation through OER will help us in curriculum transformation policy...” (Champion 2).

The academics mentioned that increased resources and decolonisation of OER content led to increasing the student pass rate. OER are considered to be useful to provide students with access to a broad range of knowledge. OER proved to be a relevant initiative to promote student support in online learning. Some academics confirmed that, when they are using OER, it forces them to be always available in the online learning platforms to regularly respond to students' queries. Academics confirmed that they were always available on the online platforms to share relevant OER for their courses, thus resulting in an improved pass rate. If all students were afforded relevant learning resources such as OER the succession rate was likely to improve. The OER champions also indicated that OER are freely accessed thus eliminating the need to purchase teaching materials since not all students could afford to purchase textbooks.

“OER is about the public [people, students, information seekers] getting an education, as needs to be open, needs to be accessible, needs to be student-centered, it needs to be cost-free” (Champion 1).

6.2.4.3 Enhance compliance to social distancing

The use of OER and any other online resources enabled the academics to adhere to social distancing. Some academics had to phase out the physical student supervision due to the pandemic. They used alternative approaches like online supervision. The academics stopped many social activities amongst themselves as they were forced to work in their homes as part of compliance to social distancing. However, this disadvantaged the academics because they were prevented from participating in many other important academic activities like conferences and seminars.

6.3 Appropriation of OER by academics

The study on OER might be hardly ever studied in isolation from ICT systems and the core, which is the domestication of OER, occurs when embracing ICT. The appropriation (adoption and development) of OER can also occur by relying on ICT systems. ICT and

systems were considered as the main factor in the adoption and development of OER. Table 6.3 shows how systems contributed to the appropriation of OER.

Table 6.3: Factors that influenced the use of OER

Factors which affected the appropriation process	Causality of appropriation (see 6.3.2)	Causality of non-appropriation (see 6.4)	Causality of dis-appropriation (see 6.5)
	• Possibilities in reduction of academics' workloads • Availability of ICT infrastructure • 4th industrial revolution compliance	• Irrelevant content • Too long video clips • Excessive information • Non-peer reviewed sources • Outdated information	• Factors leading academics to dis-appropriation of OER • Poor ICT infrastructure • Lack of system support • Poor digital skills and literacy • Developed OER are limited to Unisa eco-system • Copyright issues • Lack of OER policy

This first level of appropriation enabled filtering if academics are carrying on with the process of OER appropriation or not. Some academics could not carry on with the process of appropriation. They fell in the category of “non-appropriation”. Several factors caused academics to non-appropriate, due to the factors of knowledge about OER. Some were newly employed at Unisa, and others were not interested in the use and development of OER.

Some academics appropriated OER through the institutional system (as indicated in Section 6.1). The majority opted for alternative systems such as social media, cloud storage, collaborative systems, web-links, Google Scholar, YouTube, and OERU for OER appropriation. Refer to Chapter three, section 3.3.2 in the selection of appropriation in the

study. Therefore, the findings are presented based on all model variables including the following themes: systems (technology) designed for OER; systems used for OER; appropriation criteria; and dis-appropriation criteria. Figure 6.3 shows how MTA contributed to the data presented in this phase of the study.

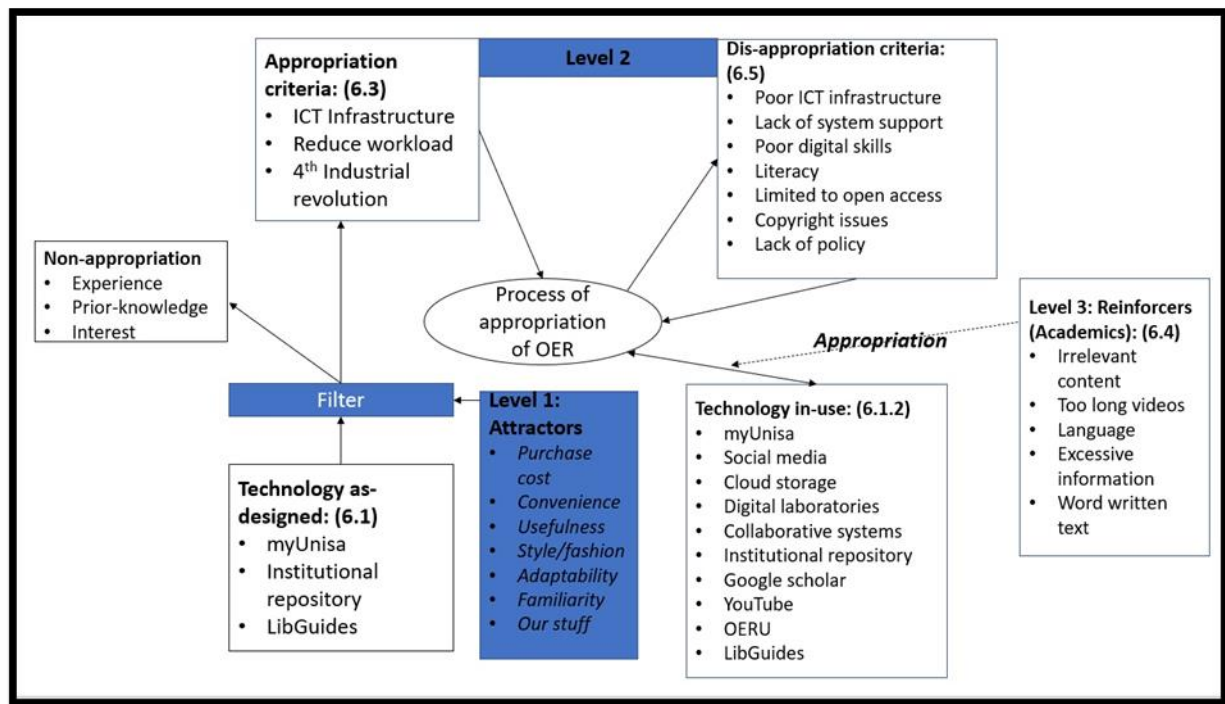


Figure 6.3: Process of appropriation of OER (Mncube et al., 2021b)

Academics were able to appropriate OER for teaching and learning. Many factors caused academics to continue to appropriate OER. The continuous motivating factors in the development and adoption of OER are based on the following factors:

- Possibility of reduction of academics' workloads
- Availability of ICT infrastructure
- 4th industrial revolution compliance

Upon adoption, academics believe that OER help to reduce their workload and it was affirmed that this motivated them to continue using these resources. The study found that

OER were convenient for teaching and learning not only for academics but also for students because of their accessibility. Academics mentioned that OER reduces the workload in teaching since the developed lesson content is made available online and students can learn at their own pace and time. Academics do not have to be always in physical contact with students. They alluded that many platforms provide OER that have already been created and students can simply access them for learning and research.

Some academics refuted this and mentioned that the adoption and development of OER create more burdens. They felt that they are expected to develop OER while facing teaching administrative burdens involving assessment marking and feedback to be given to students. Also given the Unisa context, academics try to entice students to take initiatives in an online platform. All assignments and activities need to be created so that students stay engaged similarly to traditional institutions where they attend face-to-face lectures. The academics are responsible for going the extra mile through trial and error, whilst using different online platforms which may be of interest to their students.

“Workload in my institution becomes a hindrance, as we have a big number of students” (Lecturer 1).

Some academics indicated that they were motivated to use OER because their academic institution provided “good ICT infrastructure” and Wi-Fi that enables them to use OER. This is in line with the Unisa context in which teaching and learning can be conducted easily through sound ICT infrastructure. This might be an indication that Unisa considers ICT support to its academics when conducting teaching and learning as all three analysed documents showed that the institution put a strong emphasis on ICT and this is in line with the participants’ views.

“Unisa will rely on well-defined processes, procedures and robust organisational systems supported by ICT” (Document 2).

Some academics felt that OER allowed them to provide virtual services in a modern digital era as part of the 4th industrial revolution. They also claimed that using OER might be geared to students who can use digital platforms without any face-to-face lectures. Some further claimed that modern technologies enable students to learn using OER, while at the same time

allowing them to be competitive in the era of 4IR. The academics also mentioned that OER allow academics to be able to rely on technology instead of relying on the traditional methods of tuition.

6.4. Non-appropriation of OER

In the process of appropriation (adoption and development), academics were reinforcers of OER. They were able to make firm decisions when “identifying” the content and systems which cannot interrupt or disturb the appropriation process. They managed to exercise their “powers” to decide on the exclusion of content and systems which were found not to be suitable in the appropriation process. They were able to create “cohesion” between the content and systems so that the appropriation of OER runs smoothly. Some systems and content may not be suitable for OER. This could be due to the nature of the content or the format of the content. Also, if the system is not suitable for OER, there will be some difficulties in processing, storing, transmitting, and sharing information (OER) in the process of enquiring about the criteria for exclusion during the adoption and development of OER. The following aspects were subjected to decisions regarding non-appropriation of OER:

- Experience and interest
- Irrelevant content and lengthy video clips
- Excessive information
- Outdated information and non-peer reviewed resources

6.4.1 Lack of experience and interest

The lack of experience and interest were the main causalities of non-appropriation of OER. Recall section 6.2.1 where prior knowledge was affected by the low level of experience. Regardless of the low level of experience, some academics were able to carry on with the appropriation process whereas others could not carry on and they fell into the non-appropriation category. Academics lacked interest about OER because they did not have sufficient experience and that also contributed to the non-appropriation of OER.

“I don’t know what OER are and I don’t have any experience...I will carry on with my traditional teaching methods...” (Lecturer 32).

6.4.2 Irrelevant content and lengthy video clips

Academics excluded resources which are not in line with the module outcomes. All such resources were considered as irrelevant content. Any information that did not add value to their module content (e.g. irrelevant sources) was not used. Any information that did not adhere to the ethics of the subject was also deemed irrelevant to the module because the intention was to not hurt or harm the students. Academics’ opinions were in line with one of the assessment policies which states: *“design teaching, learning, and assessment strategies to meet module outcomes”* (Document 2).

Regardless of the relevancy of OER, some academics were against the lengthy video clips which got excluded. Some of the lengthy resources were excluded because the institutional LMS cannot upload lengthy videos since it has limitations on the handling of large files (i.e. more than 25 MB). The considered resources were short and precise videos clips. Even when academics were developing their own video OER, they considered the size so that they did not exceed the maximum capacity. Besides the length of videos and other technicalities, academics were still to adopt and develop videos as resources because they did not know their audience well. For instance, some of their students might have hearing impairments and/or be blind.

Even though the information may be written in a relevant language like English, it does not mean that the content would be included in the OER compendium. The information should be simple and clear before being presented to the student in an unsuitable language. The respondents opined that even the common language English can be excluded if presented in a highly sophisticated and highly advanced level of writing exhibited by some authors. If this is the case, not all students will have the linguistic competence to cope with such technicalities of grammar.

6.4.3 Excessive information

Academics avoided “excessive information”. They were against overloading students with many resources because OER were meant to supplement teaching and learning over and

above the official teaching resources. In adoption and utilisation of OER, academics avoided overwhelming students with a large amount of information that was beyond the learning outcomes of the module. They considered the NQF levels as stipulated in the SAQA to avoid transcending the scope of the module. SAQA aims to create a single integrated national framework for learning achievements for South Africa in adherence to the NQF Act No 67 of 2008 (SAQA, 2014).

Other OER written texts or textbooks (Microsoft Word written text) were also considered as excessive information. Academics' intentions were to relay knowledge in a very precise and short manner like audios or video clips. That is why the written format considered a burden because they have already prepared study guides and tutorial letters. Instead, they considered the use of multimedia formats of OER for practical learning and teaching (e.g. online experiments that are created on video or audio format). Such multimedia formats were very interesting to modern-day students as they preferred to see real-life lessons instead of textbooks. Academics decided to promote these multimedia lessons because they have the greatest influence in education because of their graphic user interface and less use of text.

6.4.4 Outdated information and non-peer reviewed resources

Academics excluded outdated and non-peer reviewed OER resources. The OER content that has been produced or published in the past decade is considered as outdated sources and is no longer relevant for the development of study material. They confirmed that in the 21st century resources get outdated easily in the digital platforms. Some did not want to miss out any recently developed resources. As a result, they constantly acquired the latest OER. Academics were sceptical, however, about adopting OER from novice authors because of the high concerns about the quality and credibility.

“...if an OER writer does not have depth and expertise in the subject matter, I will simply exclude it...” (Academic 4).

In that case, they did not want to present non-peer-reviewed OER to their students. In that regard, any Wikipedia material is considered not relevant in the process of development, adoption, and distribution of OER.

6.5 Dis-appropriation of OER

The hindrances of OER were found to be the causality of dis-appropriation and prevent OER from adding value to the academic space. Some of the hindrances might have had some negative impact by preventing academics from effectively developing and adopting OER at Unisa. The following points were considered as causes of the dis-appropriation of OER:

- Poor ICT infrastructure
- Lack of system support
- Lack of OER policy

6.5.1 Poor ICT infrastructure

ICT infrastructure was the main causality of dis-appropriation of OER. Academics had different views concerning the existing ICT infrastructure. Some academics mentioned that they were happy with the current ICT infrastructure. Others opined that they are still facing different challenges concerning the infrastructure such as connectivity and ownership of devices. On the other hand, some academics were only concerned about their students if they really had suitable infrastructure to partake in learning. That was elicited from the fact that some of the students are located in disadvantaged communities where connectivity and infrastructure are still lacking. Academics emphasised that learning at Unisa you have to be fully equipped with access to adequate ICT infrastructure. They emphasised that both students and lecturers must have all the necessary devices, networks, and connectivity to appropriate OER in their academic space.

Academics are isolated from their students' and they do not physically meet on a regular basis. Since Unisa students are dispersed in different geographic locations, they cannot verify whether their students had all the necessary ICT infrastructure for learning. Academics were concerned about students who can manage to secure money for registration, but they still faced challenges of access and infrastructure because the internet is not free. Such hindrances did not affect students alone. This had a negative impact on academics as well because some of them turned out to be reluctant carry on appropriating OER, as some decided to dis-appropriate from OER.

Besides the lack of ICT infrastructure from the students' side, academics pointed to the need for Unisa to improve on ICT infrastructure. For example, the ICT systems and connectivity at Unisa are still slow and the LMS gets overloaded, and that creates difficulties in teaching and learning. Some expected quality ICT infrastructure from Unisa because this institution is well known for the provision of tuition in an online mode. Therefore, academics expected ICT infrastructure to be of quality and for there to be ease of teaching and learning. In such an unstable ICT infrastructure, academics pointed out that they were expected to work from home and use their data bundles to access Unisa systems, but they were not subsidised for the bundles and electricity.

6.5.2 Lack of system support

The lack of system support, including support related to OER pedagogy, is still a challenge at Unisa. There was reported a huge gap related to the infusion of OER in the teaching content. That led to some academics submitting to the repository without any thorough review. Some academics were not taught how to develop OER. Academics learned about how to develop OER for their modules on their own and some felt that their institution was not concerned about the quality in the development OER. Instead, the quantity was favoured as the institution always pushed academics to develop more OER. There were no mechanisms to check on the thoroughness of peer-review for OER before the resources were published and uploaded on the institutional repository. However, these views were not in line with the institution's OER strategy as demonstrated in the quote below:

“ODEL has realised that the vast quantities of content and teaching materials, especially openly licensed content, have significant potential to contribute to the quality of the teaching and learning experience of its students” (OER Strategy Document 1).

They also mentioned several issues relative to the dis-appropriation of OER in their academic environment. In their opinion, the OER initiative was politicised because it was only benefiting the institution, not the academics. It was perceived that the institution does not pay attention to social problems related to OER. Some academics opined that institutional processes were a problem in the development of OER and processes and procedures were not fully followed.

“I spent my own money to develop OER and I was never refunded by the institution”
(Professor 5).

Academics also claimed that digital skills and literacy are still a problem because some of them were not trained to explore and retrieve information from other media on various digital platforms. They also indicated that searching for OER requires computer literacy skills like typing skills and the ability to produce text, images, audio, and designs using technology. There are also no guarantees that students are computer literate and can thus interact with OER. Academics insisted that digital literacy and skills need attention at Unisa. They further opined that in higher education as such there is still a digital divide as students do not have equal computer literacy skills as they are from different backgrounds. Some academics noted that if some students are not comfortable with the platforms and the use of computers, this might lead them to withdraw from studying or participating in the LMSs.

Academics found it a challenge to identify OER that are suitable for their specific subject. They indicated that even if they narrowed their search to Africa or global OER databases, they seldom found relevant resources. In such cases, some developed their own OER and some are not able to do so. That might lead to the dis-appropriation of OER. Academics also mentioned that the developed OER are only beneficial to Unisa academics and students, and they consider that as a challenge. Some academics mentioned that the issue starts at registration. Students need money to be part of the Unisa ecosystem. If they are unemployed, they are unable to access the institution’s OER since these are only kept in their LMS which requires a username and password for access. That is not in line with the OER philosophy since external users are blocked. They further opined that many academic institutions still fail to promote their OER as these are mostly kept in the university systems. If the information seeker is not associated or affiliated with the institution, he or she cannot access OER.

6.5.3 Lack of OER policy and copyright

Copyright is still a challenge and initiation of rights is not clear to some academics. They also mentioned that this is becoming a problem in the development of OER because it can take a long time to produce an OER. Before that, they still must initiate copyright and take it to different institutional structures for approval. Once OER procedures are observed, they can be taken to the library (as the final place where OER are kept in the repository). Also, once

they reach the library, it does not mean that they will be published immediately as they still must comply with the library laws. The librarian opined that it is important to adhere to the copyrighting requirements. Whenever a lecturer or author created OER, they must assign the copyright laws to the particular content. They must permit OER to be in an open access repository (institutional repository). It is advisable that academics are adhering to Creative Commons before publishing their OER.

“Well, I normally suggest that they follow the route of the creatives commons licenses so they can share their OER as open access in the institutional repository”
(Librarian).

Beside the problems encountered by academics concerning the creative commons, the lack of OER policy also contributed to the dis-appropriation of OER. Academics were not too sure if there is an existing policy governing the OER development. For an example, the majority of academics were not sure if there was any OER policy. Other academics knew that there was no OER policy and they developed and adopted OER without policy. Others relied on an ODL and prescribed book policy to infuse, adopt and develop OER for their tuition. The minority academics firmly confirmed that there is an OER policy in place. Their confirmation was based on the fact that there are many institutional policies at Unisa. They noted that even management encourages them to utilise and adopt OER but there is no written document about how to manage OER. In the absence of OER policy, some academics opined that there is no document to rely on concerning the development and adoption of OER. That showed some contradictions as one of the Unisa documents states:

“Unisa has approved an OER strategy that will guide the institution in terms of its use of OER, materials, and the management of its intellectual property” (Document 1).

Even the OER champions suggested that there is a need for an OER policy. One of the champions mentioned that Unisa was the first South African university to come up with an OER strategy but currently there is no OER policy. In the absence of OER policy, the champions stated that the institution depended on other related policies like policies for prescribed books. They noted the significance of developing a standalone OER policy since this is an emerging initiative that benefits the institution particularly by bringing in more

opportunities in the Unisa context. In this case, both librarian and OER champions concurred that there is no OER policy in their institution.

“There is no policy on OER, instead we rely on prescribed book policy” (Champion 2).

6.6 Conversion of OER by academics

Commodification and appropriation processes lead to conversion which is considered the final stage of domestication. Academics demonstrated to others that they adopted and appropriated OER. Academics had gained confidence and they could talk about the OER to others.

Academics played a conversion role as they encouraged other scholars, researchers, and any other disciplines to use and develop OER. During the promotion of OER academics pointed out three key impressive things about OER as enabling academics to be vigilant: they can be easily available to many people at the same time, help to decolonise content, and they promote social justice. Also, bad impressions about OER were mentioned: lack of skills in terms of usage and adoption, and poor quality of OER. Academics opted for different approaches to promote OER including IPMS, social media, word of mouth and conferences. On that note, conversion succeeded to produce acquired and relevant findings.

The study recognised a relation or interlink between commodification and conversion phases. The same academics who were convinced in the commodification phase, to commodify OER. In the conversion phase they also played a convincing role. To acquire the relevant conversion answers the following questions were posed: Whom do academics encourage to use and adopt OER? What are the good and bad impression they have about OER? What communication channels are used for promotion tactics? Therefore, the informers, enforcers and convincers are presented in the conversion phase (see section 6.2.2).

6.6.1 Academics arguments about OER

Academics played the conversion role as they could have some positive and negative arguments about OER. Mostly their arguments were eye opener to other academics. As part

of encouraging others to use OER, academics mentioned some of the good things about OER. Some positive academic arguments considered to be of benefits about OER were:

- Issues of inequalities
- Causes academics to be vigilant
- Help in promotion of social justice

Some academics opined that inequality exists in their context; some are in the upper class, middle class, and lower class. This resulted in people having different levels of access knowledge due to connectivity issues. The issue of infrastructure raises inequality because some people might have access to data bundles but are based in areas with poor network coverage. Since OER are stored in online databases, academics noted that not all their students were able to download and share OER. Besides the challenge of network coverage, the issue of high costs of data bundles also prevails. Furthermore, they indicated that the problem starts with ownership of relevant devices used to access the internet before retrieval. It was highlighted that not all students had the necessary laptops and computers. In other words, even if OER are free, it is also important to consider the economic factors associated with accessing such resources. The developers and institutions responsible for producing OER required expert labour that required payment in exchange for their work and databases that host content. Therefore, OER may seem to be free to the end-users but are not developed without costs.

“... in a country like South Africa where people are still struggling with the cost of data, access to resources they cannot be able to access online OER” (Senior Lecturer 4).

Academics emphasised that an OER user needs to be vigilant and be careful when selecting the OER material. It is crucial to check the authors to know whether the authors are accredited. The knowledge they produced should be scientifically proven before considered as a relevant resource. As part of encouraging others to use OER, some academics had positive recommendations about OER. They appropriated OER because they wanted to enhance their teaching and learning as OER has vast sources of information that are relevant for any subject content. Some commended OER as easily sharable, especially at Unisa. In

that case, OER can be shared in the form of Uniform Resource Locator (URL) links on any virtual learning platform. Also, academics commended OER as a relevant initiative helping in the decolonisation of content, where teaching is contextualised and suitable for African students.

As part of the promotion, some academics viewed OER as an initiative that promotes social justice and fairness among students as it allows them to access quality services for tuition. OER provides clarity in related content to promote success in teaching and learning. Concerning fairness, the academics opined that they post all relevant sources to develop the level of knowledge of their students. Academics perceived OER as good for acquiring knowledge for free. They indicated that OER fulfils the “Ubuntu” social order and enables the production of more African knowledge. Some claimed that OER has the potential in fulfilling social justice where all students must have access to educational resources. They mentioned that OER were good for self-development and contributed to the global knowledge society.

In addition to that, academics seem to be honest about describing negative experiences about OER. They mentioned that some users might lack the technical skills needed to operate the ICT devices to find, retrieve and use OER materials. Some academics said that the existence of OER encouraged laziness among academics since they end up relying on others’ OER to do the teaching for them. The OER content is likely to create confusion among students since some of them are used to lectures whereby they physically attend classes. Other lecturers mentioned that in the future some students will likely forget to conduct practicals and rely more on online videos. Others complained that the quality is compromised in OER mostly because of the lack of a thorough peer review process.

“A free thing [OER] is always of poor quality” (Lecturer 12).

6.6.2 Strategies used to encourage the usage and development of OER

Participants used different strategies and tools to encourage their colleagues, researchers, and any other scholars to use OER. The tools and tactics used for promoting OER by academics are as follow:

- Integrated Performance Management Systems (IPMS)

- Academics use social media and word of mouth for marketing
- Academic conferences

Academics encouraged others to use OER. The motive was that they will obtain higher scores in their IPMS bonus meeting. The IPMS bonus is a strategy used by Unisa to grant employees bonuses if they perform exceptionally well in their duties. IPMS is an instrument that entails a constructive approach that will assist employees in achieving their performance expectations through a process of monitoring, review, and improvement (Unisa Website, 2020). Some academics seemed to be excited to report that during IPMS meetings with their line managers they indicated that they developed OER for their teaching subjects, so they get high scores which increases their bonuses. Besides academics encouraging other academics to utilise OER, the OER champions also play a role in the promotion of OER as they confirmed that when academics adopt or develop OER for their subjects there is some recognition in the form of a bonus.

“OER contributes to academics IPMS it’s an incentive of some sort, it’s not an explicit incentive at the moment it can be linked to monetary value because when you evaluate the performance at the end of the year depending on how employee has performed then they are remunerated” (Champion 4).

Support platforms like social media are relevant in the appropriation of OER and are also used as communication tactics to promote OER in the conversion phase. Some academics promoted OER via social media. Their respective departments had a Facebook page; they used messenger chats on Facebook to talk about OER, its good and bad points and its future role in education. The other method used for promoting OER is word of mouth where academics talked about OER and its usefulness in the provision of education. One academic mentioned that each time when he talks about OER to another person he will make sure that he will be motivated and start wanting to use and adopt OER. Other academics boast about OER to others.

Academics convinced other scholars and researchers about OER when attending academic conferences. They attended various conferences on teaching and learning and presented OER topics, especially those who had already used OER in their teaching context. They confirmed

that in conferences one will learn many new concepts. The academics marketed OER in academics conferences where they shared their research outputs and outcomes.

The findings seem to show that academics are convincing others about OER using social media, word of mouth, and academic conferences but it is not convincing that they are using appropriate enforcing mechanisms. Instead, findings show that there are more people with “social capital” who can better convince others to use OER. Chairs of departments and OER champions are in better positions for convincing others and they seem to address well issues of promotion as conversion permits. When academics take part in “enforcers” roles they seem to be not as effective as OER champions.

6.7 An overview of the domestication process of OER by academics

The findings of the domestication process are illustrated in Figure 6.3, starting from the commodification to technology appropriation and ending up in the conversion phase. The commodification phase shows the informants of OER before the actual commodification takes place. The technology appropriation phase presented findings into two themes which relate to “actual appropriation of OER” and “criteria leading to dis-appropriation”. To carry on with the process the appropriation was of significance as it led to the final phase which is conversion.

In the conversion phase, they conclude that conversion cannot be static. Based on the study findings which are aligned to domestication theory, the study can conclude that the conversion phase can be also considered to be the first phase of domestication theory. Actions that are occurring in conversion can lead users to appropriate the artefact especially when the research population consists only of knowledgeable people about the commodity. The inner-circle process illustrated the role played by the OER champion and librarian in supporting academics during the domestication process.

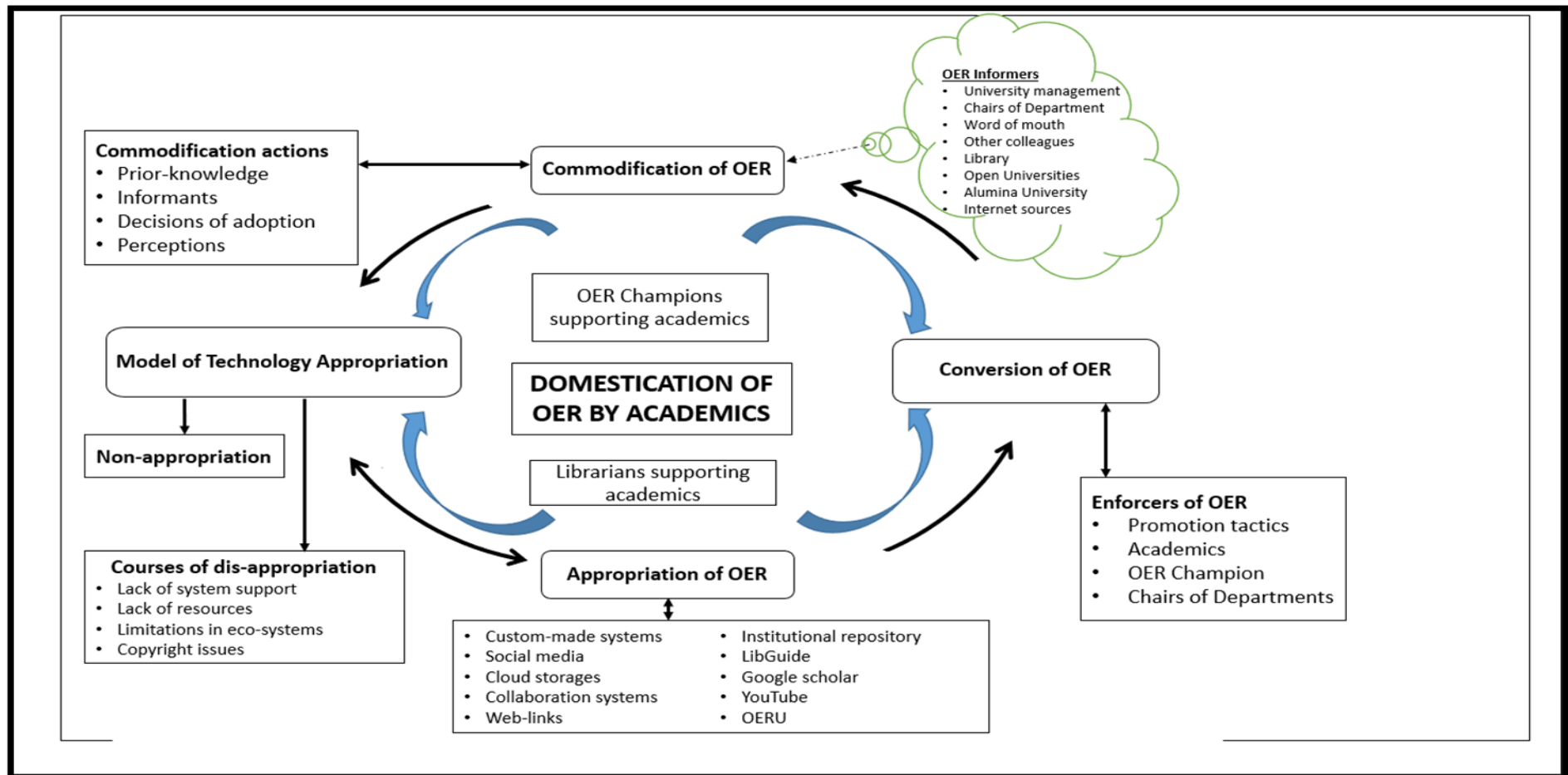


Figure 6.4: Illustration of the process domestication of OER in an ODeL context (Source: Author)

6.8 Chapter summary

This chapter presented the findings in line with the domestication theory. The presented findings were retrieved from academics who were categorised into the following categories: junior lecturer, researchers, lecturer, senior lecturers, and professors. That categorisation was done to unpack the domestication theory as all three processes were followed: commodification, appropriation, and conversion. Therefore, the study assumed that the application of the domestication of OER was successful. In data triangulation, OER champions and librarians were asked how they supported academics during the adoption, development, and use of OER.

The findings confirmed that both OER champions and librarians support academics in the process of domestication OER and there was some coherence on findings. Management represented by OER champions supported academics in the development and adoption of OER for tuition and research. Champions provided academics with training, seminars, and workshops on OER. As a mechanism for promoting OER, champions and the institution rely on the strategy developed for OER which guides academics on processes and procedures. Although the main concern is that there is no existing OER policy in place, the champions mentioned that they encourage academics to shift from the subscription of prescribed books for their modules and encourage them to opt for OER for teaching and research.

Finally, the findings showed many contradictions concerning the OER policy as there were different views as some academics claimed that there is an OER policy while others refute this. OER champions and librarians concurred that there is an OER strategy instead of an OER policy. This drew attention to the study; therefore, the implications, opportunities, and the recommendations of OER strategy will be unpacked in the next chapter.

CHAPTER 7: DISCUSSION AND INTERPRETATION OF THE FINDINGS

7.0 Introduction

This chapter discusses the research findings of the study. The study investigated how academics at an ODeL domesticate OER for tuition and research. The study focused on the following four sub-research questions:

1. How can open distance e-learning institution academics commodify open educational resources for tuition and research in South Africa?
2. How can open distance e-learning institution academics adopt and develop open educational resources for tuition and research in South Africa?
3. How can open distance e-learning institution promote the use of open educational resources to academics in South Africa?
4. What is the role of information and communication technology in the domestication of open educational resources by open distance e-learning institution academics in South Africa?

The study answered the research questions by analysing the research results through the lenses of two theories: Domestication theory and MTA. The discussion in this chapter focuses on the thematic outcomes of the research results to highlight new insights that are missing in the existing literature. This chapter is organised into seven sections. Section 7.1 provides a high-level summary of the findings and how they relate to the main research question, sub-questions, theory and emerging themes. Sections 7.2 through 7.6 discuss the sub-questions of the study. The extension of phases of domestication theory is discussed in section 7.7. The summary on the domestication of OER process is provided in section 7.8. Lastly, a chapter summary is provided in section 7.9

7.1 Summary of themes emerging from the findings

To answer the main research question, the researcher formulated four sub-questions (see Table 7.1). The first sub-question sought to establish how academics commodify OER for tuition and research at an ODeL. Answers to this question are described in section 6.2, which highlights academics' pre-existing knowledge of OER, decisions pertaining to OER adoption

and development, and perceptions around OER. The resultant discussion of the themes pertaining to this sub-question is: “The commodification of OER by academics”, which aligns with the commodification process. Two emerging sub-themes were also flagged for discussion, namely “Academics’ knowledge of the OER phenomenon” and “Academics’ perceptions of OER”.

The second sub-question inquired about how ODeL academics adopt and develop OER for tuition and research. To answer this sub-question, the following two themes were developed: “Adoption and development of OER” and “Hindrances associated with the adoption and development of OER”. The three elements (appropriation, non-appropriation and disappropriation) of the Model of Technology Appropriation were considered in this discussion. Themes such as the decolonisation of teaching and learning content; lack of tuition resources; reduction of academic workload; lack of OER policy; and copyrights issues appeared to be most relevant for the discussion. The third sub-question relates to the way in which the ODeL promotes the use of OER, which is described in section 6.2.3. The main discussion theme for this question is: “Enforcers of OER at an ODeL”.

The fourth and final sub-question addresses the impact of ICT on the domestication of OER. In this case, one key theme – “ICT as an enabler of adoption and development of OER” – was developed. In this way, the study discusses the following three emerging themes: ICT infrastructure for the ecosystem, shadow IT, and end-user support. The discussion logic is illustrated in Table 7.1.

Table 7.1: Research questions, key finding themes and the resultant theoretical propositions

DOMESTICATION OF OPEN EDUCATIONAL RESOURCES BY ACADEMICS IN AN OPEN DISTANCE E-LEARNING INSTITUTION				
Sub-research questions	Discussion theme	Supporting empirical evidence	Key findings	Sub-themes for discussion
1. How do ODeL academics commodify OER for tuition and research?	The commodification of OER by academics	• Section 6.2.1 • Section 6.2.2 • Section 6.2.3 • Section 6.2.4	• Academics' knowledge of the OER phenomenon • Informants about OER • Reasons for adoption of OER • Academics' perceptions of OER	• Knowledge of the OER phenomenon • Perceptions ○ 4th Industrial Revolution ○ Covid-19 compliance ○ Promotion of social justice
	Proposition1: <i>The degree of users' knowledge, understanding and uncertainties about the artefact contributes to the rising negative impressions about the commodification.</i> Proposition 2: <i>Academics perceive OER as a relevant approach for promoting “Ubuntu” and social justice, because of their capabilities to support free tuition and research resources.</i> Proposition 3: <i>OER are perceived as a relevant initiative to drive open tuition and research in the education sector in the 4IR era.</i>			

DOMESTICATION OF OPEN EDUCATIONAL RESOURCES BY ACADEMICS IN AN OPEN DISTANCE E-LEARNING INSTITUTION				
Sub-research questions	Discussion theme	Supporting empirical evidence	Key findings	Sub-themes for discussion
	Proposition 4: <i>OER are perceived as a possible solution to drive social distancing and enforce online learning and research when natural disasters and transmittable diseases emerge around the world (Mncube et al., 2021a).</i>			
2. How do ODeL academics adopt and develop OER for tuition and research?	Adoption and development of OER for tuition and research	• Section 6.2.3.1 • Section 6.2.3.2 • Section 6.2.3.3	• Promotion of African knowledge in teaching • Development of study material • Shortage of teaching material and costly shipping	• Decolonisation of content • Limitations of existing tuition resources • Reduction of the academic workload
		Proposition 5: <i>The appropriation of OER affords academics opportunities to decolonise teaching and learning content innovatively and efficiently to bridge the existing gaps related to the shortage of resources in academia.</i>		
	Factors associated with the dis-appropriation of OER	Section 6.5	• No OER policy in place • Challenges with copyright	• Lack of policy • Copyright issues

DOMESTICATION OF OPEN EDUCATIONAL RESOURCES BY ACADEMICS IN AN OPEN DISTANCE E-LEARNING INSTITUTION				
Sub-research questions	Discussion theme	Supporting empirical evidence	Key findings	Sub-themes for discussion
			issues	
	Proposition 6: <i>When the ODeL institution has poorly defined OER policies and lacks mechanisms for creative commons upskilling for academics, it contributes to the dis-appropriation of OER.</i>			
3. What is the role of ICT in the domestication of OER by ODeL academics?	ICT as an enabler of appropriation	Section 6.3	- ICT infrastructure - Institutional systems - Alternative systems used	- Existing ICT infrastructure and ecosystem - Shadow IT
		Section 6.5	- Poor ICT infrastructure - Lack of system support - Poor digital literacy skills - Developed OER are limited to ODeL eco-system	- Poor ICT infrastructure - Limited to ecosystem - End-user support
	Proposition 7: <i>An effective ICT infrastructure for ecosystem that is integrated with shadow IT and technical support systems are</i>			

DOMESTICATION OF OPEN EDUCATIONAL RESOURCES BY ACADEMICS IN AN OPEN DISTANCE E-LEARNING INSTITUTION				
Sub-research questions	Discussion theme	Supporting empirical evidence	Key findings	Sub-themes for discussion
	<i>enablers of the adoption, development and dissemination of OER to enhance tuition and research.</i>			
4. How does an ODeL promote the use of OER?	Enforcers of OER at an ODeL	• Section 6.2.3 • Section 6.6.1 • Section 6.6.2	• Enforcers of the utilisation and development of OER • Strategies used to encourage the usage and development	• Social capital • OER incentives
	Proposition 8: <i>ODeL institutions are in a better position to enforce the adoption and development of OER through clearly formulated and visible incentives from institutions with high social capital.</i>			

7.2 Academics' commodification of OER

This section addresses sub-research question 1: *How can open distance e-learning institution academics commodify open educational resources for tuition and research in South Africa?*

ODEL academics commodify OER differently. Section 6.2 provides empirical evidence on how the commodification of OER takes place at Unisa. Also, section 3.3.1 describes commodification as the process that informs and promotes a user's knowledge and awareness of a particular artefact so that it becomes popular for adoption or usage purposes. In studying users' adoption of innovative technologies, it is important to examine their artefact knowledge, prior knowledge, previous practices, innovations and the norms of social systems (Silverstone & Hirsch, 1992; Rogers, 2003).

Therefore, the study discusses three themes: academics' pre-existing knowledge (knowledge), academics' perceptions, as well as OER informants as enablers of commodification. Figure 7.1 illustrates how commodification is occurring at Unisa. The right-hand section in Figure 7.1 depicts three themes that have a positive impact on commodification, whereas the left-hand sections represent themes that have a low impact or negativities in commodification. The lack of knowledge, experience and interest academics considered to be the negative impact of commodification. In providing answers to this sub-question, section 7.2.1 discusses the academic knowledge of OER. Section 7.2.2 discusses the academics' perceptions and dwells more on two sub-themes, OER perceived to promote social justice and the 4th industrial revolution. The informants, who are also considered as enforcers, is the other main theme contributing to commodification and is discussed in section 7.6.

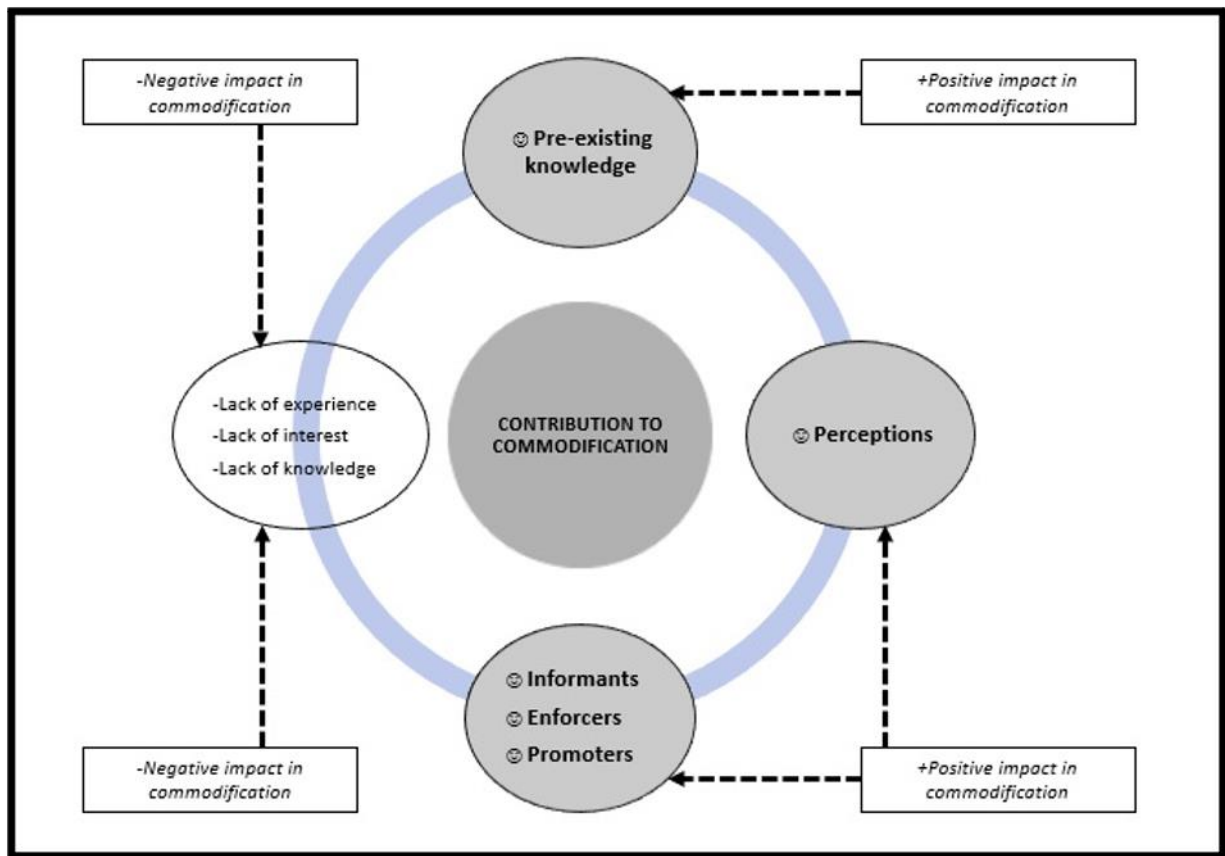


Figure 7.1: Commodification of open educational resources

7.2.1 Academics' knowledge of OER

There is no common universal term to describe OER which further leads to different views about this phenomenon. The research findings demonstrate different levels of OER knowledge, and these differences result in confusion associated with OER. The confusion in terminology may be an indication of a lack of knowledge, which, in turn, affects the OER commodification. If an understanding of OER as a commodity is lacking in the academic environment, it may impact negatively on the usage behaviour (Lawson, Sanders & Smith, 2015). If such confusion remains unresolved, it may have a negative impact on the commodification of OER.

The study identifies the acronym *OER* as one of the major problems that may contribute to the confusion of the meaning of OER. For example, some academics confuse “open educational resources” with “open electronic resources”. This confusion stems from the acronym *OER*, which is also used for “open electronic resources”. Section 6.2.1 demonstrated different levels of understanding of OER amongst the academics. Some regarded open

educational resources and open electronic resources as the same resource type. Based on the existing literature (see Table 7.2) and the empirical evidence, these two terms convey the same connotation. The study realised that open electronic resources could inform or contribute to the creation of open educational resources. The confusion in terminology and the lack of knowledge may, to some extent, explain the low uptake of OER in Africa (OER Africa, 2020). This is supported by the data retrieved from selected OER portals (MIT Open CourseWare, 2001–2020). This might be an indication that OER have not yet gained popularity.

Table 7.2: The commonalities between open electronic and educational resources

Term	Explanation of terminology	Reference source
Open <i>electronic</i> resources	Open electronic resources also include databases, magazines, archives, dissertations and theses, conference papers, government papers, scripts and monographs in electronic format.	Tsakonas and Papatheodorou, (2006); Ternenge and Kashimana, (2019)
	The term has been existing for a long time. The concept was developed in the late 1960s to describe an enabler of remote online access to database services.	Hawthorne (2008)
Open <i>educational</i> resources	The term <i>open educational resources</i> , which was coined in 2002, can be defined as any set of educational materials that are distributed in an open format and that can be accessed by anyone at no financial cost.	UNESCO (2002); Choi, et al. (2020)
	Can be described as the enablers of instructional material and innovations of content development.	Hussain, Chandio and Sindher (2013); Wiley, et al. (2014); Havemann (2016)

As previously mentioned, commodification is an initial stage that determines if OER users will proceed to the next phase of domestication – i.e. the appropriation of OER. In this way, commodification can be considered as a filter to determine whether academics continue with appropriation or turn to non-appropriation. The initial exposure to OER artefacts and the technology may influence and shape users' decisions in terms of adopting the technology (Fidock & Carrol, 2006). In this study, some academics did not contribute to or continue with the entire domestication process, whereas some participants fell in the non-appropriation category. Apart from the confusion caused by the acronym, some academics were able to commodify OER, even if some demonstrated negative attitudes, lack of work experience, and lack of knowledge about OER. To answer the first research sub-question, the following theoretical proposition was suggested:

Proposition 1: The degree of users' knowledge, understanding and uncertainties about the artefact contributes to the rising negative impressions about the commodification.

To resolve the challenges which arise from the two terms, this study proposes the combination of two terms into one term – open educational resources – which can be described as any relevant, adopted and/or created subject-specific content that is retrievable in heterogeneous systems or structures ascribed to open access initiatives. Such a combination of the two terms or the expansion of the OER description may help academics to consider the relationship between the “*electronic*” and “*educational*” resources as common entities in the commodification of OER. Logically if the reasoning and thought of these terms are matched, it may help solve the problem, where educational resources are treated differently from electronic resources. The main purpose of creating educational resources is to make them openly accessible. Open access encourages the electronic format for easy distribution and accessibility (Condruz-Bacescu, 2020).

7.2.2 Perceptions of academics on OER

Academics at Unisa have various positive perceptions about OER. However, there were some mixed reactions concerning OER. This concurred with the literature which indicates that faculty members have positive perceptions towards OER because they improve teaching and reduce cost and time (Alkhasawneh, 2020; Fischer et al., 2020; Magro & Tabaei, 2020). In

the study of OER reviewed literature published between 2002 and 2021 (life span of OER) it is evident that there has been a surge of positive perceptions about OER in global higher education institutions. The literature describes OER positive perceptions such as good quality, improvement to student performance, cost, and saving time (Harsasi, 2015; Ikahihifo, et al., 2017; Abramovich & McBride, 2018; Nipa & Kermanshachi, 2020).

Besides the positive perceptions, research findings and the extant literature show that there are still a minority of academics who have negative perceptions about OER. This may be due to the lack of understanding and experience, as indicated in section 6.2.2. Research has also established that the negative perceptions are due to the low level of competency; limited accessibility of OER; and a lack of awareness among academics (Madiba, 2018; Grossman & Simon, 2020; King & Bunce, 2020). Based on the foregoing evidence, it was possible to conclude that there are mixed opinions about OER in both developed and developing countries. The assumption may be that, globally, the adoption and development of OER are at the initial stage (Bliss & Smith, 2017).

Besides many different positive perceptions mentioned by the participants, the study recognises three are key perceptions worth discussion. These themes are: OER to promote social justice; OER to promote the 4th industrial revolution; and OER as a relevant approach for teaching during the Covid-19 pandemic.

7.2.2.1 OER to promote social justice

The research findings specified that, in the education context, the development and use of OER were associated with social justice and Ubuntu. *Ubuntu* is a philosophy, based on the idea that all humanity is connected (Mino, 2020). In the principle of fairness and justice, Ubuntu and social justice complement each other (Raju, Claassen, Madini & Suliaman, 2020). Academics adhere to Ubuntu as they take time to develop OER to increase knowledge and they are passionate about transferring knowledge to others. By closing current boundaries and the gaps associated with education access, OER offers additional opportunities. Also, OER reduces social exclusion and brings opportunities for all in need of educational resources (see section 6.6.1).

These findings aligned with the principles of social justice in OER, which are described as an initiative that "... offers the opportunity for new empirical research to measure the social justice impact of initiatives in terms of the way that learners who, by circumstance, have less

can be provided with more resources” (Lambert, 2018:241). The findings further demonstrated that the existence of OER plays a role in social justice. For example, one of the major existing challenges described in the literature (see section 2.2) points out that numerous students cannot enroll in higher education because of limited space, whereas some cannot afford education expenses (Department of Statistics South Africa, 2020). OER plays a role in closing such gaps because these resources oppose the purchases and transactions related to educational resources including textbooks. The OER initiative strives for free and accessible education. Although having access does not imply equity access. Academics and students are still expected to purchase internet (Arinto, et al., 2017) and other necessary devices and electricity for access to OER.

The existence of OER aligns with the United Nations Universal Declaration of Human Rights (1984:77), which asserts that “... higher education shall be equally accessible to all”. The literature further affirms that social justice in the education sector deals with the availability of educational programmes and teaching materials to all people, regardless of their social status (Maravić, nd; Arinto et al., 2017). The establishment of OER is available to eliminate the shortage of teaching and learning resources gaps and to increase access to education and resources (Adukia, Asher & Novosad, 2020). This is an indication that education is for everyone who requires knowledge, regardless of affordability and the consumption of knowledge. The advantages of OER are based on the facts that OER can be adopted and utilised for formal or informal education (Brahim et al., 2020), which shows that OER are not limiting or restricting the educational process and access to education.

South African HEI are also trying to address issues of exclusion, cost, and marginalisation through the creation of affordable OER (Cox et al., 2020). For instance, textbooks are costly and not all registered students can afford them (Stein et al., 2017; Jenkins et al., 2020). Hence, some higher educational institutions adhere to social justice by introducing OER as an alternative to textbooks (Unisa Annual Report, 2013). In doing so, these institutions promote the use of free resources. This is a relevant example of the role of institutions of higher education in the promotion of social justice. This is particularly important because issues of inequalities and affordability of education still exist in developing countries like South Africa. The findings gave rise to the following proposition:

Proposition 2: *Academics perceive OER as a relevant approach for promoting Ubuntu and social justice, because of their capabilities to support free tuition and research resources.*

7.2.2.2 OER to promote the Fourth Industrial Revolution (4IR)

The use of OER can support an ODeL institution when academics use modern technologies to provide tuition and research – particularly when academics utilise novel technologies made available by the 4IR. As demonstrated in section 6.3, academics have associated the use of OER with 4IR compliance. This aligns with existing literature, which observes that 4IR has become a fundamental framework for developing innovative learning ecosystems for the higher education sector if they have adapted OER (Diño & Ong, 2019). OER transformative potential, coupled with the expansion of 4IR technology innovations, represents a strategic opportunity to foster access to inclusive education and to promote pedagogical innovation and knowledge creation and sharing (Oke & Fernandes, 2020). In line with the empirical evidence of this study, OER can contribute to the 4IR era for education.

“To educate for the fourth and future industrial revolutions, there is a need to embrace the technologies associated with them. Education systems, programs, and curricula need to be flexible, allowing for students’ interests and needs. They need to be relevant to unforeseen work and social issues and qualifications need to be assessed and awarded for learning across formal, non-formal and informal avenues” (University World News, 2017:1).

Existing literature and empirical findings show that academics are willing to move with the times and achieve transformation. However, the arrival of 4IR does come with societal changes, which require academics and institutions of higher education to re-develop content that is suitable for such modern times. This should be achieved while considering a greater capacity for ethical and intercultural understanding, where all students and learners are catered for.

Although ICT infrastructure, affordable broadband connectivity and reliable electrical power supply are still challenges in several developing countries, the 4IR initiative has the potential to inspire the drive for ICT innovation, (Pawlowski & Hoel, 2012). Section 2.3.2 shows that OER rely on modern web technologies that are compactable with 4IR. Therefore, the education sector must consider adapting to the issues raised by 4IR technologies and their

disruptions to society (Penprase, 2018). This may encourage academics to continuously perceive OER as having dynamic capabilities to strengthen the transformation for tuition and research. This leads to the formulation of the following proposition:

Proposition 3: Academics perceive OER as a relevant initiative to drive open tuition and research in education sectors during the 4IR era.

7.2.2.3 OER to support teaching and learning during the Covid-19 era

With the emergence of the Covid-19 pandemic, the adoption of OER has gained popularity in academic spaces. OER are highly relevant in enabling institutions of higher education to adhere to social distancing requirements in line with the Covid-19 restrictions. Prior to the Covid-19 pandemic, OER were popular at Unisa given the online learning approaches typically used to support tuition and research. However, during the pandemic, the demand for OER has expanded beyond the Unisa environment to other traditional universities, as they recognise the opportunities provided by OER (Aguilera-Hermida, Quiroga-Garza, Gómez-Mendoza, Villanueva, Alecchi, & Avci, 2021). During the Covid-19 pandemic, educational institutions in many countries around the world, including South Africa, were forced to stop all face-to-face activities to avoid the spread of the virus (UNESCO, 2020; OER Africa, 2020). In the Covid-19 era, the OER initiative has acquired global attention, as academics, teachers and learners are encouraged to use OER, which are easily accessible and sharable without the need for any physical contact (OER Africa, 2020).

The academics remarked on the significance of OER in the Covid-19 pandemic because these resources are accessible online and they eliminate the need for physical interactions. This also shows that OER can support and promote online learning, in that resources can be accessed and used anywhere and at any time. Apart from the positive contribution to the Covid-19 pandemic, the literature also suggests that institutions and educational departments should be innovative and recommends the implementation of “open pedagogy, open collaboration and open assessment to keep learners motivated and engaged during this long period of online learning” (Huang et al., 2020:np).

Apart from demanding a new direction in education, the present challenges relate to infrastructure, pedagogy, resources, assessment, quality assurance, student support systems, technology, culture and best practices (Owolabi, 2020). This indicates that the Covid-19 period has forced policymakers, educators, academics, and governments to rethink and act on

new educational strategies. As the research confirms, OER gained popularity and OER initiatives must be implemented during the pandemic era and beyond (Van Allen & Katz, 2020). In this regard, the study concludes with the following emerging proposition:

Proposition 4: *Academics perceive OER as a possible solution to drive social distancing and enforce online learning and research when natural disasters and transmitted diseases emerge in the world (Mncube et al., 2021a).*

7.3 Adoption and development of OER for tuition and research

This section provides an answer to sub-research question 2: *How can open distance e-learning institution academics adopt and develop open educational resources for tuition and research in South Africa?*

The Unisa academics are adopting and developing OER for their tuition and research. The research findings as stipulated in section 6.1.2 show that academics are taking innovative approaches to enhance adoption and development. In this way, OER are one of the emerging initiatives in higher educational institutions (Mays, 2020). However, an academic context such as Unisa relies on the utilisation of ICT systems for teaching and learning (Kusmawan & Belawati, 2010; Rahman, 2014) and, therefore, the adoption (which relates to the utilisation and development) of OER relies on ICT (Alyami, 2020). The relationship between ODeL and OER is described in section 4.2 of this thesis. Therefore, the research findings and existing literature concur in terms of the adoption and development of OER relying on ICT. OER cannot exclude or be treated separately from ICT.

In terms of the reasons for the adoption and development of OER, the following three themes are worth discussing: the decolonisation of knowledge; academics being able to adopt and develop OER because of limited tuition resources; and the potential of OER in reducing academics' workload.

7.3.1 Decolonisation of knowledge

OER are gradually contributing to the decolonisation of knowledge and education. This is elicited from the fact that academics have come to realise that OER innovations can facilitate the Africanisation of learning and research content. Makgoba (1997:199) defines the term *Africanisation* as follows.

“It is not a process of exclusion, but inclusion ... is a learning process and a way of life for Africans. It involves incorporating, adapting, and integrating other cultures into and through African visions to provide the dynamism, evolution, and flexibility so essential in the global village. ‘Africanisation’ is the process of defining or interpreting African identity and culture”.

The description of Africanisation shows that it is a mutual process that depends on different parties. Africanisation is not a substitution or rephrasing of relevant knowledge, systems and culture. Instead, Africanisation exists because other developed contexts are well established in knowledge generation and, therefore, such development enables African developing countries to develop their own knowledge. This is confirmed in research findings as indicated in section 6.2.3.2. In this context, Africanisation is based on the development of OER that are relevant and suitable for African contexts and their education systems.

African countries still face difficulties in constructing local curricula, as the ideas of the global north are still considered predominant (Louw, 2010). On the other side, Western curricula are not always helpful in the African context, because there is a lack of commonalities between the prescribed content and the experiences of the targeted audience (Rumajogee, 2002). Academics indicated that African scholars can develop their own OER that are relevant to their educational systems, cultures and theories. This may eliminate some perceptions that “Africanisation of the curriculum is seen as an antidote to the rigid imposition of western models” (Rumajogee, 2002:7). Rumajogee’s opinion supports the idea that African academics have made meaningful contributions to OER. Therefore, integrating Africanisation in the curriculum encourages the development of scholarship and research established in African intellectual traditions (Naidoo, 2016) and the adaption of teaching and learning to African realities and conditions (Letsekha, 2013). This may be the solution to the current OER challenges in developing countries.

Several or all African countries are still facing obstacles, such as inequalities and access to education and resources. In South Africa, like in any other developing country, numerous rural schools are under-resourced, with predominantly poor learners and poor parents (Dreyer, 2018). Given such challenges, the decolonisation of OER needs to consider eliminating some of the challenges. Additionally, the development of Africanised OER might be more valuable if the OER designers take into consideration the needs of society and the context in which the students or learners are taught.

Numerous challenges – such as poverty, lack of access, and inequalities – were highlighted in the research findings. The study suggested that Africanisation and the development of OER can potentially have a transformational impact on how universities collaborate and work in increasingly complex and international contexts (Nascimbeni, Burgos, Spina & Simonette, 2020).

7.3.2 Limitations of existing teaching and learning resources

In developing countries, the lack of educational resources is a persistent problem. This is one of the reasons for which academics at Unisa pushing for the adoption and development of OER. In doing so, they seek to eliminate gaps associated with the shortage of such resources. This concurs with the findings of several studies recorded in the literature, which opine that, in developing countries, there is limited access to sufficient teaching and learning resources (Mahlangu, 2020; Mwashashu et al., 2020).

The findings demonstrate that the existence and use of OER plays a role in mitigating the challenges of limited tuition and research resources. With the assistance of OER, higher educational institutions and academics are striving globally to increase access to educational resources for their students (Jung, Sasaki & Latchem, 2016). Through OER, academics are in a better position to create more tuition content in various formats. This aligns with the literature, which states that OER transforms and increases educational resources while considering both the efficiency and fairness of education and training (Grosseck & Malita, 2017). This is in line with the increase of resources and the storage or platforms where these resources are kept. This means the planning to create more OER should also consider the issue of computer efficiency because the vast knowledge of OER is kept and processed within the information systems platforms, which are connected to the internet. This may indicate that academics are passionate about increasing reading resources in higher education.

In light of the information regarding the Africanisation of knowledge and the lack of tuition resources, the following proposition is suggested in terms of the adoption and development of OER:

Proposition 5: The appropriation of OER affords academics opportunities to Africanise teaching and learning content innovatively and efficiently to bridge the existing gaps related to the shortage of resources in academia.

7.4 Challenges to the appropriation of OER

This section provides an answer to sub-research question 2: *How can open distance e-learning academics adopt and develop open educational resources for tuition and research in South Africa?*

There are some OER appropriation challenges at Unisa, most of which relate to ICT. These challenges contribute to the dis-appropriation of OER and cause uncertainty to academics. Several of these challenges are based on ICT infrastructure in the global south. When dealing with OER in developing countries, institutions and students are facing challenges, such as poor and affordable ICT connectivity; inadequate ICT infrastructures; and lack of connectivity (Arinto et al., 2017; Kinyua, 2019). This contributes to academics not using and adopting OER – because they do not know if their students have ICT infrastructure and the necessary learning devices. The assumption is that, if students are provided with all tuition necessities such as devices, it will support and improve the throughput rate and reduce the level of frustration among academics in higher education (Cox & Trotter, 2017).

The challenges encountered in the appropriation phase contribute to the dis-appropriation of OER. As evidenced in the study, some academics dis-appropriated OER. The challenges involved in the appropriation of OER, which are highlighted in section 6.4, include poor ICT infrastructure; a lack of system support; and a lack of relevant skills. This study was interested in investigating and reporting on the following two most relevant factors that contribute to the dis-appropriation of OER: the lack of OER policy and copyright issues. The opted themes for discussion helped to provide answers to sub-question 3, which sought to establish how ODeL academics adopt and develop OER for tuition and research.

7.4.1 Lack of OER policy

The research results demonstrated that the Unisa does not have an official OER policy in place. In the absence of an OER policy, there is an OER strategy that still needs to be upgraded into a policy. The findings further opine that, globally, the study context (i.e. Unisa) was the first one to have an approved OER strategy. Currently, OER policies are lacking at numerous institutions of higher education (Chikuni et al., 2019). The study found it difficult to distinguish between a strategy and policy. The literature opines that a *strategy* is a special

plan for achieving a market position and to reach the organisational goals and objectives, whereas a *policy* refers to a set of organisational rules for rational decision-making (Bagal, 2016). Based on these findings, the study may conclude that the strategy is too briefly compared to the policy.

The findings showed that, before a policy is formulated, a strategy should be designed. An OER strategy can be described as a comprehensive set of guidelines formulated by the university before the official policy approval (De Hart, Chetty & Archer, 2015). The policy is related to the establishment of priorities for supporting the decisions made by an institution and generally supports the gathering, use and reuse of OER in an institution (Miao, Mishra & McGreal, 2016). Once the policy has been articulated, it may lead to the success and continuous adoption and development of OER. That is why the UNESCO declaration and recommendation support the creation, use and adoption of inclusive and quality OER, which includes the development of supportive OER policies (Huang et al., 2020). There is a need for clarity on or description of an OER strategy and OER policy. The lack of policy may contribute to hindering the appropriation and may also lead those who have started to adopt and develop OER to dis-appropriate OER.

There were some contradictions concerning the policy. Academics mentioned that there was a policy in place, while others were not too sure if there was a policy or not. Additionally, they assumed that the OER strategy and the policy were the same thing. This is an indication of existing contradictions related to OER policy and strategy. For clarity, OER champion 2 confirmed that, at Unisa, there was no operational OER policy. The institutional report (2013) also expresses that there is no OER policy available for now at Unisa. Instead, Unisa has an OER strategy.

Out of 26 South African Universities, only three universities (the University of Cape Town, University of Witwatersrand and the University of South Africa) have adopted OER guidelines in the form of a policy or strategy (Owolabi et al., 2020). The University of South Africa has approved its OER strategy, which demonstrates that the institution realises that the vast quantity of content and teaching materials – particularly openly licensed content – have significant potential to contribute to the quality of students’ teaching and learning experience (De Hart, Chetty & Archer, 2015; Owolabi et al., 2020).

Since the 2012 Paris Declaration on OER, only a small number of countries have developed national policies for OER (Miao, Mishra & McGreal, 2016). Policies are important, as they can help institutions to drive their OER projects and manage their OER by highlighting the objectives, scope and applicability, copyright and licensing, quality assurance and review system liability (Abeywardena, 2017).

In South Africa, provision for the regulation of OER usage is available in a governmental higher education policy. This policy supports efforts investing in the design and development of high-quality learning resources that should be made freely available as open resources (DHET, 2014a).

7.4.2 Copyright issues

Copyright issues contribute to the dis-appropriation of OER. The results confirmed that the copyright and creative commons remained hindrances to the adoption and development of OER. Several academics had challenges associated with a lack of knowledge and technical skills. As part of appropriation, the Creative Commons should be initiated once the OER are created. Creative Commons, which is an open organisation associated with OER, is responsible for initiating any type of educational material that is freely available for academics and students in the 5R's activities, such as retaining, using, adapting and sharing (Atkins et al., 2007; New Jersey Institute of Technology, 2019; Huang et al., 2020). Also, Creative commons licences are compactable with copyright because a violation of Creative Commons is also a violation of copyright (Hagedorn, Mietchen, Morris, Agosti, Penev, Berendsohn & Hobern, 2011).

Academics do not know how to assign copyright to developed OER. It is supported by the literature that most schoolteachers and university lecturers do not understand the regulations around the sharing of OER materials (Hodgkinson-Williams & Arinto, 2017). According to the past research, academics' OER-related concerns include copyright issues, technical concerns and sustainability (Fischer et al., 2020). This lack of understanding or knowledge of the legal aspects of OER use and dissemination may have a negative impact on the appropriation of OER. Expanding knowledge of creative commons and copyright is necessary for academics to produce and compose protected, sustainable educational material (Panda & Santosh, 2017).

The findings concurred with the literature in terms of the fact that problems arise when users (academics) struggle to comply with OER copyright requirements (Bissell, 2009). Some of the reasons result from the fact that there are no guidelines in place (Gulley, 2013; Kosciak & Savelka, 2013). The challenge remains that numerous academics still lack awareness and understanding of copyright and creative commons (Cox, 2016).

The findings and literature concurred with the challenges associated with the technicalities of copyright, as some academics opined that they had developed OER, but not published them because they are not knowledgeable about the copyright and creative commons. There are still obstacles related to copyright and creative commons (Yang, 2020). Therefore, HEI who recognise the importance of OER need to strive for continuous upskilling of academics concerning the initiation and assigning of appropriate copyright and creative commons. This may contribute to reducing the number of academics who decide to dis-appropriate OER. The research findings and the relevant literature give rise to the following proposition:

Proposition 6: *When the ODeL institution has poorly defined OER policies and lacks mechanisms for creative commons upskilling for academics, it contributes to the dis-appropriation of OER.*

7.5 ICT as an enabler of adoption and development of OER

Section 7.5 addresses sub-research question 4: *What is the role of ICT in the appropriation of OER by ODeL academics?* The existence and success of Unisa rely on the effective utilisation of ICT. Concerning the use and development of OER, the results of the study recognise the following two key themes of ICT as an OER enabler that are worth discussion: ICT infrastructure within the ecosystem; and shadow IT.

7.5.1 ICT infrastructure within the ecosystem

The empirical findings show that, when the ICT infrastructure at a higher educational institution is managed well, academics are encouraged to start adopting and developing OER. In an ODeL, the ICT infrastructure becomes a priority, because of the nature of the institution. This aligns with the literature, which alludes that the ICT infrastructure is prioritised in an ODeL (Unisa website, 2021).

There is concurrence between the findings and literature. Several universities have implemented ICT for tuition, knowledge management and research (Umukoro & Tiyaamiyu,

2016). This is an indication that ICT has transformed the way academics provide tuition and conduct research. The way in which study material is being developed has also been transformed since online or e-learning has gained in popularity in the last two decades (Burgos & Corbí, 2018). E-learning is considered an effective approach for accommodating an increasingly diverse student population and enriching the learning environment through the incorporation of online teaching resources (Serrano et al., 2019). The findings and literature both agree that the dissemination of OER in virtual platforms and modern distribution channels can play a significant role in e-learning (Burgos & Corbí, 2018). To benefit from a flexible and open learning system, ICT potential must be well managed, thereby improving and facilitating the adaptation of professional training and education to the digital world (Tudor, 2020).

The empirical findings indicated that the ecosystem has several ICT applications in place and that the infrastructure is in a better position to be used. The ODeL seemed to rely more strongly on information systems for teaching and learning as well as adopting and developing OER, but this contradicted the aim of OER. For example, the literature opines that OER aims to provide access to the global society (UNESCO, 2002; Wahid, 2020; Lambert, 2020). If academics solely use the ecosystem as a platform for adoption and development, they are not using the appropriate route for marketing or distributing OER. In such occurrences, users in the public domain cannot access OER that was developed and stored within the ODeL local ecosystems. Therefore, these systems are only partially contributing to OER distribution. This highlights the need for Unisa to find solutions so that the external information seekers can access OER developed internally. Only then will they fully align with the general aim/purpose/objectives of OER.

Besides the dissemination of OER through the Unisa ecosystem devices, the findings demonstrated the existence of an ecosystem LMS used to disseminate OER. However, the LMS can be limiting to the users. In particular, findings further showed that, while the LMS was suitable and convenient for the use of OER, the platform had hindrances related to its storage capabilities. This implies that ODeL should pay more attention to the improvement of storage capacity and open access capabilities. Sufficient storage capacity may contribute to ICT as enabler of adoption and development of OER. Indeed, the use of OER mostly relies on the LMS and other virtual platforms that may require enough capacity in data handling (Cobb, 2020).

Besides the existing LMS, there can be other systems in place for data management, such as the institutional repository. The institutional repository can take the form of an online academic library system used for data collection, preservation and dissemination of the intellectual output of institutional research (Lynch, 2003). The modern institutional repository does not cater for research only, but also for other tuition outputs, such as OER. This supports the research findings, because in the ODeL institutional repository there is a TAB (space) where institutional OER are kept. Based on the records stored in the institutional repository, academics appear to be more inclined to adopt rather than to develop OER.

The findings indicated that there was no connectedness between the institutional systems used for OER and that the ICT ecosystem as they played different roles. The LMS, which is suitable for the Unisa ecosystem, stores and manages OER for the actual use in tuition and research. The institutional repository, on the other hand, is used for storing OER that can be accessible by the Unisa community and global users. Literature confirms that all data stored in the institutional repository is widely accessible to global scholars and information seekers (Chisita & Chiparausha, 2020). This aligns with the notion of open access. Therefore, to make sure that the LMS develops OER that are globally accessible, the study suggests that Unisa must integrate the LMS and the institutional repository, so that they adhere to open access, thereby enabling academics to adopt, develop and disseminate OER.

7.5.2 *Shadow information technology*

The research findings indicated that academics sometimes avoid using existing institutional ICT systems when adopting, developing and disseminating OER. For example, they can use different online platforms. Academics may also rely on shadow IT, i.e any hardware or software in an enterprise that is not supported by the central IT department of the domain (Kopper, Westner & Strahringer, 2020).

The international organisation that is responsible for policy formulation is the OECD (2019:6) which describes *online platforms* as the providers of “... a range of services available on the Internet including, marketplaces, search engines, social media, creative content outlets, app stores, communications services, payment systems, services comprising the so-called ‘collaborative’ or ‘gig’ economy, and much more”. All these platforms play a role in shadow IT. In line with the research findings and literature, shadow IT systems that are used as OER platforms (e.g. social media platforms; cloud storage devices; collaborative

systems; Google Scholar; and YouTube) may support the adoption and development of OER at an ODeL.

Academics may also be highly innovative, in that they go as far as developing mobile applications for the dissemination of their OER. The re-development and alternative use of internet systems may support access to quality education. Moreover, access to modern technology has enabled people to find, share and exchange information beyond national boundaries (Opening Educational Practices in Scotland (OEPS), 2017).

Indeed, one popular medium of teaching and learning which has revolutionised education is social media, which are commonly used for marketing content and knowledge distribution (Ansari & Khan, 2020). Social media attract increasing attention from consumers and they are currently regarded as one of the most important channels to communicate information about brands to consumers (Cheung, Pires & Rosenberger III, 2019; Prasad & Saigal, 2019). The popularity of social media may be an indication that numerous students own smartphones devices, which are simple to domesticate because of the graphic user interface. The literature affirms that OER are well marketed and disseminated through social media (Chapman & Greenhow, 2019). Many institutional systems can embed social media in their service delivery. Even if the shadow IT is not officially recognised by the organisation, the user becomes more explorative to find new possible solutions in service delivery.

The research results demonstrate that academics also considered YouTube as a relevant platform for the adoption of OER. This is in line with the current literature, which considers YouTube as the most popular platform that promotes open access and scholarship with fewer boundaries (Ofoegbu, Asogwa & Ogbonna, 2021). However, these research results indicated that the use of YouTube was not always approved by ODeL intuitions – mainly because of copyrights and intellectual property regulations. This, in a way, contradicts OER principles, which advocate for open access. Nonetheless, the findings indicate that shadow IT contributes significantly more to OER dissemination than official institutional systems.

7.5.3 End-user support

The research findings indicated a lack of assistance and support for academics when dealing with OER. Respondents recommended end-user support to assist academics when developing OER. Using and creating OER require users to have necessary digital skills. In section 6.5.2, findings show that not all academics are happy with institutional support, including technical

support in relation to OER. This is an indication that when academics do not have enough technical support they might encounter hindrances with utilisation of ICT. Also, if ICT is not enabling, it may hinder the adoption and development of OER. The significance of end-user support is to provide essential support with computer software and application for development (Field engineer, 2021). In this context, the end-user support provides assistance for academics encountering problems during the development of OER. Such persisting problems may lead to the dis-appropriation of OER. Upon encountering such hindrances, academics might be inclined to stop any OER development activities to focus on other duties. This lead to suggest the following proposition:

Proposition 7: *An effective ICT infrastructure and ecosystem integrated with shadow IT and technical support systems are enablers of adoption, development, and dissemination of OER to enhance tuition and research.*

7.6 Promoters or enforcers of the use of OER at an ODeL

Section 7.6 addresses sub-question 3: *How does an ODeL promote the use of OER?* Being an academic at a higher educational institution means being an independent, innovative and creative individual. As the research results showed, in most cases, individuals in managerial positions are better positioned to influence and motivate the use of OER. OER champions and university management may encourage academics to adopt and develop OER, but it remains the academics' responsibility to develop and use OER. Academics still have their "academic freedom" to decide on what they want to prescribe for their students. The assumption may be that not all academics believe in OER and, therefore, the promoters and enforcers of OER should investigate different angles, rather than pushing the one agenda, because that results in a violation of academics' rights. Therefore, in providing the necessary answers, the following two themes were regarded as worth discussing: social capital as an enabler of conversion, and OER incentives.

7.6.1 Social capital as an enabler of conversion

The results showed that academics were not in an optimal position to play a conversion role. The ones better suited for the conversion task were OER champions, CODs, School directors and Deans. This implies that social capital plays a key role in higher education advocating OER.

It is significant to note that there is no common term to describe the term *social capital* (Claridge, 2004). This study was influenced by Baker (1990:619), who describes *social capital* as “... a resource that actors derive from specific social structures and then use to pursue their interests; it is created by changes in the relationship among actors”. This relates to the study, because the findings showed that individuals in managerial positions can encourage the development and use of OER.

Based on the literature and the research results, the study recognises the social capital from a global perspective. The initiative of OER was recommended by the UNESCO (2002) on issues of educational developments and policies. This was suggested for the purposes of education and globalisation (UNESCO and Commonwealth of Learning, 2011, 2015). Based on the global economy, the global higher educational sectors promote the globalisation of education. Also, higher education plays a role in social development and national economic competitiveness (UNESCO and Commonwealth of Learning, 2011, 2015). OER are one of the popular globalisation initiatives in the international educational community (Condruz-Bacescu, 2020). Figure 7.2 illustrates how social capital is manifested in the ODeL context.

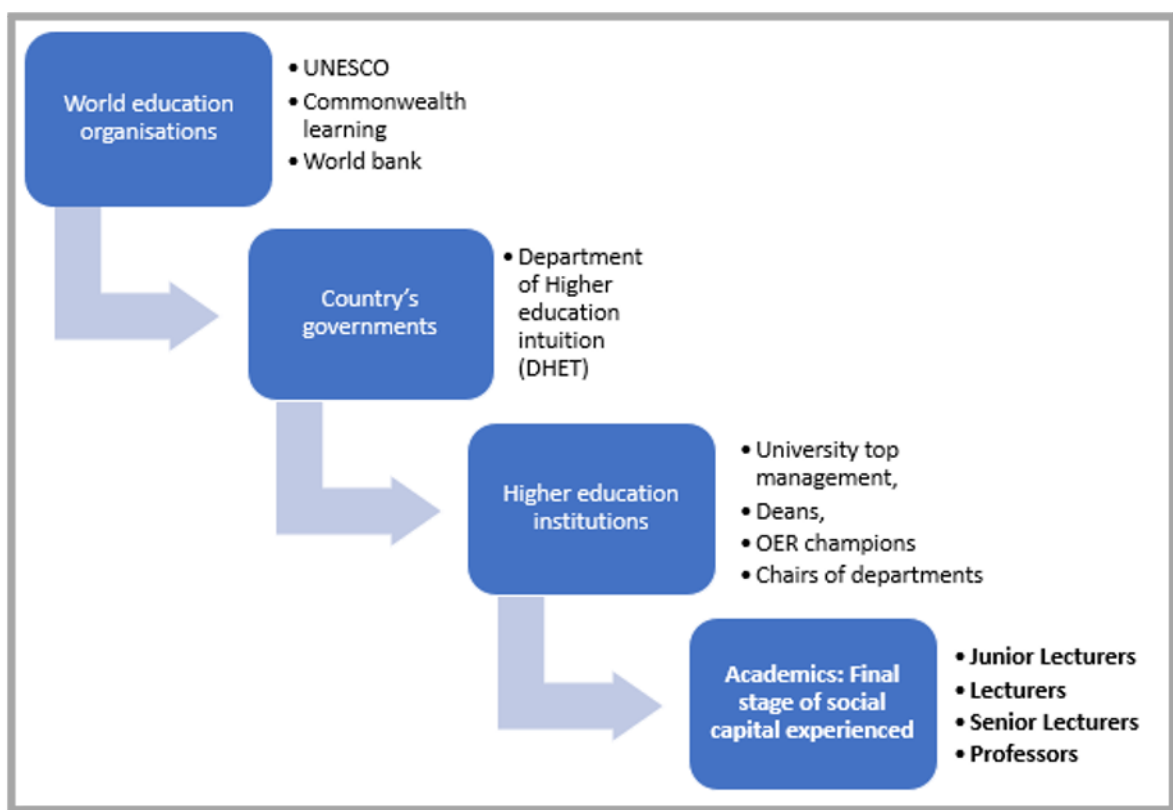


Figure 7.2: The actions of social capital concerning OER

Upon reflecting on the role of social capital in supporting the development and use of OER, four stakeholders were identified, as shown in Figure 7.2. The influence of social capital does not start at the national level, however; it can instead be traced to global initiatives. For example, UNESCO (2002) initiated and recommended the use of OER for both developed and developing countries. Due to this initiative being recommended by such a global and reputable institution, the government of South Africa decided to embark on the OER initiative, similarly to other commonwealth countries.

The South African education government framework started to develop a policy related to the development of OER, open education licensing policies and OER repositories in both school and post-school education and training (Government Gazette, 2017). The argument was that the DHET had devised an “open learning” strategy to increase access to education and training opportunities (Government Gazette, 2017). Furthermore, the state developed policies and gazettes concerning OER, which may be considered as another form of social capital from the government into higher educational institutions. This mandate contains guidelines for adopting and developing OER, which, in this case, is an element of social capital that is a continuation. The findings also showed that the social capital occurred at Unisa, where university top management, Deans, OER champions and Chairs of Departments are enforcing or promoting the use of OER by academics for tuition and research.

Social capital plays a significant role in a university. The study findings also showed the institutional management has different strategies – which may be associated with social capital – of encouraging academics to use, adopt and develop OER. The social capital activities may be interpreted as another form of power being exercised by people who have authority (managerial levels) in the context of higher educational institutions. Power is vitally important to the organisational structure, which helps to stimulate the agendas of an institution (Anderson & Brion, 2014). Therefore, the power in an organisation that can contribute to social capital in higher education is becoming more widely recognised and substantiated (Fearon, Nachmias, McLaughlin & Jackson, 2018). Therefore, academics do not appear to have an option, but to adhere to the institutional instructions. This may affect their rights and freedom of being academics. The findings and literature enabled the researcher to conclude that people in managerial positions are significant role players in the promotion of OER.

7.6.2 *Open educational resources incentives*

The results indicated that there was a need for clearly formulated incentives to encourage academics to use and develop OER. Moreover, information on these incentives should be made available to academics on numerous platforms. The literature suggests that incentives facilitate the adoption of open practices in the educational institutions (Nascimbeni & Burgos, 2016). As part of encouragement, the publication of tuition and research materials, such as OER, can be used as one of the criteria for academics' promotion (Huang et al., 2020; Alyami, 2020).

Findings have shown that there were limited incentives for academics to use and develop OER. The literature also affirms the need for more incentives to support the creation, use, and sharing of OER resources (Henderson & Ostashevski, 2018). As evidence, some academics alluded that they preferred to focus on research only, rather than developing OER, because there were research incentives, whereas there were no incentives for the development and use of OER. If such initiatives are not prioritised in higher educational institutions, academics may not pursue OER development (King, 2017; Lieberman, 2018).

The reasons for incentivising academics when they develop OER might be of significance. The literature indicates that some universities in developed countries provide incentives to academics when they revise curricula to include high-quality, affordable course materials in a form of OER (Neary & Davis, 2020). This practice may be a highly constructive motivation to improve the development of OER and increase the level of OER usage.

The key finding is that there is a need for clearly formulated incentives (i.e. the intent and nature of these incentives should be clear to the academics). For example, some of the things that contribute to the persisting contradictions are incentives and bonuses. Not all academics were able to differentiate between these initiatives. The IPMS bonus is the strategy used by Unisa to grant employees bonuses if they perform exceptionally well in their duties. An IPMS is an instrument that entails a constructive approach to assist employees in achieving their performance expectations through a process of monitoring, reviewing and improvement (Unisa Website, 2021).

As shown by the empirical findings, several academics were not well informed about the OER incentives, but they were aware of the research incentives. This may be an indication that research incentives are gazetted in the research institutional policy. It is confirmed that

all research regulation and remuneration processes stipulate incentives for research publications (Unisa, 2013), whereas there is no clear policy about OER incentives. Even those who mentioned that they did receive bonuses when they developed OER had just heard about that by word of mouth – not through any official channels. To avoid the recurring confusion at the institution, the study suggests that OER, as an emerging phenomenon in higher educational institutions, forces the institution to initiate a transparent clause for incentivising OER within the institutional OER policy. In summary, the following proposition is suggested:

Proposition 8: *ODEL institutions are in a better position to enforce the adoption and development of OER through clearly formulated and visible incentives from institutions with high social capital.*

7.7 The expansion of domestication theory

The study suggests two additional phases in the domestication theory. The study opted for domestication theory (see section 3.3) as well as the MTA framework (see section 3.7). Initially, the study followed a deductive reasoning approach where three phases of domestication guided the study. The domestication theory and its phases guided the formulation of the research questions and data collection process. Later, the discussion of the findings reinterpreted the results of the study using inductive reasoning; this interpretation focused on answering the research questions. In deviating from deduction to induction, the study followed the methods of Soiferman (2010) that postulate that from data collection to presentation of findings the researcher must look for the patterns worth discussion and thereafter start developing theoretical concepts. Subsequently, in the different interpretations of the findings, the study recognised that there are some gaps in the existing versions of domestication theory (Silverstone & Hirsch, 1992; Lie & Sørensen, 1996; Berker et al., 2006). The study notes that there is room to extend the theoretical framework. Those concepts were not used or identified in any other domestication studies. This study used the new concepts, and they were useful in interpreting the findings. Figure 7.3 shows the current existing or new phases of domestication theory.

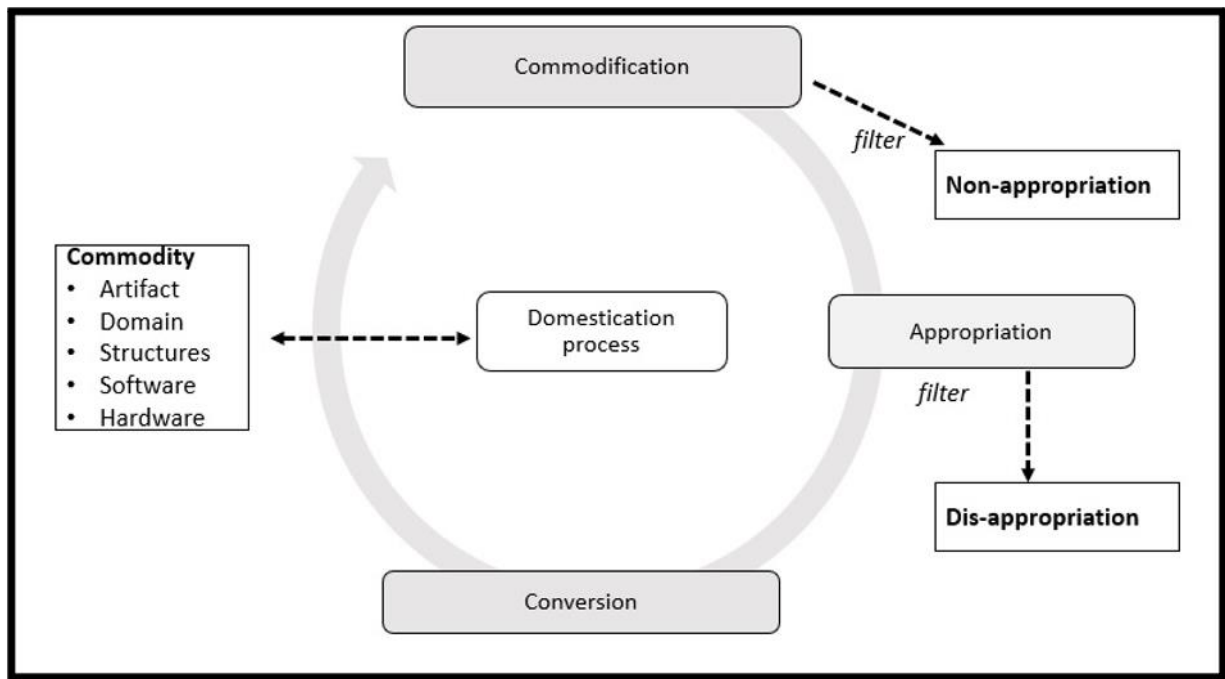


Figure 7.3: The modified domestication theory with new variables

The new concepts for the domestication theory are non-appropriation and dis-appropriation as indicated in Figure 7.3. Non-appropriation flows from the commodification phase. Through the commodification phase the study gathered data related to academics' prior knowledge; informants and perceptions about the OER (see section 3.3.1). For many reasons, academics may opt or fail to proceed to the appropriation stage (recall courses of non-appropriation in 7.2.1). Using the commodification phase the study could filter if academics (users) can carry on with the appropriation process or non-appropriation category. All domestication studies we reviewed did not identify such gaps (see section 3.4).

The second concept is dis-appropriation – which might happen after appropriation has taken place. In the appropriation stage, users encounter different challenges in usage, adoption and development (see section 6.4). Due to such challenges, some users fail or opt not to carry on with the appropriation process and that leads to dis-appropriation (the main causality are articulated in 7.4.1 and 7.4.2). The extended constructs of the existing theory were tested and are in line with Gregor's (2006) expectations, as these concepts were able to explain and discuss the causality of non-appropriation and dis-appropriation. Therefore, the study suggestion of domestication theory consists of the following five phases: **commodification; non-appropriation; appropriation; dis-appropriation; and conversion**. It is significant to note that any researcher or study opting to use this latest domestication theory must recognise

its flexibility. This study proved that the conversion phase which is currently considered to be the last stage of domestication (Silverstone & Hirsch, 1992; Lie & Sørensen, 1996; Silverstone & Haddon, 1996) from now can be considered as the first phase of domestication theory. Such variable dynamics can occur mostly when the study's population is well vested in the artefact (see section 6.5).

7.8 Summary of the domestication process

In the previous sections, the study has demonstrated that we have sufficiently responded to each sub-question that guided this study. In this final section of the chapter, we summarise all that we have stated by concisely presenting the answer to our main question: How do ODeL academics domesticate OER for tuition and research?

Figure 7.4 represents how the study contributed to new knowledge. The phases of domestication theory are listed in the first column of the figure, followed by the research questions linked to each phase and then the main themes that arose from these phases. In the final column on the right the new propositions that arose from the research questions are stated.

Opting for three phases (commodification, appropriation and conversion) of domestication theory resulted in eight new propositions as part of answering the study's main research question. Additionally, the study suggested two additional phases, non-appropriation and disappropriation, as indicated in Figure 7.4. Commodification enabled the study to ask how academics are commodifying OER at Unisa. In the commodification, the study showed that OER are perceived as able to promote social justice, provide a great initiative to promote open access and play a role in online tuition and research. Also, commodification plays a role in filtering if academics fall into the category of non-appropriation or appropriation. The majority of academics were able to appropriate OER and a few fell into the non-appropriation category. The negative perceptions and lack of knowledge about the artefacts were the main causalities to non-appropriation.

Appropriation contributions consist of two propositions and one additional concept (disappropriation). Appropriation occurs because academics wanted to decolonise tuition content, increase tuition and research resources, and reduce the workload of academics. ICT infrastructure and shadow IT have significantly played a huge role in the appropriation of

OER. This phase was evidenced as a filter in determining if the academics carry on with conversion or dis-appropriate the artefact. Lastly, the conversion phase shows that social capital has a mass strategy to enforce academics to domesticate OER. Unisa plays the social capital role by having different strategies such as incentives and bonuses to convince academics to domesticate OER.

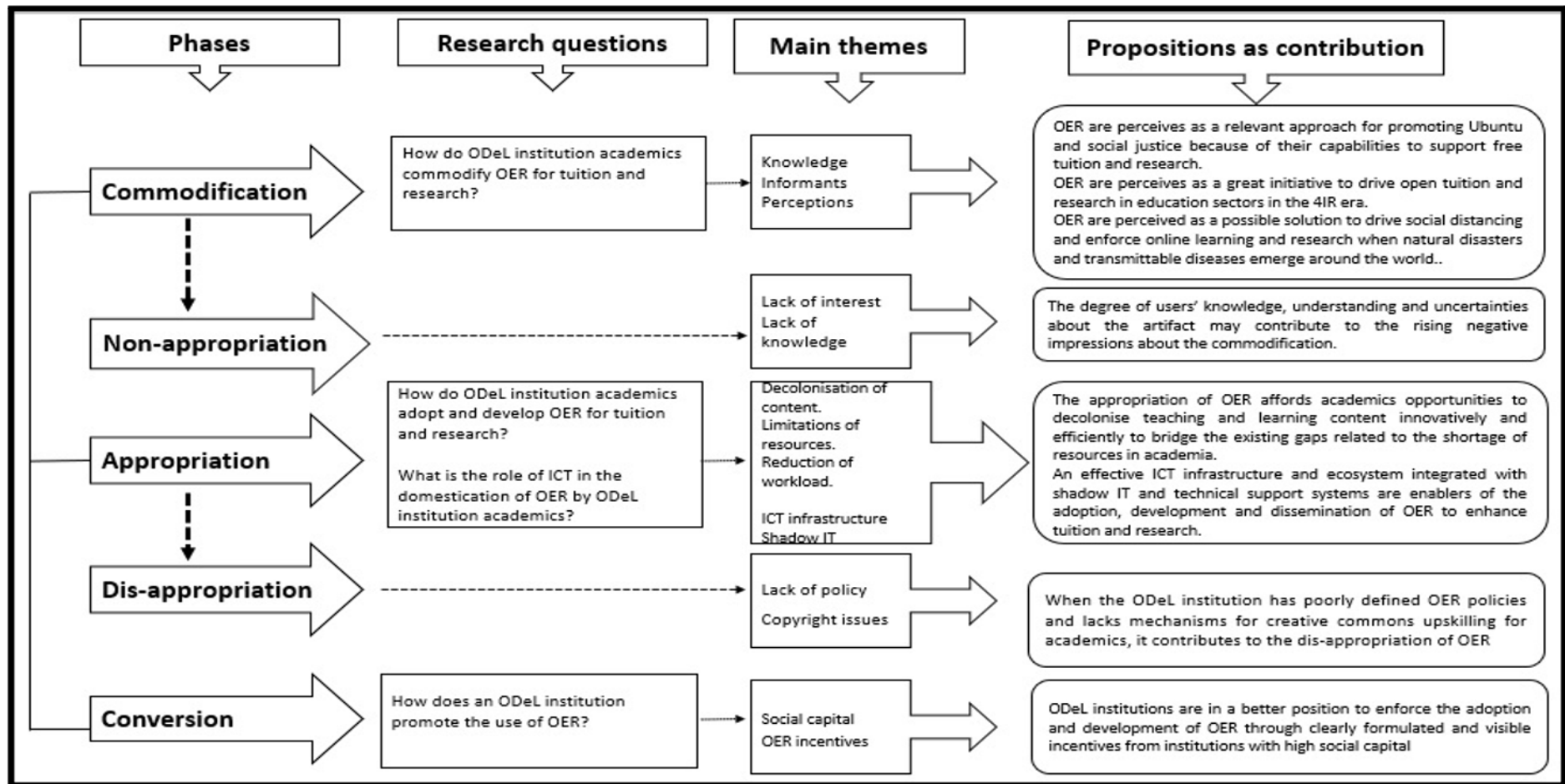


Figure7.4: The summary of domestication of OER in an ODeL

7.9 Chapter summary

This chapter presented the discussion of the findings, which are based on the results captured in Chapter six. The focus of this chapter was to address the research questions in line with the key thematic outcomes to summarise how ODeL academics domesticate OER for tuition and research. Considering the findings, eight theoretical propositions were suggested and validated by using existing literature regarding the adoption and the development of OER in higher educational institutions, particularly at Unisa.

CHAPTER 8: CONCLUSION AND RECOMMENDATIONS

8.0 Introduction

The conclusion to this study is presented in eight sections. Section 8.1 gives an overview of the thesis with particular focus on what was achieved in chapters 1–7. Section 8.2 summarises the key research findings. These findings are presented according to the domestication theory as the main theory underpinning of the study. Section 8.3 presents the research contributions of the study to theory and practice. This is followed by section 8.4, which highlights the recommendations of the study. Section 8.5 unpacks the research limitations and section 8.6 offers suggestions for future research. Section 8.7 deals with the researcher's reflections on the entire study and section 8.8 concludes the thesis with a final word and a lesson of the study on the domestication of OER.

8.1 Overview of the study

Chapter 1 presented the justification, significance and aim of the study. Insights into the phenomenon under investigation – i.e. the domestication of OER – were addressed in chapter 2 (Literature Review). The literature review made it possible for the researcher to understand the main study phenomenon and to identify gaps in the literature, which resulted in the formulation of the research questions. Chapter 3 dealt with the identification and justification of the domestication theory and MTA as relevant theories. The domestication theory and the MTA were employed effectively in the study, in that they guided the formulation of the research objectives and the main research question including the sub-questions.

Guided by the domestication process, the study became descriptive, as indicated in chapter 4. The study adopted qualitative research methods and followed both deductive and inductive reasoning. Therefore, it was justified to use the interpretivist research paradigm and the case study research design. The researcher decided on the use of different data collection methods, including face-to-face interviews, online interviews, focus group discussions, artefact analysis, as well as document and website data analysis.

As discussed in chapter 5, the contextual setting of the study was Unisa. Purposive sampling was used at the heterogeneous institution's schools, colleges and departments, after which snowballing sampling was used to determine the relevant adopters and developers of OER. Based on that, the various academics were selected to participate in the study. For data triangulation, OER champions and librarians were considered, because the study wanted to validate academics' views. Besides that, it was necessary to determine the role that the institution played in supporting the processes of domesticating OER. The results were captured in chapter 6 and the interpretation and discussion of the findings were presented in chapter 7. Lastly, the contributions of the study are presented in this chapter.

8.2 Summary of key findings

In investigation of the domestication of OER, the study followed the domestication theory processes including commodification, appropriation and conversion. This, in turn, guided the research in terms of collecting data from users about the artefacts. The study answered the following four sub-research questions:

- How can open distance e-learning institution academics commodify open educational resources for tuition and research in South Africa?
- How can open distance e-learning institution academics adopt and develop open educational resources for tuition and research in South Africa?
- How can open distance e-learning institution promote the use of open educational resources to academics in South Africa?
- What is the role of information and communication technology in the domestication of open educational resources by open distance e-learning institution academics in South Africa?

8.2.1 *The commodification of OER by academics*

Based on the experience, prior knowledge, informants, and perceptions about OER, Unisa academics commodified OER and the commodification strategy was established (see section

7.2). This academics' commodification strategy might be useful to inform Unisa and any other institution about academics' actions and behaviours towards the commodification of OER.

The commodification of OER indicated that it would enable high student retention rates and promote the Africanisation of knowledge. In South Africa, as in any other developing country, there is a shortage of teaching material (Mahlangu, 2020; Mwashashu et al., 2020). Academics alluded that they developed teaching material in OER format to mitigate the need for students to purchase prescribed books. OER have the potential to phase out printed (hardcopy) materials, because they promote virtualisation of content that can be accessed on an online platform. Also, OER were found to have capabilities of enhancing research and student supervision.

To conclude: the study identified commodification as the main filter within the domestication process and the main causality of appropriation and non-appropriation of OER for tuition and research. This is an indication of commodification being the first phase in the domestication theory (Habib & Sønneland, 2010) and may be evidence that a successful domestication study should consider commodification first.

8.2.2 ODeL as the enforcer of OER

Unisa played the following two key roles in the domestication process: in the commodification phase, the institution can inform and educate its academics about OER and in the conversion phase, the study uncovered the way the key stakeholders within ODeL play a conversion role in the domestication of OER. The research findings indicated that although academics can convert others to domesticate OER they are not the best stakeholders to do so. The ODeL institution considered enforcers as the Vice Principal's office, Deans, School Directors, and CODs as those who seem to have more capabilities of conversion, particularly to convince academics to adopt and develop OER. In that regard, the findings indicated that social capital has a role in the ODeL context. In particular individuals with enough relevant social capital are better suited to convince academics to use, adapt and develop OER for tuition and research. The stakeholders with enough social capital included the OER champions, Vice Principal, School Directors, Deans, and CODs.

Some of the tactics they use are incentives and bonuses to motivate the adoption and development of OER.

8.2.3 *The appropriation of OER*

The adoption and development of OER occur differently at Unisa. The study found that the adoption of OER is more predominant than actual OER development. The motivation for OER appropriation might include the need: to improve student pass rate, to mitigate social exclusion in terms of access to educational resources, to reduce students' need to buy teaching and learning resources, and to increase opportunities/support for postgraduate students' supervision.

Although academics are embracing OER development, this endeavour is occurring at a slower pace due to challenges related to the lack of digital and pedagogical skills (Pandey & Rizvi, 2018; Oke & Fernandes, 2020). Nonetheless, some academics are creative and innovative in developing their OER, which are kept in the Unisa institutional repository. These academics comply with the institutional intellectual property policy, which states that all tuition and research resources produced by ODeL academics must be stored in the institutional repository (Chisita & Chiparausha, 2020). The research findings also show that some OER are developed within the institution; however, some are not visible because some academics prefer to use their own storage devices to keep OER related to their modules. This would mean that not all developed OER are publicised and stored on the institutional repository. Some academics avoided publishing or producing OER, because they are hindered by a number challenges related to copyright issues (Fischer et al., 2020). Many existing hinderances led some academics to disappropriation of OER.

8.2.4 *ICT role in domestication of OER*

ICT has played a pivotal role in the domestication of OER and it particularly dominates the appropriation phase, where the actual process of adoption and development takes place. In the findings of this study, the role of ICT was also recognised in both the commodification and conversion phases – as enabler of training, marketing, advertising and informing academics about OER.

The study showed that academics at Unisa domesticate ICT for OER: The research findings demonstrated the following actions, which were considered in this study: ICT acceptance, rejection, and usage (Berker et al., 2006). The domestication of OER succeeded because the majority of academics relied on different ICT systems to support the domestication of OER. In addition to the institutional systems, some academics preferred alternative systems and technologies when adopting and developing OER. Section 8.3.3 concludes that academics were innovative in the appropriation of OER, as some of them were able to develop their own system to cater for OER. For example, some relied on social media platforms. Besides Unisa ICTs, the research findings showed that shadow IT plays a significant role in the domestication OER. This proved to be a relevant initiative to enhance collaboration in teaching and learning, regardless of the study context, because all resources are digitised, so that they can be adopted, developed and disseminated globally to be accessed by any user requiring information (UNESCO, 2002).

The findings also specified that ICT can contribute to non-appropriation and dis-appropriation of OER. This was due to poorly managed ICT infrastructure and insufficient support from the institution. Additionally, a lack of digital literacy among academics was identified as one of the major points leading to the dis-appropriation of OER.

8.3 The contribution of the study

8.3.1 *Theoretical contribution*

The first theoretical contribution relating to the domestication theory is the suggestion of two additional phases to be considered by other researchers opting for this theory. The domestication theory sequence starts with the commodification phase, followed by the appropriation phase and, lastly, the conversion phase. Instead of appropriation from domestication theory, the study relied on MTA, because its complexity allows more alternative variables, such as technology as designed; the process of appropriation; and technology in use. This allowed for more aspects of the domestication process to be explored, such as what causes users to appropriate the artefact; non-appropriation of the artefact; and what leads users to dis-appropriate the artefact. These three

aspects are not included in the version of current domestication theory (Silverstone & Hirsch, 1992; Silverstone & Haddon, 1996).

The domestication theory is limited in that it provides for broader aspects, such as how existing ICT or systems designed in a particular domain contribute to the appropriation of the artefact. Additionally, it could not directly seek the types of relevant technology used in the process of appropriation. In enhancing the domestication as part of contributing to knowledge, the study presented an amalgamation of MTA in the appropriation phase of domestication theory. This was done through the lenses of deductive and inductive reasoning, which contributed by suggesting two additional phases – non-appropriation and dis-appropriation (see section 7.7). Therefore, this study encourages upcoming information systems studies to employ the current domestication process which entails the following five elements: commodification, appropriation, non-appropriation, dis-appropriation and conversion.

The second theoretical contribution emanates from the eight propositions derived from this study around the domestication of OER by Unisa academics. This was achieved by considering the complex interactions between the academics (users) and technology in the heterogeneous ODeL context. The propositions contribute to understanding the complex domestication process that occurs as academics interact with and respond to OER, which is followed by the adoption and development of OER for tuition and research. The theoretical propositions of the study can be considered, because they were drawn from key empirical claims that were supported by the empirical findings, existing literature and empirical observations. Consequently, gaps in the literature and the research findings contributed to the formulation of propositions. The following propositions were offered to understand academics' domestication of OER for tuition and research:

1. The degree of users' knowledge, understanding and uncertainties about the artefact contributes to the rising negative impressions about the commodification.
2. Academics perceive OER as a relevant approach for promoting Ubuntu and social justice, because of their capabilities to support free tuition and research resources.

3. Academics perceive OER as a relevant initiative to drive open tuition and research in education sectors during the 4IR era.
4. Academics perceive OER as a possible solution to drive social distancing and enforce online learning and research when natural disasters and transmitted diseases emerge in the world (Mncube et al., 2021a).
5. The appropriation of OER affords academics opportunities to Africanise teaching and learning content innovatively and efficiently to bridge the existing gaps related to the shortage of resources in academia.
6. When the ODeL institution has poorly defined OER policies and lacks mechanisms for creative commons upskilling for academics, it contributes to dis-appropriation of OER.
7. An effective ICT infrastructure for an ecosystem that is integrated with shadow IT and technical support systems are enablers of the adoption, development and dissemination of OER to enhance tuition and research.
8. ODeL institutions are in a better position to enforce the adoption and development of OER through clearly formulated and visible incentives from institutions with high social capital.

8.3.2 Contributions to practice

The main practical contributions relate to the adoption and development of OER. This contribution may not be applicable to study context only (i.e., ODeL). Instead, it should be beneficial to any other institution that makes use of OER. The contribution is based on the following areas: academic institutions, institutional information systems and policy enhancement.

ODeL: The study provides opportunities for ODeL (Unisa) to take cognizance of ICT infrastructure and what is currently occurring in terms of adopting and developing OER for teaching and learning. This helps to unveil vast opportunities and challenges concerning

appropriation of the OER artefact. This might enable ODeL and any higher education universities to learn lesson about academics' views and perceptions about OER.

Institutional information systems: The study noted that the adoption and development of OER affects not only academics departments. Institutional departments, such as ICT and academic libraries, are role players in the development and distribution of OER. It was noted that there is a disconnection in the understanding of the term “OER” amongst stakeholders. As a practical contribution, the study recommends the amalgamation of the departmental and institutional systems for efficiency and the provision of better services in sustaining OER.

Policy: Globally, the lack of OER policy is still a common issue (Chikuni et al., 2019; Huang et al., 2020). The study provides solutions to and opportunities for the development of OER policies that govern the adoption and development of OER. Findings may also highlight the opportunity to strengthen existing OER strategies and convert them into policies.

The solution to the recurring problem: Some of the practical contributions relate to academics' lack of use, development and dissemination of OER because of a number of factors, such as lack of digital literacy and knowledge of the use of OER (Mwashashu et al., 2020). To avoid these recurring situations, higher education institutions must take cognizance of OER infusion in their onboarding (induction) training, so that every academic who enters an ODeL will know from the start that he or she is expected to adopt and develop OER intuition. That may be a solution to increase the level of adoption and development of OER. In this study, it was noted that the ODeL universities and numerous traditional universities are exchanging the face-to-face model to online education and, in this way, OER are embracing the academic domain.

8.4 Limitations of the study

8.4.1 The research context

Limitation in the research context is recognised, as the study context was higher education institutions of South Africa. South African higher education institutions are faced with numerous challenges associated with students and staff demands. During the week of 8–12 April 2019,

which was scheduled for interviews with participants, the researcher could not honour the scheduled appointments due to a trade union strike. The staff members were chased out from their offices to join the strike. That caused the researcher to re-reschedule other dates and times, as the researchers were based in another province.

8.4.2 Data collection period

The data collection process started in 2019 and it stretched to 2020. From the end of 2019 to the beginning of 2020, the world has been facing the challenge of a global pandemic (Covid-19), which caused lockdowns in countries across the world, including South Africa. Schools and universities, including those in the research context, were also closed to avoid the spread of the Covid-19 virus. This affected the research and data collection process: because of the restrictions involved in the lockdown and the observation of social distancing, the researcher could not go to the field to conduct the data collection. Therefore, the researcher considered other possible methods of data collection that would meet social distancing requirements. This resulted in delays in the research and resulted in the need to re-apply for ethical clearance and permission to conduct interviews. The researcher re-applied from both associated universities (i.e. the university where the study is registered and the university involved in the research context). Waiting for the ethical clearance and permission for data collection adhering to the Covid-19 restrictions took some months during which the researcher could not collect any primary data.

8.4.3 Connectivity issues

Due to the Covid-19 pandemic, governments all over the world, including South Africa, introduced lockdown strategies and restrictions. This resulted in alternative planning and work practices and numerous people were expected to work remotely. Because of these events, the researcher implemented a new data collection strategy that relied on online platforms such as Microsoft Teams to conduct the interviews. This caused participants to complain about data bundle shortages for the interviews, since they did not have free connectivity and internet access at their institutions. Some initially agreed to participate in the study, but further down the line opted out because of internet connectivity issues and data bundles being depleted. Since the

participants were dispersed in different geographic locations, some did have bundles, but they were unable to connect to the internet because not all locations in South Africa are well equipped with wireless connectivity. This was a significant problem to participants, who relocated to their homes in rural areas during the lockdown. This created more challenges, because the researcher considered alternative methods to get them participating in the interviews.

8.5 Lessons in the application of domestication theory and MTA

The study recognised similarities in the domestication phases, such as commodification and conversion. In commodification, the users (academics) were expected to give their perceptions about the phenomenon (OER). Later, in the conversion phase, they indicated how they had been using OER and gaining confidence in using OER, so as to promote OER to others. As part of the promotion, academics were expected to share their perceptions with others who they were informing about OER.

The use of “appropriation” from MTA was highly useful, although it required the researcher to be attentive to the potential overlap with the conversion phase. For example, in the MTA process, academics were expected to mention factors that caused them to “non-appropriate”, “appropriate” and “dis-appropriate” OER. However, these aspects were covered in the conversion phase in which academics were expected to illustrate good and bad impressions of OER. The research findings demonstrated that good impressions about the artefact led to appropriation and bad impressions resulted in dis-appropriation.

8.6 Recommendations of the study

8.6.1 Induction programme for academics

Lack of OER knowledge is one of the common issues in higher education (Karunanayaka & Naidu, 2018; Appiah et al., 2020), which continues to hinder the adoption, development and dissemination of OER in support of tuition and research. Additionally, the confusion caused by the use of the terms “open electronic resources” and “open educational resources” may hinder the commodification process, including the understanding and uptake of adoption and

development of open educational resources. Academics who are newly employed in an ODeL are usually not well educated about the use of OER. Therefore, the study recommends the establishment of an induction (on-board) programme for incoming academics. The characteristics or outline of the induction programme must entail the following objectives: an overview of OER; processes of adoption and development of OER; copyright issues and dissemination of OER. Such programmes will benefit all newly employed academics and the level of OER commodification can be increased.

8.6.2 *Academic freedom*

The study found that academics are not in a better position to play a conversion role, because those in power had the authority to do so. Academics' limited power may affect their academic freedom and rights. The study recommends that Unisa must maintain academic freedom and rights as the academics are the educational experts and they should be allowed to use different and/or preferred teaching methodologies. Therefore, it may be interesting to establish how Unisa enforces academics to adopt and develop OER and consider their freedom and rights at the same time.

8.6.3 *Shadow IT*

In terms of handling OER, the research findings showed that academics are not limited to certain information systems to which the institution subscribes. Therefore, the study recommends that higher education institutions should not limit academics or decide for them which information systems to use when they are adopting and developing OER. It was derived from the study findings that some information systems for an ecosystem have hindrances and boundaries related to capacity storage and useability. Also, ICT systems are improved daily to revolutionise and improve society and organisations. Users should not hold on to a particular system because new systems are emerging regularly, and these systems have relevant features that can be used to improve the efficiency of OER. Several emerging information systems can be used for the adoption and development of OER at the users' preference.

8.6.4 Adoption and development

Academics have adopted and developed OER for teaching and research, but not all of them have published OER that can be accessed in the public domain. Some academics have developed OER and use them for their modules, although they cannot be widely accessed by other scholars and students. Therefore, there is a need for OER to be available in a global domain.

The lack of policies with clear guidelines on developments, usage, publicity and dissemination of OER result in numerous challenges (Huang et al., 2020). It is not known how to monitor and manage OER that have been developed in the Unisa context. Academics get demotivated and they do not know what to do once they have developed OER. The development of clear OER policies for Unisa might help to eliminate confusion and enhance the development, copyright, incentives, usage and adoption of OER.

8.6.5 OER end-user support specialist

Besides effective policies, the research findings showed that OER champions, CODs and librarians provide support for OER development. The implication started from the domestication theory and MTA processes, which are concerned with user perceptions, adoptions, systems development and lack of end-user support elements. The organisation cannot expect users to domesticate artefacts successfully without system support and training. The adoption and development occur in the ICT platforms, where users interact with computers and application software. This requires users to be ICT literate. However, academics at Unisa are from different backgrounds and not all of them are techno-savvy.

Based on the foregoing problems, the study recommends the employment of an end-user support specialist who is knowledgeable about the OER artefact and has an information systems background. The end-user specialist will aid academics when they need assistance in the development of OER. Additionally, Unisa is a large, heterogeneous institution that requires pedagogical assistance for academics in the development of OER. Additionally, the institution may need to consider hiring more pedagogical instructors to provide subject-related support.

8.6.6 Common virtual platforms

Numerous academics have developed OER that are relevant to their modules. However, many of these OER are not visible, because they are kept on personal devices, storage drives and are not published, as they should be. Although the institution might have a repository that is responsible for the housing of OER developed at the institution, these OER are not necessarily visible in this space. Therefore, the study recommends that colleges at institutions establish a common virtual or web platform that caters for all OER developed within the departments. That may help increase OER output and encourage academics to develop and publish OER. Additionally, this may improve monitoring the quality of OER before they are publicised in the public domain (i.e. outside the institution).

8.6.7 Guidelines of OER development

The study observed that an OER strategy might not be practical enough to articulate the actual process of adoption and development of OER. Guided by the domestication theory, the study yielded empirical findings that make it possible to recommend practical guidelines that academics can apply to initiate the adoption and development of OER in academia. Appendix 10 shows the guidelines to be considered in the development of OER at Unisa and at other institutions.

8.7 Future research

The study was concerned with finding answers as to how ODeL academics are domesticating OER. The in-depth investigation was conducted to understand how academics are adopting and developing OER for their tuition and research. That is why it was necessary to focus on academics only. The domestication study enabled the researcher to understand user behaviour and perceptions toward the OER artefact.

The study found that academics are adopting and developing OER for the benefit of the students' tuition and research. Therefore, with additional funding and resources, it may be interesting to conduct another study focusing on ODeL students only, in order to get their perceptions on the

access and use of OER recommend by academics. This can be done by using a different methodology, such as a quantitative approach, where a web survey can be used to obtain data from students, who are scattered across different geographic locations. If possible, a qualitative approach can also be employed as a mixed-method approach. This may contribute to establishing coherence between the findings of academics and students. There are opportunity for studies to investigate the relevance of the proposed guidelines using an action research approach.

8.8 Evaluation of the research

In the final stage of any study, it is necessary to evaluate the research. In the evaluation process, the following seven questions can be used to evaluate a research contribution: What is new? So what? Why so? Well done? Done well? Why now? Who cares? (Whetten, 1989). Although answers to these questions can be found in different sections of this thesis, a summary of these questions is offered in Table 8.1.

Table 8.1: Evaluation of the contribution of the study (Whetten, 1989)

QUESTION	SUPPORTING ANSWER
What is new?	It was previously unknown how academics in the ODeL context are adopting or developing OER for tuition and research. The study shed some light on the existing opportunities and challenges encountered by academics during the adoption and development of OER at an ODeL. As illustrated in Section 8.3.1, the study contributed new knowledge in the form of eight propositions as well as an expansion of the domestication theory. The study further suggested new guidelines for academics' adoption and development of OER.
So what?	The research was done to enlighten an ODeL on how academics are adopting and developing OER for tuition and research. The insights will motivate many other academics who have not started to adopt and develop OER to consider this initiative for their tuition and research.

QUESTION	SUPPORTING ANSWER
Why so?	The OER initiative has been recognised as a significant emerging approach for access to tuition and research in the academic domain. OER have entered higher education institutions and been shown to be relevant to close information the gap to access to education. OER also have the capabilities to address the Africanisation of education. The study showed that OER play a role in social justice for many individuals at higher education institutions, including academics, students and other information users. If OER are properly marketed and known in academic spaces, they will gradually improve the education provision, particularly because many higher education institutions are moving towards e-learning. OER prove to be relevant to adhere to e-learning.
Well done?	Guided by the theoretical framework and the empirical findings the study established approaches used by academics when domesticating OER. Additionally, based on theory and findings, the study recommends a guideline to be considered for the development of an OER policy at ODeL. This guideline must be considered when academics adopt and/or develop OER (see Appendix 10).
Done well?	The research phenomenon and the domestication process were coherently followed in this study. The researcher-maintained relevance and inter-connection between all chapters and consistency in theoretical elaboration and methodology which led to producing appropriate findings.
Why now?	At Unisa, the provision of tuition and research relies on ICT, which leads to drastic changes. The existence of OER has the potential to revolutionise tuition and research. If academics infuse OER, they should unlearn outdated methodologies and learn new methodologies of course redesign. ODeL and other institutions rely on online learning and enhancing education, and, in this

QUESTION	SUPPORTING ANSWER
	way, they have become a force for compliance. For example, during the Covid-19 pandemic, social distancing was encouraged. Therefore, in the presence of OER tuition must take place on online platforms.
Who cares?	Unisa and any other institutions are highly concerned about the use and benefits of OER initiatives. Policymakers are also concerned about OER, because many changes are occurring in education and policies must be developed and, if they do exist, they must be strengthened. Academics are the ones in the centre of creating, adopting and disseminating OER to the students, which, in turn, benefits higher education and improves global collaboration. Higher education institutions are also concerned about OER, because they are aware that numerous students cannot afford to enrol in tertiary education. Those who do qualify and can afford to enrol cannot necessarily afford the purchase of textbooks because of ever-increasing prices. Several developing countries like South Africa are still facing a challenge because they cannot afford to purchase educational resources.

8.9 Personal reflections

In the initial stage, which is the proposal phase, it was difficult to obtain literature related to OER, because only a few studies on OER have been published. Since the Covid-19 pandemic was announced globally at the end of 2019, social distancing has become a priority and one of the requirements to prevent the virus from spreading. The pandemic has resulted in a drastic change in relevant research topics and numerous researchers have started recognising the essence and potential of OER. This is evident in the vastly expanding knowledge about and contribution to OER in both developed and developing countries. Increasing numbers of scholars are showing interest and have started to contribute to the study and understanding of the phenomenon. The shift originated when schools, private institutions, and any other contact universities started showing an interest in OER and started recognising OER as a meaningful initiative for online

learning with capabilities to adhere to lockdown enforcements. Globally, OER started to grow significantly, as evidenced by an increase in research publications related to OER.

The researcher learned the practical realities of online engagement in conducting research and collecting primary data. Initially, some things were just being preached but not practiced. For example, data collection was physically conducted initially. However, when the Covid-19 pandemic became a reality, the researcher phased out physical interaction and face-to-face interviewing and instead utilised online realities for learning. To conclude: researching online platforms are part of OER and, therefore, the study itself serves as evidence of an OER outcome.

The other practical relevant examples of OER are: most of the resources (journal articles, books, policies and reports) were freely accessed, retrieved and consulted online; primary data was collected via online platforms; web content analysis was conducted online; the researcher attended online seminars and classes; the researcher's supervision was conducted online; and the thesis will finally be stored online so that other users can access and use it for free.

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APPENDICES

Appendix 1: Ethical letters before Covid-19 pandemic

	Faculty of Commerce Private Bag X3, Rondebosch, 7701 2.26 Leslie Commerce Building, Upper Campus Tel: +27 (0) 21 650 4375/ 5748 Fax: +27 (0) 21 650 4369 E-mail: com-faculty@uct.ac.za Internet: www.uct.ac.za  @Commerce UCT  UCT Commerce Faculty Office

06 November 2018

Mr Lancelord Mncube
Department of Information
System
University of Cape Town

REF: REC 2018/011/130

Dear Lancelord Mncube,

Domestication of open educational resources by academics in an open distance e-learning institution of South Africa.

We are pleased to inform you that your ethics application has been approved. Unless otherwise specified this ethical clearance is valid for 1 year and may be renewed upon application.

Please be aware that you need to notify the Ethics Committee immediately should any aspect of your study regarding the engagement with participants as approved in this application, change. This may include aspects such as changes to the research design, questionnaires, or choice of participants.

The ongoing ethical conduct throughout the duration of the study remains the responsibility of the principal investigator.

We wish you well for your research.



Professor Ulrike Rivett
Chair Ethics in Research Committee Commerce Faculty

Leslie Commerce Building
Office Telephone: +27 (0)21 650 4375
Office Fax: +27 (0)21 650 4369
E-mail: modie.sempu@uct.ac.za
Website: www.commerce.uct.ac.za <<http://www.commerce.uct.ac.za/>>

"Our Mission is to be an outstanding teaching and research university, educating for life and addressing the challenges facing our society."

Appendix 2: Ethical clearance for Covid-19 pandemic



Faculty of Commerce

Private Bag X3, Rondebosch, 7701
2.26 Leslie Commerce Building, Upper Campus
Tel: +27 (0) 21 650 4375/ 5748 Fax: +27 (0) 21 650 4369
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Internet: www.uct.ac.za



@Commerce UCT



UCT Commerce Faculty Office

15/05/2020

Lancelord Siphamandla Mncube
Department of Information Systems
University of Cape Town
REF: REC 2020/05/008

Domestication of open educational resources by academics in an open distance e-learning institution of South Africa

We are pleased to inform you that your ethics application has been approved. Unless otherwise specified this ethical clearance is valid until 31-May-2021 .

Your clearance may be renewed upon application.

Please be aware that you need to notify the Ethics Committee immediately should any aspect of your study regarding the engagement with participants as approved in this application, change. This may include aspects such as changes to the research design, questionnaires, or choice of participants.

The ongoing ethical conduct throughout the duration of the study remains the responsibility of the principal investigator.

We wish you well for your research.

A handwritten signature in black ink, appearing to read 'JRousseau'.

2020.05.15
17:07:02 +02'00'

Jacques Rousseau
Commerce Research Ethics Chair
University of Cape Town
Commerce Faculty Office
Room 2.26 | Leslie Commerce Building

Office Telephone: +27 (0)21 650 2695 / 4375

Appendix 3: Permissions to conduct research before Covid-19



RESEARCH PERMISSION SUB-COMMITTEE (RPSC) OF THE SENATE RESEARCH, INNOVATION, POSTGRADUATE DEGREES AND COMMERCIALISATION COMMITTEE (SRIPCC)

27 February 2019

**Decision: Research Permission
Approval from 06 February 2019
until 31 December 2019.**

Ref #: 2019_RPSC_011
Mr. Lancelord Siphamandla
Mncube
Student #: NCBLAN002
Staff #: N/A

Principal Investigator:

Mr. Lancelord Siphamandla Mncube
Department of Information Systems
Faculty of Commerce
University of Cape Town
ncblan002@myuct.ac.za; 0738724708

Supervisors: Prof Maureen Tanner; tanner@uct.ac.za; 021 650-4345, 0786209418
Prof Wallace Chigona; wallace.chigona@uct.ac.za; 021 650-4345, 0765204125

Domestication of open educational resources by academics in an open distance e-learning institution of South Africa

Your application regarding permission to conduct research involving UNISA employees, students and data in respect of the above study has been received and was considered by the Research Permission Subcommittee (RPSC) of the UNISA Senate, Research, Innovation, Postgraduate Degrees and Commercialisation Committee (SRIPCC) on 22 February 2019.

It is my pleasure to inform you that permission has been granted for the study. You may:

1. Gain access to the relevant Unisa employees' email addresses by means of the staff directory in order to invite them to participate in the study.
2. As a principle, the RPSC grants researchers permission to use only one mode of communicating with the prospective participants. As a result, the RPSC cannot grant you permission to use the participants' telephone numbers to contact them.
3. Conduct face-to-face interviews with selected Unisa academics and OER champions.



University of South Africa
Pretter Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

4. Conduct a focus group discussion with selected Unisa librarians responsible for publishing OER's.

You are requested to submit a report of the study to the Research Permission Subcommittee (RPSC@unisa.ac.za) within 3 months of completion of the study.

The personal information made available to the researcher(s)/gatekeeper(s) will only be used for the advancement of this research project as indicated and for the purpose as described in this permission letter. The researcher(s)/gatekeeper(s) must take all appropriate precautionary measures to protect the personal information given to him/her/them in good faith and it must not be passed on to third parties. The dissemination of research instruments through the use of electronic mail should strictly be through blind copying, so as to protect the participants' right of privacy. The researcher hereby indemnifies UNISA from any claim or action arising from or due to the researcher's breach of his/her information protection obligations.

Note:

The reference number 2019_RPSC_011 should be clearly indicated on all forms of communication with the intended research participants and the Research Permission Subcommittee.

We would like to wish you well in your research undertaking.

Kind regards,



pp. Dr Retha Visagie – Deputy Chairperson: RPSC

Email: visagr@unisa.ac.za, Tel: (012) 429-3478

Prof Lessing Labuschagne – Chairperson: RPSC

Email: llabus@unisa.ac.za, Tel: (012) 429-4368



Appendix 4: Permission to conduct research in compliance with Covid-19



RESEARCH PERMISSION SUB-COMMITTEE (RPSC) OF THE SENATE
RESEARCH, INNOVATION, POSTGRADUATE DEGREES AND
COMMERCIALISATION COMMITTEE (SRIPCC)

27 February 2019 (Date of issue)
24 June 2020 (Date of amendment)

Decision: Research Permission
Approval from 06 February 2019
until 30 June 2021.

Ref #: 2019_RPSC_011_AR
Mr. Lancelord Siphamandla
Mncube
Student #: NCBLAN002
Staff #: N/A

Principal Investigator:
Mr. Lancelord Siphamandla Mncube
Department of Information Systems
Faculty of Commerce
University of Cape Town
ncblan002@myuct.ac.za; 0738724708

Supervisors: Prof Maureen Tanner; tanner@uct.ac.za; 021 650-4345, 0786209418 Prof
Wallace Chigona; wallace.chigona@uct.ac.za; 021 650-4345, 0765204125

**Domestication of open educational resources by academics in an open distance e-
learning institution of South Africa**

Your application regarding permission to conduct research involving UNISA employees, students and data in respect of the above study has been received and was considered by the Research Permission Subcommittee (RPSC) of the UNISA Senate, Research, Innovation, Postgraduate Degrees and Commercialisation Committee (SRIPCC) on 22 February 2019. Furthermore, the application requesting permission to extend the study permission period and to make some amendments to the study was reviewed by the RPSC on 18 June 2020.

It is my pleasure to inform you that permission has been granted for the study. You may:

1. Gain access to the relevant Unisa employees' email addresses by means of the staff directory in order to invite them to participate in the study.



University of South Africa
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www.unisa.ac.za

2. As a principle, the RPSC grants researchers permission to use only one mode of communicating with the prospective participants. As a result, the RPSC cannot grant you permission to use the participants' telephone numbers to contact them.
3. Replace face-to-face interviews with selected Unisa academics and OER champions, with Microsoft Teams interviews.
4. Conduct a focus group discussion with selected Unisa librarians responsible for publishing OER's. During the COVID-19 human interactions restrictions, Microsoft Teams may be used.
5. You may disclose the identity of the university to give the context for the study. The RPSC requests that you must be careful at all times, not to reveal the identity of the university in a manner that could result in reputational damage.

You are requested to submit a report of the study to the Research Permission Subcommittee (RPSC@unisa.ac.za) within 3 months of completion of the study.

The personal information made available to the researcher(s)/gatekeeper(s) will only be used for the advancement of this research project as indicated and for the purpose as described in this permission letter. The researcher(s)/gatekeeper(s) must take all appropriate precautionary measures to protect the personal information given to him/her/them in good faith and it must not be passed on to third parties. The dissemination of research instruments through the use of electronic mail should strictly be through blind copying, so as to protect the participants' right of privacy. The researcher hereby indemnifies UNISA from any claim or action arising from or due to the researcher's breach of his/her information protection obligations.

Note:

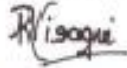
The reference number 2019_RPSC_011_AR should be clearly indicated on all forms of communication with the intended research participants and the Research Permission Subcommittee.



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PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

We would like to wish you well in your research undertaking.

Kind regards,



Dr Retha Visagie – Deputy Chairperson

Email: visagr@unisa.ac.za, Tel: (012) 429-2478

Prof Lessing Labuschagne – Chairperson

Email: labus@unisa.ac.za, Tel: (012) 429-6368



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Appendix 5: Procedural documents for academics

Section A: Introductory letter

	Department of Information Systems Leslie Commerce Building Engineering Mall, Upper Campus OR Private Bag X3 - Rondebosch - 7701 Tel: +27 (0) 73 872 4708 Fax: +27 (0) 21650 2280 Internet: http://www.commerce.uct.ac.za/informationssystemsf/

Dear Prospective Participant

My name is Siphamandla Mncube. I am conducting research with my supervisors Prof Maureen Tanner (Associate Professor) and Prof Wallace Chigona (Full Professor) in the Department of Information Systems, studying towards a PHD at the University of Cape Town in the Faculty of Commerce and specializing in Information Systems. I am inviting you to participate in a study entitled '*Domestication of open educational resources by academics in an open distance e-learning institution of South Africa*'.

The information you provide will be used solely for research purposes of completing my PHD. The purpose of this study is to develop a rich, understanding of how academics are domesticating OER in an ODeL institution of South Africa.

You have been selected to participate in this interview because you are an academic at the University of South Africa (an ODeL). As an academic, you are expected to promote, create, adapt, utilise and disseminate OER for your tuition and research. The selection criteria were based on the following ranks: lecturer, senior lecturer, associate professor, and full professor. The main data source of the study will be semi-structured interviews (conducted via Microsoft Teams), which will be used to gather data on the adoption of OER by academics in their daily lives within the institution. The type of questions to be asked are as follows:

- How can academics in an open distance e-learning commodify open educational resources for tuition and research in South Africa?
- How can open distance e-learning academics adopt and develop open educational resources for tuition and research in South Africa?
- What is the role of information and communication technology in the appropriation of open educational resources by open distance e-learning academics in South Africa?

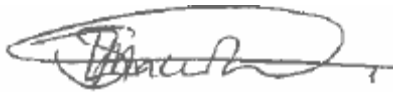
The interviews will be conducted for approximately 30-60 minutes. These semi-structured interviews will be recorded and transcribed after the data collection process.

Participation is voluntary and that there is no penalty or loss of benefit for non-participation. Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be given the information sheet to keep and be asked to sign a written consent form. You are free to withdraw at any time and without giving a reason. Please note it will not be possible to withdraw once you have been interviewed.

I do not foresee that you will experience any negative consequences by participating in this interview. Nevertheless, the researcher undertakes to keep any individual information provided herein confidential. If any injury occurs will be reported to the University of South Africa relevant ethics structure and it will be resolved professionally. Once again, the issue of confidentiality of information will be highly maintained. During the recording process, your name will be not revealed or recorded anywhere. Your answers will be given a pseudonym and you will be referred to in this way in the data, any publications, and theses.

Thank you for taking the time to read this information sheet and for participating in this study. The interviews will be conducted through Microsoft Teams and I will hear from you about a suitable date and time. Thank you for taking the time to read this information sheet and for participating in this study. If you choose to be part of this research project, please sign the consent form below.

Thank you.

A handwritten signature in black ink, appearing to read 'Lancelord Siphamandla Mncube', with a large, stylized loop at the beginning and a horizontal line extending to the right.

Lancelord Siphamandla Mncube

Section B: Participant Consent Form

By signing this participant consent form, you are agreeing to participate in a research project entitled *Domestication of open educational resources by academics in an open distance e-learning institution of South Africa*, conducted by Lancelord Siphamandla Mncube as a prerequisite for the PhD in Information Systems. Lancelord guarantees the confidentiality and anonymity of the details and comments you will provide, which will strictly be used for the research report. Should you wish to contact the researcher for any reasons, please do not hesitate to email him at ncblan002@myuct.ac.za/ sncube54@gmail.com or call him at the following telephone numbers: Mobile 0738724708;

Telephone: 012429 4344

Skype: sncube54.

Microsoft Teams: ncblan002@myuct.ac.za

Participant Name:

College and Department Name:

Signature:

Date:

Section C: The interview procedure

Arrangements
1. Read interview consent form. 2. Confirm date, time, and venue. 3. Make sure that the stationery and the accessories are ready for the interview process. 4. Be on time and keep reminding participants about appointments.
Conducting semi-structured interviews
1. Greet the participants and introduce myself. 2. Briefly describe the interview process. 3. Present the informed consent form (signed, based on the participants' agreements). 4. Reveal information about tape recorders (based on agreement switch it on and start recording). 5. Ask questions based on the interview guide (Ask follow-up questions if necessary). 6. The interviewer will give the participant a chance to ask questions. 7. The interviewer will summarise the key points discussed during the interview. 8. Inform participants about the way forward. 9. Thank the participant for their participation and their time. 10. Switch off the audio recorder.
After interviews
1. Upload recorded data to research laptop (backup)

2. Send a note for the vote of thanks to participants
3. Set updates and time for data analysis
4. Report about results
5. Keep or store data for a minimum of five years as per research ethics policy

Section D: Academics semi-structured interviews

Sub-section A: Demographic information

College: _____

Department: _____

Position: _____

Experience in teaching in an ODeL: _____

What do you teach: _____

Sub-section B: Main research questions

Commodification phase

1. Tell me about your previous views about OER?
2. How OER could be useful to your life?
3. How did you hear about OER previously? And where did you hear from?
4. Who are the drivers of OER in your institution?
5. How did you decide to adopt or develop OER in your tuition and research?
6. How did you begin to adopt or develop OER?
7. What are your perceptions and views about the adoption and development of OER?

Appropriation phase (MTA)

8. How do you use systems differently for OER as designed in your institution?

9. Are there any specific features would you recommend about OER?
10. What things you do not do when adopting or developing OER and why?
11. What are the motivating factors affecting you in adopting or developing OER?
12. What are the hindrances affecting you in the adoption or development of OER?

Conversion phase

13. To whom do you encourage to adopt or develop OER?
14. Are there good or bad things do you mention about OER?
15. What procedures or tactics do you take when marketing OER in an ODeL?

Appendix 6: Procedural documents for OER Champions

Section A: Introductory letter

	Department of Information Systems Leslie Commerce Building Engineering Mall, Upper Campus OR Private Bag X3 - Rondebosch - 7701 Tel: +27 (0) 73 872 4708 Fax: +27 (0) 21650 2280 Internet: http://www.commerce.uct.ac.za/informationssystem/

Dear Prospective Participant

My name is Lancelord Siphamandla Mncube, I am conducting research with my supervisors Prof Maureen Tanner and Prof Wallace Chigona in the Department of Information Systems, studying towards a PhD at the University of Cape Town in the Faculty of Commerce and specialising in Information Systems. I have got funding from National Institute for the Humanities and Social Sciences and this funding helps the researcher to complete PHD. I am inviting you to participate in a study entitled ***‘Domestication of open educational resources by academics in an open distance e-learning institution of South Africa’***.

The information you provide will be used solely for research purposes of completing my PHD. The purpose of this study is to develop a rich, understanding of how academics are domesticating OER in an ODeL of South Africa. You have been selected to participate in this interview because you are an OER champion at the University of South Africa (an ODeL). As an OER

Champion, you are expected to motivate and influence academic staff to develop and adopt OER for your tuition and research. The main data source of the study will be semi-structured interviews, which will be used to gather data on the domestication of OER by academics in their daily lives within the institution. The type of questions to ask are as follows:

- How can an open distance e-learning promote the use of open educational resources in South Africa?

The interviews will be conducted for approximately 30-60 minutes. These semi-structured interviews will be recorded and transcribed after the data collection process. Participation is voluntary and that there is no penalty or loss of benefit for non-participation. Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be given the information sheet to keep and be asked to sign a written consent form. You are free to withdraw at any time and without giving a reason. Please note it will not be possible to withdraw once you have interviewed.

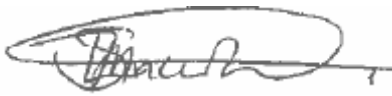
I do not foresee that you will experience any negative consequences by participating in this interview. Nevertheless, the researcher undertakes to keep any individual information provided herein confidential. If any injury occurs will be reported to the University of South Africa relevant ethics structure and it will be resolved professionally. Once again, the issue of confidentiality of information will be highly maintained. During the recording process, your name will be not discovered or recorded anywhere. Your answers will be given a pseudonym and you will be referred to in this way in the data, any publications, and theses. Your data will be kept confidential and anonymous data may be used for the research report, journal articles, and conference proceedings.

The records will be kept for five years for completing a PHD for study purposes thereafter the data will be deposited into a central repository for future use as required by the NRF that research data must be accessible to other researchers when they want to use it. There will be no costs incurred by the participants. This study has received written approval from two institutions such as the Research Ethics Review Committee of the University of Cape Town and the Research Ethics committee at Unisa. Copies of the approval letter/s can be obtained from the

researcher if you so wish. If you would like to be informed of the final research findings, please contact Lancelord Siphamandla Mncube on 0788724708 or ncblan002@myuct.ac.za.

Thank you for taking the time to read this information sheet and for participating in this study. If you choose to be part of this research project, please sign the consent form below.

Thank you.

A handwritten signature in black ink, appearing to read 'L. Mncube', with a large, sweeping loop at the end.

Lancelord Siphamandla Mncube

Section B: Participant Consent Form

By signing this participant consent form, you are agreeing to participate in a research project entitled *Domestication of open educational resources by academics in an open distance e-learning institution of South Africa*, conducted by Lancelord Siphamandla Mncube as a prerequisite for the PhD in Information Systems. Lancelord guarantees the confidentiality and anonymity of the details and comments you will provide, which will strictly be used for the research report. Should you wish to contact the researcher for any reasons, please do not hesitate to email him at ncblan002@myuct.ac.za/ sncube54@gmail.com or call him at the following telephone numbers: Mobile 0738724708;

Telephone: 012429 4344

Skype: sncube54.

Microsoft Teams: ncblan002@myuct.ac.za

Participant Name:

College and Department Name:

Signature:

Date:

Section C: OER Champion semi-structured interviews

Sub-section A: Demographic information

College: _____

Department: _____

Position: _____

Experience in an ODeL: _____

Sub-section B: interview schedule

Promotion and awareness

- How do you promote OER in your college?
- How do you enforce academics to integrate, access, use and disseminate OER in an ODeL?
- Do you think your college has all the necessary resources to drive OER initiatives and, if so, why?
- What is the significance of OER for tuition and research in an ODeL?
- How are OER developed and disseminated in your college?

Technology-as-designed

- In what ways are the systems and technology play role in enabling academics when adopting OER for their tuition and research?

Embedding of OER in academic routine

- How are OER introduced to academics to enhance tuition and research?

- How and to what extent are academics encouraged to adopt and develop OER in their module content within the ODeL?
- Do academics encourage the dissemination of OER in their module content within the ODeL? and Why?
- What do you think can motivate academics to keep on integrating, accessing, utilising, and disseminating OER for enhancing tuition and research?

Appendix 7: Procedural documents for Librarian

Section A: Introductory letter

	Department of Information Systems Leslie Commerce Building Engineering Mall, Upper Campus OR Private Bag X3 - Rondebosch - 7701 Tel: +27 (0) 73 872 4708 Fax: +27 (0) 21650 2280 Internet: http://www.commerce.uct.ac.za/informationssystem/

Dear Prospective Participant

My name is Lancelord Siphamandla Mncube (PHD student) and I am researching with my supervisors Prof Maureen Tanner and Prof Wallace Chigona in the Department of Information Systems. I am studying towards a PHD at the University of Cape Town in the Faculty of Commerce and Specialising in Information Systems. The study is funded by the National Institute for the Humanities and Social Sciences and this funding enables the researcher to complete PHD. I am inviting you to participate in a study entitled ***Domestication of open educational resources by academics in an open distance e-learning institution of South Africa.***

The information you provide will be used solely for research purposes and completing my PHD. The purpose of this study is to develop a rich, understanding of how academics are domesticating OER in an ODeL of South Africa. You have been selected to participate in this interview

because you are a Librarian at the Unisa. You are responsible for publishing OER which is created by academics at Unisa.

The main data source of the study will be focus group discussions, which will be used to gather data on the domestication of OER by academics in their daily lives within the institution. The type of questions to ask are as follows:

- How can an open distance e-learning promote the use of open educational resources in South Africa?

The interview will be conducted for approximately 30-60 minutes. The focus group interview will be recorded and transcribed after the data collection process. Participation is voluntary and that there is no penalty or loss of benefit for non-participation. Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a written consent form. You are free to withdraw at any time and without giving a reason. Please note it will not be possible to withdraw once you have interviewed.

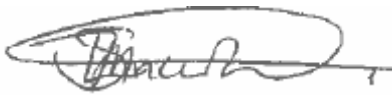
I do not foresee that you will experience any negative consequences by participating in this focus group interview. The researcher is aware of focus group interview issues concerning anonymity and confidentiality. The researcher will ensure that do not disclose identifiable information about participants and try to protect the identity of research participants through various processes designed to anonymize them. Nevertheless, the researcher undertakes to keep any individual information provided herein confidential. If any injury occurs will be reported to the University of South Africa relevant ethics structure and it will be resolved professionally.

Once again, the issue of confidentiality of information will be highly maintained. During the recording process, your name will be not disclose or recorded anywhere. Your answers will be given a pseudonym and you will be referred to in this way in the data, any publications, and theses. Your answers may be reviewed by people responsible for making sure that research is done properly, including the transcriber, external coder, and members of the Research Ethics Review Committee. Otherwise, records that identify you will be available only to people

working on the study unless you permit other people to see the records. Your data will be kept confidential and anonymous data may be used for a research report, journal articles, and conference proceedings.

Thank you for taking the time to read this information sheet and for participating in this study. If you choose to be part of this research project, please sign the consent form below.

Kindly regards,

A handwritten signature in black ink, appearing to read 'Lancelord Siphamandla Mncube', with a large, sweeping initial 'L' and a horizontal line extending to the right.

Lancelord Siphamandla Mncube

Section B: Participant Consent Form

By signing this participant consent form, you are agreeing to participate in a research project entitled *Domestication of open educational resources by academics in an open distance e-learning institution of South Africa*, conducted by Lancelord Siphamandla Mncube as a prerequisite for the PhD in Information Systems. Lancelord guarantees the confidentiality and anonymity of the details and comments you will provide, which will strictly be used for the research report. Should you wish to contact the researcher for any reasons, please do not hesitate to email him at ncblan002@myuct.ac.za/ sncube54@gmail.com or call him at the following telephone numbers: Mobile 0738724708;

Telephone: 012429 4344

Skype: sncube54.

Microsoft Teams: ncblan002@myuct.ac.za

Participant Name:

College and Department Name:

Signature:

Date:

Section C: Librarian semi-structured interview

Sub-section A: Demography information

Position: _____

Section: _____

Sub-section B: Interview schedule

1. What is your role to promote OER in an ODeL institution?
2. What are the mechanisms do you use to promote OER for lecturers?
3. What are the challenges you faced when processing OER?
4. What is the necessity of copyright for OER?
5. How technology and social media are playing role in OER?

Appendix 8: Records of study of participants

No.	College	Department	Position	Work experience (years)	Module offering	Interview date
1	CAES	Environmental Sciences	Lecturer	7	Climate mitigation	13 July 2020
2	CAES	Environmental Sciences	Lecturer	7	Horticulture	27 July 2020
3	CAES	Environmental Sciences	Lecturer	4	Soil science	27 July 2020
4	CAES	Environmental Sciences	Lecturer	7	Ecology conversation	03 August 2020
5	CAES	Environmental Sciences	Lecturer	16	Environment al geology	14 July 2020
6	CAS	Accounting	Senior Lecturer	10	Accounting	12 September 2019
7	CAS	Accounting	Senior Lecturer	1	Finance	12 September 2019
8	CAS	Accounting	Junior Lecturer	1	Accounting	17 September 2019

9	CEMS	Marketing	Lecturer	6	Marketing	02 April 2019
10	CEMS	Finance, risk management & Banking	Lecturer	4	Risk management	09 September 2019
11	CEMS	Banking	Junior Lecturer	3	Banking	16 September 2019
12	CEMS	Insurance	Lecturer	2	Insurance	16 September 2019
13	CEMS	Finance, risk management & Banking	Senior Lecturer	8	Risk	17 September 2019
14	CEMS	Business management	Professor	25	Research	03 June 2020
15	CEMS	Business management	Lecturer	4	Business management	30 July 2020
16	CGS	IODL	Researchers	5	Research	11 April 2019
17	CGS	IODL	Researchers	5	Research	11 April 2019
18	CGS	Institutional support	Senior Lecturer	12	Academic support programmes	11 August 2020

19	CHS	History	Lecturer	4	History	28 March 2019
20	CHS	Arts	Junior Lecturer	1	Cataloguing	29 March 2019
21	CHS	Sociology	Senior Lecturer	4	Sociology	04 April 2019
22	CHS	Linguistics: Modern Language	Lecturer	18	Chinese	11 April 2019
23	CHS	Communicatio n Science	Lecturer	9	Media Studies	10 April 2019
24	CHS	Anthropology & Archaeology	Lecturer	4	Anthropolog y	03 June 2020
25	CHS	Psychology	Lecturer	3	Psychology	11 June 2020
26	CHS	African Languages	Senior Lecturer	10	IsiZulu	30 July 2020
27	CHS	Communicatio n Science	Lecturer	10	Media studies	04 August 2020
28	CHS	English studies	Senior Lecturer	20	English	06 August 2020

29	CSET	Information Systems	Senior Lecturer	10	Database's modules	05 April 2019
30	CSET	Computing	Lecturer	2	Programming	03 June 2020
31	CSET	Physics	Professor	7	Mechanics	04 June 2020
32	CSET	Information systems	Lecturer	7	Databases management	05 June 2020
33	CSET	Information Systems	Professor	12	Software engineering	09 July 2020
34	CSET	Mechanical industrial engineering	Lecturer	3	Engineering drawing	06 August 2020
35	Education	Leadership & Management	Professor	16	Education	11 April 2019
36	Education	Science Education	Professor	2	Education	02 August 2019
37	Education	Curriculum & Instruction	Professor	28	Education	13 September 2019
38	Education	Educational management	Professor	7	School Management	12 June 2020
39	Law	Police practice	Senior	8	Forensic	05 June 2020

			Lecturer		Science	
40	Law	Jurisprudence	Professor	14	Professional ethics	16 July 2020
41	Law	Police practice	Senior Lecturer	30	Police practice	03 August 2020
42	Law	Criminology	Senior Lecturer	9	Security science	11 August 2020
Focus groups interviews						
43	CGS	Lecturers x 2	4 years 5 years	Face to face	Research and supervision	28 March 2019
44	CEMS	Lecturers x 2	33 years 33 years	Microsoft Teams	Economics	10 July 2020
OER Champions						
45	CHS	Directorate Teaching and Learning	34 years	Face to face	26m25s	09 September 2019
46	CGS	Institutional Open Distance Learning (IODL)	20 years	Face to face	26m44s	05 April 2019
47	CAS	Directorate	23 years	Face to face	28m34s	01 April 2019

48	CSET	Directorate Teaching and Learning	25 years	Microsoft teams	31m32s	26 June 2020
49	CEMS	Business Management	25 years	Microsoft Teams	37m48s	28 June 2020
OER Librarian						
50	Library	Institutional repository	20 years	Face to face	35m16s	10 April 2019

Appendix 9: Participants' interview records and sessions

No.	College	Naming of participants	Work experience	Mode of interview	Duration of the interview (minutes : seconds)	Interview date
1	CHS	Lecture 1	4 years	Face to face	30:20	28 March 2019
2	CHS	Junior Lecturer 1	1 year	Face to face	21:18	29 March 2019
3	CHS	Senior Lecturer 1	4 years	Face to face	41:49	04 April 2019
4	CHS	Lecturer 2	18 years	Face to face	32:49	11 April 2019
5	CHS	Lecturer 3	9 years	Face to face	46:04	10 April 2019
6	CSET	Senior Lecturer2	10 years	Face to face	25:03	05 April 2019
7	Education	Professor 1	16 years	Face to	17:17	11 April 2019

				face		
8	Education	Professor 2	28 years	Face to face	39:36	13 September 2019
9	Education	Professor 3	4 years	Face to face	34:82	11 August 2019
10	CGS	Lecturer 4	5 years	Face to face	25:32	11 April 2019
11	CGS	Lecturer 5	5 years	Face to face	30:41	11 April 2019
12	CEMS	Lecturer 6	6 years	Face to face	42:32	02 April 2019
13	CEMS	Lecturer 7	4 years	Face to face	24:47	09 September 2019
14	CEMS	Junior Lecturer 2	3 years	Face to face	25:26	16 September 2019
15	CEMS	Lecturer 8	2 years	Face to face	43:59	16 September 2019
16	CEMS	Senior Lecturer 3	8 years	Face to face	16:52	17 September 2019
17	CAS	Senior Lecturer 4	10 years	Face to face	28:11	12 September 2019
18	CAS	Senior	1 years	Face to	26:05	12 September 2019

		Lecturer 5		face		
19	CAS	Junior Lecturer 3	1 years	Face to face	19:10	17 September 2019
20	CSET	Lecturer 9	2 years	Microsoft Teams	42:43	03 June 2020
21	CHS	Lecturer 10	4 years	Microsoft Teams	31:42	03 June 2020
22	CEMS	Professor 4	25 years	Microsoft Teams	37:48	03 June 2020
23	CSET	Professor 5	7 years	Microsoft Teams	32:05	04 June 2020
24	Law	Senior Lecturer 6	8 years	Microsoft Teams	25:11	05 June 2020
25	CSET	Lecturer 11	7 years	Microsoft Teams	36:46	05 June 2020
26	CEMS	Lecturer 12	4 years	Microsoft Teams	Email response	30 July 2020
27	CHS	Lecturer 13	3 years	Microsoft Teams	32:52	11 June 2020
28	Education	Professor 6	7 years	Microsoft Teams	27:33	12 June 2020
29	CSET	Professor 7	12 years	Microsoft	1:36	09 July 2020

				Teams		
30	CAES	Lecturer 14	7 years	Microsoft teams	21:42	13 July 2020
31	CAES	Lecturer 15	16 years	Microsoft Teams	57:27	14 July 2020
32	Law	Professor 8	14 years	Microsoft Teams	36:37	16 July 2020
33	CAES	Lecturer16	7 years	Microsoft Teams	29:52	27 July 2020
34	CAES	Lecturer 17	4 years	Microsoft Teams	30:33	27 July 2020
35	Law	Senior Lecturer 7	30 years	Microsoft Teams	55:31	03 August 2020
36	CAES	Lecturer 18	7 years	Microsoft Teams	31:47	03 August 2020
37	CHS	Senior Lecturer 8	10 years	Microsoft Teams	23:22	30 July 2020
38	CHS	Lecturer 19	10 years	Microsoft Teams	35:43	04 August 2020
39	CSET	Lecturer 20	3 years	Microsoft Teams	34:40	06 August 2020
40	CHS	Senior	20 years	Microsoft	39:25	06 August 2020

		Lecturer 9		Teams		
41	Law	Senior Lecturer 10	9 years	Microsoft Teams	42:15	11 August 2020
42	CGS	Senior Lecturer 11	12 years	Microsoft Teams	30:57	11 August 2020

Appendix 10: Recommended guidelines for adoption and development of OER

AGENCIES	THEORETICAL INFLUENCE	INITIATION ACTIONS	DESCRIPTION AND EXPECTATIONS (EXTRACTED FROM EMPIRICAL FINDINGS):	OUTCOMES
	Commodification approach			
Institution management	Gather academics' (users') experiences	Prior knowledge	Acquire broader understanding of user knowledge.	Gathering knowledge about OER
		Background information	Acquire knowledge based on teaching offering, disciplines and fields	Gathering knowledge about OER
		Users' perceptions and value of OER	Acquire users' perceptions about the phenomenon	Attitude towards OER
		Purpose of OER	Why are academics interested in adopting and developing	Benefit target audience

AGENCIES	THEORETICAL INFLUENCE	INITIATION ACTIONS	DESCRIPTION AND EXPECTATIONS (EXTRACTED FROM EMPIRICAL FINDINGS):	OUTCOMES
			OER?	
	Induction (onboarding)	Training and skills	The institution must provide OER training to new academics. Train academics on creative commons and copyrights.	Increased knowledge and skills
	Appropriation approach			
Academics	Enablers	Information systems	Ensure that the relevant systems and infrastructure and platforms are in place to support adoption and development.	Users can adapt and develop OER
		Shadow IT	Empower users to choose the relevant system that will suit	Avoid ecosystem IT

AGENCIES	THEORETICAL INFLUENCE	INITIATION ACTIONS	DESCRIPTION AND EXPECTATIONS (EXTRACTED FROM EMPIRICAL FINDINGS):	OUTCOMES
			their existing needs. Freedom to choose the relevant systems.	limitations
		End-user support	When users encounter technical difficulties with systems, they should know which ICT specialist to consult for assistance.	Enhance user support
Academics	Pedagogical requirements	Lesson objective	OER should be selected to meet the learning objectives and these objectives should inform the choice of OER in a specific module.	Achieve teaching objective/s

AGENCIES	THEORETICAL INFLUENCE	INITIATION ACTIONS	DESCRIPTION AND EXPECTATIONS (EXTRACTED FROM EMPIRICAL FINDINGS):	OUTCOMES
		SAQA framework	The choice of OER should be aligned with SAQA requirements.	Remain relevant without overloading students with information
		Start with the adoption or development of OER	At this stage, when the system, pedagogy, SAQA standards and lesson objective have been addressed, the OER development begins.	Ease usage and confidence
		Creative commons	Academics should adhere to ethical standards when developing OER. Academics should stipulate the specific CC for copyright.	Protection of knowledge

AGENCIES	THEORETICAL INFLUENCE	INITIATION ACTIONS	DESCRIPTION AND EXPECTATIONS (EXTRACTED FROM EMPIRICAL FINDINGS):	OUTCOMES
	e-learning approach	Quality assurance	Academic institutions should establish a committee to ensure quality assurance for OER development.	Adherence to ethics and quality
		Web platforms	The developed OER must be suitable for any web platform.	Online realities
		Schools' common platforms	The department, school and college must have a common platform for the storage of internally developed OER.	Online realities
	Conversion approach			
Institution management	Promotion of OER	Social capital	Individuals with high social capital to motivate OER	Increased capacity

AGENCIES	THEORETICAL INFLUENCE	INITIATION ACTIONS	DESCRIPTION AND EXPECTATIONS (EXTRACTED FROM EMPIRICAL FINDINGS):	OUTCOMES
		Incentives	Developers should be made aware of available incentives to encourage the use of OER.	Increased capacity
Academics, library and institution management	Final process of dissemination	Institutional repository	The central institutional repository for all OER developed by academics should be easily available.	Increased access and collaboration
		Shadow IT	Academics should be allowed to disseminate OER via preferred shadow IT.	Enhanced visibility

Appendix 11: Codebook

Key theoretical concepts	Definitions	Empirical observation	Source of empirical observation
Commodification	Describe as the process used by academics to give value to the adoption of open educational resources in their context	• Prior knowledge of OER. • Practices – adoption and framing of OER	• Academics in ODeL
	At this stage, the values of OER were marketed by other users who have used it before	• The informants of academics about OER	• Academics in ODeL • OER champions
Appropriation of technology			
Appropriation	Enable to examine the use of technology when dealing with OER in an academics space (virtual learning environment).	• Systems in place and role they play in usage and adoption	• Academics in ODeL
	Cover most of the issues involved when investigating how open	• Reasonable cost to OER	• Academics in ODeL

	educational resources become a part of academics in their daily lives.	• Convenience to technological products • Usefulness of OER • Training of academics	• OER Champions
Dis-appropriation	dis-appropriation is concerned about what factors course in to declining, hindering usage and adoption of open educational resources by academics	• Emerging obstacles • Reception • Accessibility and usability • Policy–existence	• Academics in ODeL
Conversion	In this stage academics have gained the development skills, capabilities, literacies about the open educational resources, they can share and inform others about the resources.	• marketing of developed and adopted open educational resources to other relevant users • New emerging features	• Academics in ODeL • OER Champions • Librarian
	deals about publicizing of the open educational		

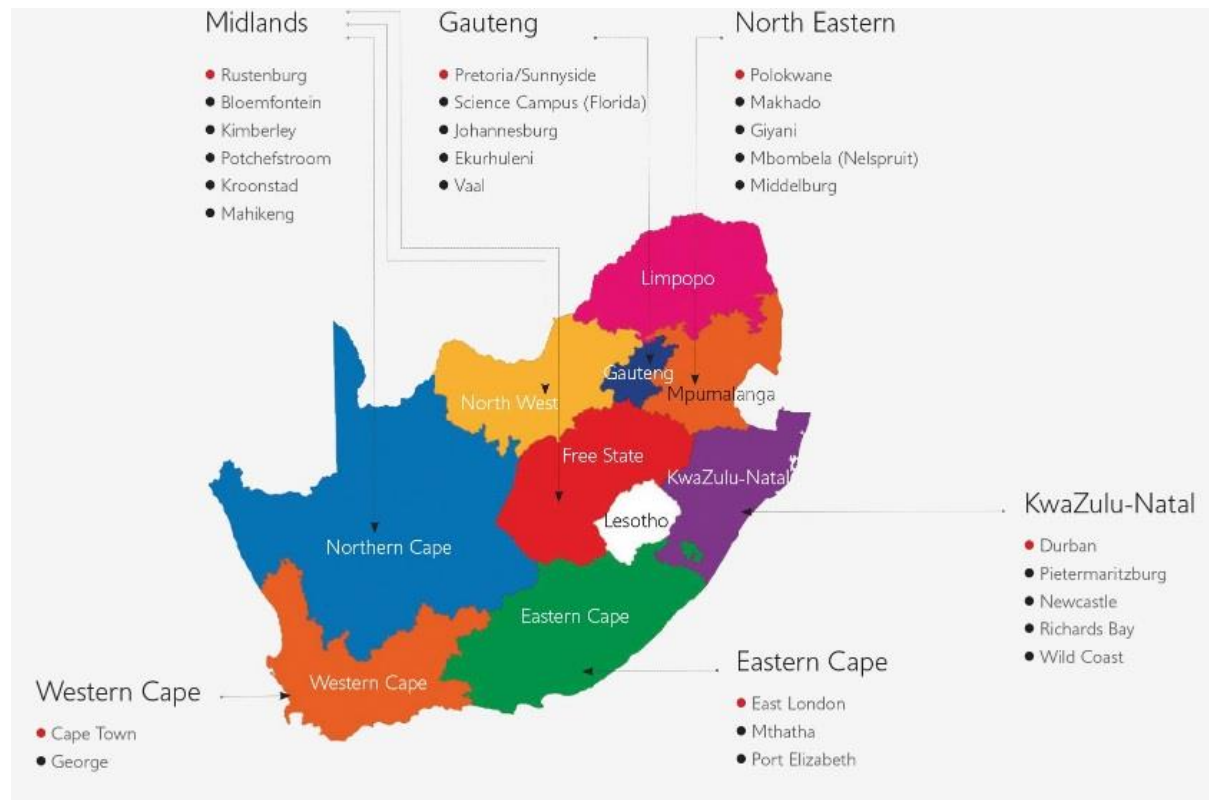
	resources to students and public domain		

Appendix 12: List of all universities in South Africa (HESA, 2016)

Classification	Institution
Comprehensive University	Nelson Mandela Metropolitan University
	University of Fort Hare
	University of Johannesburg
	University of the Free State
	University of the Western Cape
	University of Venda
	University of Zululand
	Walter Sisulu University
	University of South Africa <i>(can be classified as an ODeL University)</i>
Traditional University	North-West University
	Rhodes University
	Sefako Makgatho Health Sciences University
	Stellenbosch University
	University of Cape Town

	University of KwaZulu-Natal
	University of Limpopo
	University of Pretoria
	University of the Witwatersrand
University of Technology	Cape Peninsula University of Technology
	Central University of Technology, Free State
	Durban University of Technology
	Mangosuthu University of Technology
	Sol Plaatje University
	Tshwane University of Technology
	University of Mpumalanga
	Vaal University of Technology

Appendix 13: Unisa campuses in a South African map



Appendix 14: Unisa colleges, schools, and departments

College	School	Departments
Accounting Sciences	School of Accountancy	Department of Auditing
		Department of Financial Accounting
		Department of Management Accounting
		Department of Taxation
	School of Applied Accountancy	Department of Financial Governance
		Department of Financial intelligence

College	School	Departments
College of Agriculture & Environmental Sciences	School of Agriculture and Life Sciences	Department of Agriculture and Animal Sciences
		Department of Life & Consumer Sciences
	School of Ecological & Human Sustainability	Department of Environmental Sciences
		Department of Geography

College	School	Departments
College of Economic & Management Sciences	School of Economic and Financial Sciences	Department of Decision Sciences
		Department of Economics
		Department of Finance, Risk Management and Banking
	School of Management Sciences	Department of Business Management
		Department of Human Resources Management
		Department of Industrial and Organizational Psychology
		Department of Marketing and Retail
	School of Public and Operations Management	Department of Applied Management
		Department of Public Administration & Management
		Department of Operations Management

College	School	Departments
College of Education	School of Educational Studies	Department of Adult Basic Education
		Department of Educational Foundations
		Department of Psychology of Education
		Department of Inclusive Education
		Department of Educational Leadership and Management
	School of Teacher Education	Department of Mathematics Education
		Department of Science and Technology Education
		Department of Language Education, Arts and Culture
		Department of Curriculum and Instructional Studies
		Department of Early Childhood Education

College	School	Departments
College of Human Sciences	School of Arts	Department of African Languages
		Department of Afrikaans & Theory of Literature
		Department of Art and Music
		Department of Communication Science
		Department of English Studies
		Department of Information Science
		Department of Linguistics & Modern Languages
	School of Humanities	Department of Anthropology and Archaeology
		Department of Biblical and Ancient Studies
		Department of Christian Spirituality, Church History and Missiology
		Department of History
		Department of Philosophy, Practical and Systematic Theology
		Department of Religious Studies and Arabic

	School of Social Sciences	Department of Development Studies
		Department of Health Studies
		Department of Political Sciences
		Department of Psychology
		Department of Social worker
		Department of Sociology

College	School	Departments
College of Law	School of Law	Department of Criminal and Procedural law
		Department of Jurisprudence
		Department of Mercantile Law
		Department of Private Law
		Department of Public, Constitutional and International Law
	School of Criminal Justice	Department of Criminology and Security Science
		Correctional Management
		Police Practice

College	School	Departments
College of Science, Engineering & Technology	School of Science	Department of Chemistry
		Department of Mathematical Sciences
		Department of Physics
		Department of Statistics
	School of Engineering	Department of Civil and Chemical Engineering
		Department of Mechanical and Industrial Engineering
		Department of Electrical and Mining Engineering
	School of Computing	Department of Information Systems
		Department of Computer Science

College	Departments
Postgraduate Studies	Masters and Doctoral applications and registrations
	Masters and Doctoral Dissertation and Thesis examination process
	Postgraduate Diplomas & Honours applications and Registrations

Appendix 15: The different Unisa colleges with their offering

College classification	Offerings
College of Accounting Sciences (CAS)	“Offers several qualifications endorsed by professional financial bodies both nationally and internationally and produces high-quality graduates for the various accounting professions” (Unisa website, 2020:np).
College of Economics and Management Sciences (CEMS)	“The largest provider of business education in Africa and one of the largest in the world. Unisa’s Graduate School of Business Leadership (SBL) is an autonomous academic department within CEMS” (Unisa website, 2020:np).
College of Human Sciences (CHS)	“Offers high-quality general academic and career-focused programs in the arts and humanities, social sciences, education, religion and theology” (Unisa website, 2020:np).
College of Science, Engineering, and Technology (CSET)	“Offers general academic and career-oriented degrees, diplomas and certificates in a range of science, engineering and technology disciplines” (Unisa website, 2020:np).
College of Agriculture and Environmental Sciences (CAES)	“Specialises in education and training in food production and the sustainable use and management of Africa’s natural resources” (Unisa website, 2020:np)
College of Education (CEDU)	“Responsible for the professional education and training of close to 50% of all teachers in South Africa” (Unisa website, 2020:np)
College of Law (CLAW)	“Confers professional qualifications that provide access to the legal profession, as well as various career-based qualifications in subjects such as police practice” (Unisa website, 2020:np).
College of Graduate Studies (CGS)	“Endeavours to increase Unisa’s postgraduate profile and to improve the performance of master’s and doctoral students” (Unisa website, 2020:np).

Appendix 16: Unisa OER strategy

The logo features the word "Unisa" in a dark blue serif font, with the word "Open" in a large, light blue, 3D-style sans-serif font below it. The background is a bright blue sky with white, fluffy clouds.

**The University of South Africa (Unisa) has approved an OER
(Open Education Resources) strategy!**

It's official! Unisa (University of South Africa) has approved its OER strategy. Unisa is a university in the midst of transformation at several levels. Many historic processes, including the development of teaching materials, are being disrupted by advances in ICT. The approval of the OER strategy demonstrates that Unisa has realised that the vast quantities of content and teaching materials, especially openly licensed content, have significant potential to contribute to the quality of the teaching and learning experience of its students. This signifies that Open Education Resources (OER) can no longer be considered as marginal, socially acceptable, "nice-to-have" materials. Their use needs to be integrated into mainstream institutional processes if their true potential is to be harnessed in the process of pedagogical transformation. As a response, Unisa has approved an OER strategy that will guide the institution in terms of its use of OER, licensing of teaching and learning materials, and the management of its intellectual property.

The approval of the OER strategy also demonstrates Unisa's commitment to align itself with the current educational landscape and to give attention to the imperatives of the *White Paper for Post-School Education and Training in South Africa*. The White Paper sets out strategies to improve the capacity of the post-school education and training system to meet the country's needs. In terms of these policy objectives, OER are given a high priority for the future. In terms of the open learning imperatives laid out in the White Paper, the Department of Higher Education and Training "expects that providers will engage and collaborate in sharing infrastructure, learning resources and staff capacity, to contribute to improved access, quality and cost-effectiveness of provision" (Dr Nzimande, Minister of Higher Education and Training). Unisa, through the strategic priorities included in the OER strategy, has initiated an engagement with the idea of harnessing existing resources as well as subsequently releasing materials under open licenses.

Unisa's approved OER strategy encompasses five priorities. The initial strategy focuses on

managing teaching and learning material, harnessing OER for teaching and learning, and the subsequent releasing of openly-licensed materials, as well as contributing towards global knowledge and the review of institutional policies to incorporate values of openness.

The strategic priorities are as follows:

1. Development of an effective management system for intellectual property, including information about copyright status

In terms of this priority, we plan to locate all intellectual assets in the form of teaching and learning materials, audit the content for copyright infringements, rectify these and then centralise storage in line with an electronic content management system.

2. Establishment of an open licensing framework

In line with a gap also identified in the aforementioned White Paper, we will develop a framework for the licensing of Unisa's intellectual assets, develop guidelines for choice and use of licences, communicate with and train stakeholders. We aim to create a copyright office at Unisa to attend to copyright issues and queries.

3. Systematic integration of high quality, available OER as appropriate into courses and their subsequent release for use by others.

Unisa can benefit by shifting from authoring and producing all its own materials to harnessing what already exists. In terms of this priority, change in practice will be stimulated and supported through changing perceptions, pedagogic approaches and practice.

4. Contribution to the global OER repository of resources.

This priority makes provision for Unisa to continue contributing to OERu as well as considering the development of MOOCs. Unisa, as an ODL institution, is well placed to participate in open online learning from an African perspective, where there is a shortage of context-specific resources. This priority will enable Unisa to find a relevant and suitable space in the global open education community.

5. Evaluation and review of institutional policies to incorporate OER values and processes.

Unisa has many policies and procedures that relate to teaching and learning that are outdated in terms of the new business model. When these policies (inter alia Curriculum Policy, ODL policy, Prescribing books, Tuition Policy and Framework for the implementation of a team approach to curriculum and learning development at Unisa) are revised, it will be imperative that they give support to the aspects of licensing of study materials and harnessing of OER as contemplated in the strategy and ensuing consultations.

For the full OER strategy [click here](#).

You are welcome to contact Kerry de Hart (OER coordinator in the Office of the Pro-Vice-Chancellor) on unisaopen@unisa.ac.za for more information or if you would like to be involved in the exciting developments around OERs at Unisa (www.unisa.ac.za/oer)



Appendix 17: Associated theories to the study

The exploration of various potential theories is appropriate for any study to ensure a thorough investigation of the particular phenomenon as a theory could drive the study in a specific direction. For example, some theories may channel research towards adopting a particular approach - either qualitative or quantitative. In addition, all theories and models may play a major role in yielding to different results for research. To decide on the most relevant theories, the researcher categorised all potential theories in groups. In Figure 3.2 **Category A** encompasses the most relevant theories opted to drive the study: the Domestication Theory and the Model of Technology Appropriation. **Category B** encompasses the Structuration Theory which was considered worthy because it focuses on structures and dual structures. Lastly, in **Category C** an illustration of investigated theories is given that includes the TAM, the TPB and the ISSM. Grouping was done based on the fact that these theories share similar variables and are concerned about how IT is adopted and used (Rad, Nilashi & Dahlan, 2018).

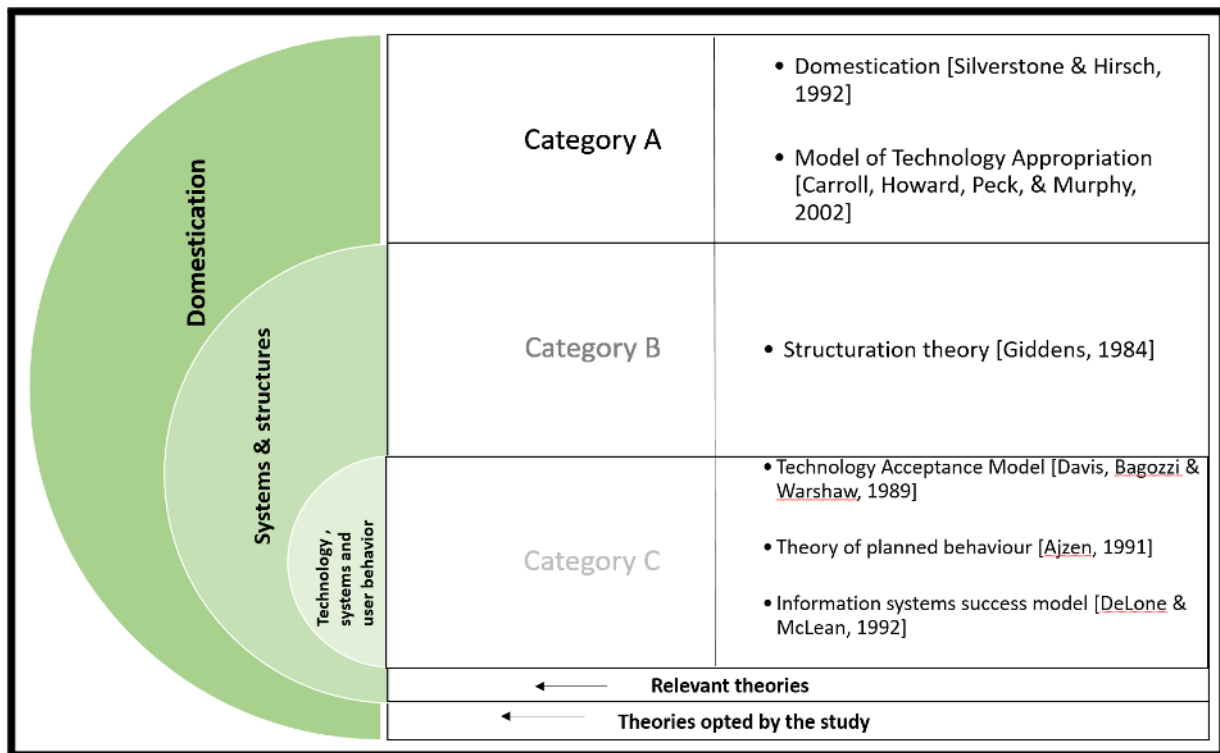


Figure 3.4: Categories of associated theories and models

A. Technology Acceptance Model

The TAM was initially developed by Davis in 1986. The initial version was revised by Davis *et al.* in 1989. In 1993 Davis revisited this model in terms of strengthening it and later it was updated by Venkatesh and Davis in 1996. The strengthening or extension of the model has been a continuous process. To date many extensions of TAM have been proposed by different researchers. TAM gained popularity in the field of information systems and other ICT disciplines in that it enabled researchers to understand acceptance behaviour and the utilisation of technology (Davis, 1989; Davis et al., 1989; Pin & Lin, 2005; Wu & Wang, 2005; Chuttur, 2009; Leong, Ibrahim, Dalvi-Esfahani, Shahbazi & Nilashi, 2018). Figure 4.3 presents the original TAM which consisted of six variables that include external variables; perceived ease of use; perceived usefulness; attitude toward using; behavioural intention to use; and actual system use (Davis et al., 1989).

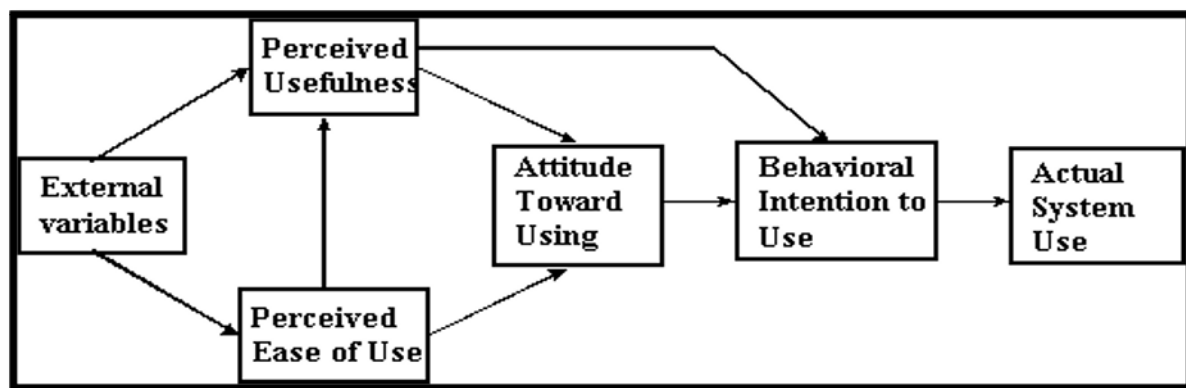


Figure 3.5: Technology Acceptance Model (TAM) (Davis et al., 1989:159)

TAM affords opportunities for researchers to apply it when addressing issues, such as behavioural modelling in technology-mediated contexts (Lim, 2018). It has demonstrated several strengths, particularly around information systems usage and its theory base of social psychology that includes the validity and reliability of its instruments (Elwood, Changchit & Cutshall, 2006). TAM may be used to investigate acceptance in education contexts (Scherer, Siddiq & Tondeur, 2019). For example, it was considered relevant to the context of this study, namely: an ODeL where tuition takes place *via* a learning management system. In TAM's relation to an education

context, application is based on many different factors, such as the adoption of social networks for pedagogy; user behaviour in relation to e-portfolios; teleconferencing; green IT; e-learning; and web 2.0 tools (Park, Rhoads, Hou & Lee, 2014; Persico, Manca & Pozzi, 2014; Acarli & Sağlam, 2015; Akman & Mishra, 2015; Cheng, Chen & Yen, 2015; Leong, et al., 2018). All these aspects are popular in ODeL universities in around the globe. However, that consideration did not qualify TAM to take a lead in this study because the study's interest was in the domestication process of OER by academics.

TAM focuses only on technology use and adoption can, therefore, mean that the whole process of technology adoption and usage is rooted in individual psychology avoiding the need to consider the social structures within which individuals necessarily operate (Adam, Howcroft & Richardson, 2004). Besides that, there are three main reasons that led to the exclusion of TAM from this study. Firstly, TAM is based on the uses and gratification variables that are repetitive in nature and methodologically weak (Ruggiero, 2000; Schepers & Wetzel, 2007). The recent extension of TAM by Taherdoost (2018:2) proposes the “e-service technology acceptance model.” It was noted that all the theories seem to cover electronic services that become a reputation of variables. It was thought that it may be better to advance TAM in multidisciplinary terms where theories from different fields, such as Mathematics, Sociology and Decolonisation, are merged with TAM which may assist in contributing to new knowledge that is relevant in an African context. Secondly, TAM lacks an understanding of how individual beliefs about a technology are constructed; instead, the models start with treating these beliefs as black boxes that simply exist untethered in space and time (Benbasat & Barki, 2007). Thirdly, TAM is weakened by its lack of focus on how perceptions are formed or how they can be manipulated as it was developed for organisational contexts and it is constrained in its consideration of social and cultural factors and influences (Hynes & Richardson, 2009).

Domestication, however, contests a leading perspective of the essentialist assumptions held about technologies used by academics when adopting and using OER in their teaching and research. The Domestication Theory

“enables researchers initially to understand media technology use in the complex structures of everyday life settings, with attention to interpersonal relationships, social background, changes and continuities, but also to the increasingly complex interconnection between different media, and the convergence of different media technologies and media texts” (Hynes & Richardson, 2009:486).

B. Theory of Planned Behaviour

The TPB is a psychological theory which has received considerable attention in the relevant literature (Armitage & Conner, 2001; Fishbein & Ajzen, 2010). The Theory of Planned Behaviour is an extension of the Theory of Reasoned Action (TRA) and focuses on the conditions of planned behaviour (Ajzen & Fishbein, 1980). The behavioral intentions consist of three psychological variables, namely: attitude, subjective norm and perceived behavioral control (Wang, Chu, Deng, Lam & Tang, 2018). Despite psychological variables, this theory has been visibly used in different fields as it has been applied differently in predicting and explaining an extensive range of behaviours, including health-relevant behaviour, like smoking, sexual behaviour, exercise and food choice (Manstead & Parker, 1995; Conner & Sparks, 1996; Godin & Kok, 1996; Conner & Armitage, 1998) as well as walking and cycling behaviour (Bird, Panter, Baker, Jones, Ogilvie & iConnect Consortium, 2018), food supply chain (Giampietri, Verneau, Del Giudice, Carfora & Finco, 2018), cancer education (Heuckmann, Hammann & Asshoff, 2018), communication campaigns (Bélanger-Gravel, Lottinville, Beaurivage, Laferté, Therrien & Gauvin, 2018), swimming lessons (Irwin, O'Callaghan & Glendon, 2018), information systems (Garrison, Rebman Jr, & Kim, 2018) and various other fields. This suggests that most activities conducted by humans have a psychological intervention in all different spheres of life. As Ajzen (1991:188) maintains, “the relative importance of attitude, subjective norm, and perceived behavioural control in the prediction is expected to vary across behaviour and situations”.

Theory of Planned Behaviour has been subject to some criticism as being limiting because it only focuses on three behavioural predictors (Hagger, 2010; Hardeman, Johnston, Johnston, Bonetti, Wareham & Kinmonth, 2002; Sniehotta, Pesseau & Araújo-Soares, 2014). This study

was essentially concerned with human social behaviour but it was also interested in how academics domesticate OER for tuition and research. The TPB-based intention models represent static images of a motivational state and cannot take into consideration dynamic processes surrounding the organization and phenomenon under investigation (Brännback, Krueger, Carsrud & Elfving, 2007). A dynamic theory, such as the Domestication Theory, was deemed more relevant because it caters for dynamic process artefacts, systems, structures, human beings, knowledge and power in particular organisations. The focus is not only on one aspect as is the case with TPB.

The TPB tends to favour a quantitative approach to research as it encourages the development of instruments, such as scales and questionnaires that are mostly used in gathering quantitative data (Fishbein & Ajzen, 2010; Heuckmann et al., 2018). However, this study was an interpretive study that was more concerned about how new interventions, such as OER, are domesticated for tuition in higher education institution. It may have been interesting to use the TPB but because the theory is lacking in terms of relevant domestication variable, it was considered irrelevant. In addition, the TPB would have been too limiting as it only focuses on peoples' behaviour (Ajzen, 2011). The best option was thought to be the use of all three theories, the TAM, the TPB and the Information Systems Model, as it was assumed that they would yield the desired results.

C. Information Systems Success Model

The third model that was considered is the ISSM which consists of six interrelated dimensions of information systems success: system service quality, information quality, information system use, user satisfaction, individual impact and organization impact (DeLone & McLean, 1992). This model is widely implemented in different contexts to determine the usefulness of information systems (Argyropoulou, 2013). It may be used in information systems or virtual learning systems as a descriptive tool because the six dimensions offer possibilities to explore and describe the environment from several perspectives (Laudon & Laudon, 2016). It is of significance in researching OER in the ODeL context as it can provide details related to system quality which involves the speed of data transfer, ease of access, system authenticity,

responsiveness, flexibility and user-friendliness (Mahmoodi, Esmaelzadeh-Saeieh, Lotfi, Eftekhari, Kamrani, Tourzani & Salehi, 2017).

This study was seen as being diverse and it aimed at determining the opinions and perceptions concerning the domestication of OER by academics for the purposes of tuition and research. Therefore, theory was considered to be not as applicable to this research. During the exploration of the ISS model, the researcher learned that it has been overused in the contexts of Information Systems, Information Science, Computer Science and IT, generally. That is one reason why, in this study, the researcher wanted to deviate from other similar studies by employing a different theory that would prevent yielding the same results as those of other studies related to the same information systems phenomenon. This is a significant theory concerning the description of information systems used in an ODeL context and it helps to understand the nature of information systems used in ODeL universities globally.

D. Structuration Theory

The Structuration Theory was developed by Anthony Giddens and published under the title *The Constitution of Society* in 1984. The theory has been highly influential in various fields, such as Social Sciences and Management Sciences as well as Accounting (Englund, Gerdin & Burns, 2011); HIV/AIDS stigma-reduction intervention (Misir, 2015); and in IT (Jones & Karsten, 2008). However, given the pervasiveness of technology in the everyday operation of organizations, especially in the strategy formulated and reality construction in contemporary organizations, some attempts have been made to extend Giddens's ideas by including an explicit IT dimension in terms of social analysis (Walsham, 1993, 2002). This model has been used by a number of researchers in the field of Information Systems who looked at different issues, such as globalisation and IT deployment in developing and developed countries, like India and Britain (Walsham & Sahay, 1999; Nicholson & Sahay, 2001); the dynamics of groupware application (Ngwenyama, 1998); communication and collaboration using IT (Olesen & Myers, 1999); and global virtual team dynamics and effectiveness (Maznevski & Chudoba, 2000). Furthermore, this work by Giddens has been widely cited in many Information Systems studies (Benbasat & Weber 1996; Robey 1996; Jones & Karsten, 2008; Chen & Hirschheim 2004; Hassan & Will,

2006; Mwangi, 2014; Ononiwu, 2015) and it has been successful in producing desired knowledge.

The potential of the Structuration Theory is in helping to increase an understanding of organisations, organising and the organised; it remains to be developed (Pinsonneault, 2003:). It is further suggested that central to IT research is the understanding of how organisational phenomena affect the development and use of technologies and how technologies help to shape organizations. Gregor (2006) believes that the Structuration Theory continues to draw on in a wide range of theoretical and empirical studies in the Information Systems field.

There are three significant Structuration Theory concepts such as structure, system, and structuration. The first is **structure** which is defined as customary rules and resources prepared as belongings of social systems (Giddens, 1989; Rose, 1998; Rose & Hackney, 2003) from which human agents draw and which they reproduce as they act. Jones and Karsten (2008) show that structures are not items that can be directly observed but rather that they are inherent in objects. 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 appears. The second is **system** which refers to reproduced relations between actors, organised as regular social practices (Jones & Karsten, 2008). **Structuration**, the third concept, refers to situations leading to the stability of social transformation of structures and the reproduction of the system which reproduce social systems; it is the production and reproduction of social systems introduced by the interaction of rules and resources (Orlikowski & Robey, 1991).

The Structuration Theory would have been more relevant because it allows the study a complexity of dual structures, dual systems and structuration of a particular domain. This theory is limited in terms of human agency (Pozzebon & Pinsonneault, 2001) and it also lacks an appropriation process as it does not allow the identification of facts concerning what makes users appropriate and dis-appropriate technology within organisations. This study's focus was more on user adoption, utilisation and perception and the only theories that would address that were the Domestication Theory that focuses more on organisational structures from developmental and sociological perspectives (Staber & Sydow, 2002) and the Model of Technology Appropriation.

Domestication Theory has erroneously attributed purposes, reasons and needs for society rather than for individuals (Pozzebon & Pinsonneault, 2001). Although the sociological perspective was considered important, the study attempted to find clarity and ingenuity on how individuals/academics domesticate OER in their tuition and research. It was important to look at how structures enable academics to perform their duties. Lastly, according to the Structuration Theory, the data gathered in the process is analysed and compared across successive periods (Pozzebon & Pinsonneault, 2001). Therefore, the Domestication Theory was deemed most suitable for the study because the user perception enables improvement in new developments.