A critical analysis of the participation of the University of Cape Town community in the advancement of open scholarship: towards a strategy for the promotion of open scholarship

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DECLARATION

I, Lena Nyahodza, hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work or any part of it has been, is being, or is to be submitted for another degree in this or any other university. For the purposes of further research engagement and development, I grant the University of Cape Town a royalty-free, non-exclusive, non-transferable license to publish this thesis in whole or in part in any format.

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DEDICATION

I dedicate this thesis to my late mother, Francescah Loice Sori Nyahodza, for believing in me and for being patient with me, and to my late father, Francis Pamhidza Nyahodza, for being there always, especially after mom's demise. This is also dedicated to my six siblings and all beings who became my support system in my life.

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ABSTRACT

Open scholarship (OS) plays a significant role in improving access to knowledge as it removes cost barriers and copyright restrictions related to published research. As part of the openness movement, OS, particularly open access (OA), emerged in scholarly communication to bring radical change in scientific publishing through making publicly funded research immediately available to the reader at no cost. The University of Cape Town (UCT) has embraced the openness philosophy through establishing OA and research data management policies and has declared in its mission statement the desire to share its resources, including research to support development on the African continent. The objective of this study was to critically analyse UCT community's participation in the advancement of open scholarship to develop a strategy for the promotion of OS.

The study was informed by the transformative worldview and adopted two theories, critical theory and the capability approach (CA) framework. It used a convergent transformative mixed method approach and a case study design to explore the case of OS at UCT. Both quantitative and qualitative data were collected using an online questionnaire completed by 207 academics and researchers; interviews with 10 representatives of faculty research committees, with volunteer researchers from faculties and with six key informants; focus group and individual discussions with 30 Masters students, PhD students and post-doctoral fellows; and, through content analysis of 17 documents. Quantitative data were analysed using both *Excel* and *Strata* while qualitative data were analysed using *NVivo*.

The study found low uptake across the three open scholarship components (open research, open educational resources and open data) that were covered in this study. There was evidence that UCT academics and researchers view open scholarship as critical in supporting human development and social justice, and that they are motivated by social justice imperatives to engage in open scholarship practices. The study found that while there was the provision of OS infrastructure by UCT, funding for article processing charges (APCs) (albeit inadequate), established OA and open data policies, academic promotion at UCT, however, aligns research impact assessment with traditional bibliometrics indicators such as high impact factor of journals, which influence researchers to embrace a closed publishing culture. Lack of inclusion of open scholarship achievements in promotion criteria and inadequate APCs funding have been identified as major contributing factors in academics and researchers' low participation in OS as a social good. Critical theory was useful for engaging a scholarly communication

study within a dominant capitalist society characterised by the commodification of knowledge; and this was evident in this study as the cost barrier has become a hinderance in publishing and in accessing knowledge as some of UCT's knowledge was found behind paywalls. A capability approach framework guided academics and researchers to identify strategies they have adopted to participate in OS and to identify elements they regarded as essential for the development of a strategy to support open scholarship including infrastructure, funding and organisational support. Based on academics and researchers' views of essential elements to support open scholarship and what worked for academics and researchers at UCT, this study proposed a strategy to support OS that could be used as a pilot by universities with similar experiences to those of UCT.

The study recommends motivation of researchers to participate more in green OA through the incentivising of green OA practice for universities that have funding challenges to support gold OA. It also recommends prioritisation of accredited African-based diamond and gold OA access journals and collaboration to raise funds to support gold OA. The challenges experienced by UCT academics and researchers may be common among their peers in Africa and other global south regions, and hence the study recommends piloting, with adjustments as required, of the proposed strategy for purposes of advancing open scholarship. This could ground African researchers at the forefront of research production in Africa, as the continent is still grappling with inequalities of apartheid and colonialism and therefore require access to knowledge to support human development.

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LIST OF ABBREVIATIONS

APCs	Article processing charges
ASNS	Academic Social Network Sites
BOAI	Budapest Open Access Initiative
CA	Capability Approach
CHET	Centre for Higher Education Transformation
CC	Creative Commons
CQ	Critical question
DMP	Data management plan
DHET	Department of Higher Education and Training
DOAB	Directory of Open Access Books
DOAJ	Directory of Open Access Journals
ETDs	Electronic Theses and Dissertations
HIF	High impact factor
HEIs	Higher education institutions
HERANA	Higher Education Research and Advocacy Network in Africa
ICTs	Information and communication technologies
IRs	Institutional repositories
LMICs	Low- and middle-income countries
LPC	Library Publishing Coalition
MOOCs	Massive open online courses
NRF	National Research Foundation
OA	Open access
ROARMAP	Registry of Open Access Repositories Mandatory Archiving Policies
OpenDOAR	Open Directory of Open Access Repositories
OERs	Open educational resources
OJS	Open Journal Systems
OMP	Open Monograph Press
OS	Open scholarship
OSS	Open-source systems/software
PASS	Professional administrative and support staff
PKP	Public Knowledge Project
ROAR	Registry of Open Access Repositories
RDM	Research data management
SARChI	South African Research Chairs Initiative
SDGs	Sustainable Development Goals
UCT	University of Cape Town
UK	United Kingdom
USA	Unites States of America

CHAPTER 1
INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

Open scholarship (OS) conveys a philosophy that incorporates open access (OA), open educational resources (OERs), open data, open-source software, and other different forms of openness within the scholarly and research environment, having digital or computational techniques being driving forces of activities in this field (Arthur et al., 2021: 795). Open scholarship is also an umbrella term for open access (including openness of humanities), OERs and open data, open science (for the science discipline) and other open practices (Burgelman et al., 2019: 1; Turner, 2021). Open science and open scholarship can be used interchangeably to mean openness in its broad sense without differentiating scientific disciplines (Burgelman et al., 2019: 1), whereas openness is broadly described as the democratisation or transformation that science is experiencing due to emerging information communication technologies (ICTs) and globalisation (Burgelman et al., 2019: 1). This transformation is intended to dismantle the commercially dominated market of monopoly and commercialisation of science (leading to the serials crisis explained in Section 1.10.6) within the scholarly communication (research publishing) field (Chan, 2004; Masterman, 2020). The three components of open scholarship that include open access (OA), open educational resources (OERs) and open data, are the main focus of this study. The selected components are all considered critical for development and transformation purposes while their availability supports other OS activities.

OS plays a central role in education (Weller, 2014: 2) and its core values, which are free and unrestricted access to research outputs, are fundamental to all facets of development including informing policy and use of science by laypeople (Kurtulmus, 2021: 145). Higher education institutions (HEIs) and funders are the major participants in the open scholarship movement (Burgelman et al., 2019: 2) and most OER projects in HEIs largely prioritise formal education without much focus on the benefits that informal learning settings can also achieve from such projects (Perryman & Coughlan, 2013: 1). Emerging technologies are being adopted by academic libraries to host and manage open access publishing platforms and other related services (Pyati, 2007; Burns, 2014: 155). The engagement of libraries in open publishing is perceived as an emancipatory role within an information dominant world in which commercial publishers control access to knowledge through imposing copyright restrictions (Pyati, 2007)

to monetise scholarship with constant increase of subscription fees (Knoche & Fuchs, 2020: 527) to access serials.

The wide recognition of scientific research's contributions to economic competitiveness and social development has increased the attention of universities in knowledge production and dissemination (Sutz, 2005: 54), positioning research as a driving force for development. During a scientific inquiry, researchers may assess needs, investigate challenges being experienced by a community (Fredua-Kwarteng, 2019), or test hypotheses in different scientific fields. According to Marín-González et al. (2017: 258) both effective dissemination and communication of research findings are vital in the redressing of real-life issues, with communities benefiting from research related recommendations that could have social, political, or economic impact and inform policy. Such a critical role of research requires universities, particularly in the developing countries like those in Africa, to collaborate in research engagement with various stakeholders and effectively openly disseminate research outputs to support equitable access to research findings, particularly for economically marginalised communities.

According to Fredua-Kwarteng (2019) African universities play a critical role as partners of development with major responsibilities including advisory, production of graduates with relevant skills as well as production and dissemination of empirical research for use by government and society. To support knowledge sharing, national or regional research frameworks would be required to make research open by default (Burgelman et al., 2019: 2). Pyati (2007) argues that libraries' engagement in scholarly publishing services (open access publishing) has great potential in challenging the commercially dominated information market, thus achieving equity in information access. Engagement in open access publishing by libraries and other not-for-profit organisations globally (Pyati, 2007; Raju & Pietersen, 2017) position these entities as democratic agents as they become inclusive of the information marginalised, through free access to scholarly products, thus promoting participation in the knowledge economy or the information society. And hence the need to engage in this study to analyse the case of open scholarship at the University of Cape Town that is among the research-intensive universities in Africa (University of Cape Town, 2020c: 3). Such a study may be useful for the University and other higher education institutions in reflecting if there are efforts among their research communities to democratise knowledge through open scholarship, and which

improves information access to contribute towards the economy and other information needs of society.

1.2 Research context and background

The University of Cape Town (UCT) is an international research-intensive[1], multicultural and top-rated, academic institution in Africa (*The Times Higher Education*, 2022) and is located in Cape Town in the Western Cape Province of South Africa. UCT's rating is in terms of performance indicators including research productivity and research impact; teaching; industry income; and international outlook (Boonzaier, 2020). UCT's community includes a multinational community with 5000 staff members that comprise of academic and professional, administrative support and service staff, and some 29 000 international undergraduate and post-graduate students from approximately 100 countries across the globe (*The Times Higher Education*, 2022). Both in November 2020 and May 2021(the time of data collection for this study), UCT Human Resources (UCT-HR) confirmed UCT academics staffing were 1154 permanent academic and research staff, 523 contract staff and 73 emeritus staff (University of Cape Town Human Resources, 2020; University of Cape Town Human Resources, 2021). This may be a confirmation that the university prioritises transformational goals and prioritise cutting-edge education and research for Africans, and hence accessible to diverse African communities.

UCT's values include excellence in research, teaching and innovation to address issues challenging the society (University of Cape Town, 2020a). and the University's research excellence status is evident in several research awards listed on its website and on various departmental websites (University of Cape Town, 2022b). Research groups visible on the university's website serve to accelerate research collaboration at global level (University of Cape Town, 2022c: 3). This makes open scholarship a relevant subject for UCT to increase collaboration and accessibility of knowledge to support development. South African higher education's notion of transformation emphasises teaching, learning and research that "meet the national development needs, and educational programmes that support a democratic ethos and culture of human rights" (University of Cape Town, 2012: 1). Higher education transformation

[1]Research-intensive is an education model whereby a university makes the production of scientific knowledge its primary focus (Cloete & Maassen, 2015: 4).

is a call to challenge, through education, social classes and inequalities including income imbalances among South African communities that emanated from apartheid[2] legacy (Sehoole, 2005: 23) and inequalities in African countries that are a result of colonialism legacy (Mart & Toker, 2010: 362). In response to transformation demands, UCT committed to utilise its resources to address development issues on the African continent (University of Cape Town, 2020a), while prioritising disadvantaged South Africans through engaged scholarship (University of Cape, 2012: 1). UCT's commitment to support development issues is hindered by the tradition of restricting knowledge (Knoche & Fuchs, 2020: 508) and the high cost of textbooks (Masuku, 2019), which also challenges the attainment of transformation and social justice in South Africa. Costs of education and prescribed textbooks also exclude poor families of low-income in South Africa (Masuku, 2019; Raju, 2019).

In 2006, UCT adopted a social responsiveness[3] policy, broadly divided into "engaged scholarship involving academic staff knowledge transfer through research and teaching, civic engagement involving students' community service, and professional engagement involving PASS[4] staff using their professional expertise" (University of Cape Town, 2018) to support development among local non-academic constituencies in South Africa. The policy defines scholarship as "the thoughtful creation, interpretation, communication, or use of knowledge that is based in the ideas of the disciplines, professions, and interdisciplinary fields" (University of Cape Town, 2018). Kupe (2019) argues for the need to ensure research and development capacity on the African continent as the basis for innovative solutions. Evidence shows that researchers at UCT are engaging in collaborative community research projects related to climate change, safety and security, education, health and many other critical areas (*The Times Higher Education*, 2022). The UCT research community is also recognised for being active in research related to sustainable development goals (SDGs) identified by the United Nations for global development, which are intended to eradicate poverty while balancing social, economic

[2]Apartheid is a political system based on institutionalised racial segregation and discrimination that was adopted by the South African National Party of the white Dutch people that had migrated to South Africa to separate (a divide and rule move) to oppress South Africans and it lasted for 46 years, from 1948 to 1994 (Battersby, 2020: 169).

[3]Social responsiveness is defined as an obligation to contribute to community or country in a way that makes the quality of life and environment better for those around them (White, 2016). In the context of UCT's open access policy, the aim is to share knowledge to build a more just, equitable and unified South African society through providing members of the community with knowledge and skills and fostering literacy in students (University of Cape Town, 2022d).

[4]In the context of the University of Cape Town, PASS refers to professional, administrative and support staff responsible for services that support teaching and learning (University of Cape Town Human Resources, 2014).

and environmental aspects of society (United Nations, 2015; Wastl et al., 2020). However, the challenge noted in the literature is the lack of visibility of African content (Duermeijer, Amir & Schoombee, 2018) and unaffordable cost to access knowledge due to high fees for subscription to journals (Collyer, 2018; Khoo, 2019).

South Africa's history of Bantu education (further discussed in Section 3.4 of Chapter 3) of apartheid indicates use of a skewed curriculum (Mncwabe, 1990: 51), which make the visibility and accessibility of scholarship for a research-intensive university like UCT critical. During apartheid, education was offered on racial grounds, classifying communities into white, coloured, Indian and black ('Nguni or Bantu'[5] tribes). For the purpose of this study the term 'blacks', black or 'black South Africans' in lower-case is used to refer to the Nguni or Bantu people and 'Blacks' of 'Black South Africans' in upper-case is used to refer to all people of colour[6] (Coloured, Indians and blacks) as these racial groups fall under same group in the post-apartheid South African's employment equity policy (Andersson & Gardeström, 2013: 2). Coloured and Indian races were regarded as second-class citizens while blacks were regarded as third-class citizens who received the most inferior education (Thobejane, 2013: 1, 2) causing inequities and social classes that triggered a history of student protests since 1950 (Abdi, 2002: 106). The intention for the difference in curriculum among the South African racial schools and universities was to achieve underdevelopment for the least regarded population, the black students, for them to serve the 'superior' white race. According to Shay (2016), curriculum reform has not been achieved in the post-apartheid era and student protests in South Africa since 2015, during the #RhondesMustfall (#RMF) and #FeesMustFall (#FMF) movement (see section 3.4 of Chapter 3) are attributed to the apartheid legacy inequalities that are excluding financially historically marginalised communities from accessing education and knowledge (textbooks, research and other educational needs). The Eurocentric curriculum of apartheid (South Africa) and colonialism (Africa) still requires decolonisation and production of

[5]Nguni is a cluster of Bantu-speaking people or ethnic groups living in South Africa, Swaziland and Zimbabwe and in boarders of these countries; in South Africa Nguni people divided into political entities to form tribes including Zulu, Xhosa (Gaur, et al., 2014), Pedis, Tswanas, Sothos, Shangaan, Venda and Ndebele and most of these are part of the black community that were segregated to attend black universities of apartheid (Thobejane, 2013: 2).

[6]People of colour is used to refer to all racial groups that are not white (Malesky, 2014).

knowledge to address African problems (Shay, 2016; Moyo & Hadebe, 2018: 88), and hence the need for universities to consider openness for inclusivity in education.

UCT started participating in open access (OA) projects in 2007 and publicly declared its commitment to the openness movement through the signing of the Cape Town Open Education Declaration[7] in April 2008 (OER Africa, n.d.: 1). The University became a signatory of the Berlin Declaration[8] in November 2011 (Paskevicius, 2011) and the literature reveals evidence of the availability of infrastructure (Czerniewicz & Goodier, 2014: 2) and policies (Cox & Trotter, 2016: 157) that support the advancement of open scholarship at UCT. These include the institutional repository (OpenUCT) (Czerniewicz & Goodier, 2014: 2); open journals and open monograph platforms (Raju & Pietersen, 2017); OER grants, OA policy adopted in 2014 to supports research and OERs sharing (University of Cape Town, 2020b); open access publication funding (also known as article processing charges (APCs)); a research data management (RDM) policy adopted in 2017 to mandate research data sharing; and a data repository, ZivaHub, (Moore, 2017) all available on UCT Libraries website. UCT also established an eResearch unit to support access to information technologies (such as, research data storage options, high-performance computing, etc.) to support innovative research practices (University of Cape Town eResearch, 2022). The institution's commitment to social responsiveness activities also suggests the university's alignment with principles of knowledge sharing and there is need for open scholarship as the social responsiveness policy explicitly states, *inter alia*, the need for academic engagement with external constituencies based on scholarship; and the definition of engaged scholarship provided earlier includes "… use of knowledge that is based in the ideas of the disciplines, etc." for the benefit of the community (University of Cape Town, 2012), which is not possible with copyrighted restricted works.

The norm in scholarly communication publishing is to index journals in commercial databases, which led to the serials crisis (see Section 1.10.6), due to the high access fees for journals charged by publishers mostly in US dollars and other foreign currencies (Kupe, 2019; Khoo,

[7]The Cape Town Open Education Declaration is a worldwide endeavour to promote the creation and sharing of OERs that enable maximum re-use by others through customising, improving and redistributing of these educational materials without constraint (The Cape Town Open Education Declaration, 2022).

[8]The Berlin declaration on open access to knowledge in the sciences and humanities of 22 October 2003 declared that research outputs and cultural heritage should be made freely accessible while enabling maximum re-use by researchers and other citizens (Max-Planck-Gesellschaft, 2022).

2019). The serials crisis is exacerbated by commercial publishers demanding authors to cede their copyrights thus granting exclusive distribution rights to publishers, which make open sharing or redistribution of published research illegal (Knoche & Fuchs, 2020: 527). The crisis impacts communities with restricted library subscription budgets particularly those from HEIs in Africa and other global south[9] countries (Kupe, 2019), due to dwindling funding at universities, inequalities and income imbalances among communities. Participation in open scholarship is therefore crucial on the African continent in order to increase visibility of and accessibility to research relevant to African development and to decolonise apartheid and colonial education. Therefore, a study to ascertain open practices among the UCT community would be significant to understand levels of contribution by UCT through resources (knowledge) sharing towards addressing Africa's major development challenges.

1.3 Research problem

The socio-economic inequities of the legacies of apartheid and colonialism are still evident on the African continent, as many Africans still live in poverty (Warsame, 2019; Aikins, & Mclachlan, 2022). Africa is faced with many development challenges (Handelman & Brynen, 2019: 9), which demand access to knowledge for innovations and development to support the upliftment of marginalised communities. Universities in South Africa have a significant transformational role to play in the post-apartheid[10] and post-colonial era (Cloete & Bunting, 2000: 2) and should be driven by reconstruction and development programmes (Ekong & Cloete, 1997: 4). The instrumentalist approach in South Africa insists on higher education acting as engine of development through problem solving with the production of research relevant to African problems (Ekong & Cloete, 1997: 4). The focus of such approaches is based on the understanding that knowledge production and dissemination directly support development as information holds distinct social and economic benefits (Bornman, 2016: 264), therefore, free accessibility of knowledge would be relevant to Africa's context of inequalities. However, most research reported in journals remain unaffordable (Koehlmoos & Smith, 2011:

[9]Global south may refer to countries located in Africa, Asia, Oceania, Latin America and the Caribbean classified by the World Bank as low- or middle-income countries (Clarke, 2018).

[10]Post-apartheid refers to the end of racial discrimination or segregation in South Africa, which is the post-1994 period (IGI Global, 2022c).

273) and hence most African universities do not have access to critical content (Raju, Claassen & Moll, 2017: 43) to support innovation and human development.

UCT commits to transformation, *inter alia*, through the promotion of multidisciplinary research, including a policy aimed at driving research that benefits the South African and international audience as indicated in Section 3.1.5 of the University's social responsiveness policy framework (University of Cape Town, 2012: 6). Universities can only fulfil their democratic roles by the provision of equitable access to education and knowledge; and educational services are anticipated to produce well-equipped graduates with research production and research application skills (Ekong & Cloete, 1997: 10). However, the cost of textbooks that support education, particularly at tertiary level, has also been declared a barrier to further education in universities across the world (Allen, 2016; Raju, 2019; Masuku 2019. The production of information, including that of textbooks, is funded by taxpayers, while commercial publishers make large profits (Kallio, 2017; Kleyn & Nicholson, 2018; Raju, 2019), which further disadvantage the marginalised, more so the majority of African who are still living in poverty (Aikins & Mclachlan, 2022). Cost is also a barrier for libraries with limited budgets (Collyer, 2018: 63).

Open access promised a radical change that would transform traditional publishing (Knoche & Fuchs, 2020: 508) from paywalls to openness. However, barriers to OA emerged with APCs, publication fees, that are extremely high and serve to create more income for commercial publishers (Knoche & Fuchs, 2020: 508), and also excludes authors from low-income communities (Jurchen, 2020: 161). Open data is another critical scholarly output noted for its significance in supporting community development (Corti et al., 2014; HOTOSM Community, 2018), whereas "most datasets on the continent, particularly in Sub-Saharan Africa", are closed (Brandusescu & Nwakanma, 2018: 23). The research problem that needed to be addressed is whether the challenging of commercialisation of UCT knowledge, or of the serials crisis and alienation of scholarship from users through participation in open scholarship at UCT is removing barriers (cost and copyright) that further exclude historically marginalised South Africans. This prompted the conducting of this study to critically analyse participation of the UCT community in open scholarship to understand the extent to which democratisation of knowledge is being achieved to improve free accessibility to and re-use of knowledge for human development, and to provide an opportunity for researchers to contribute to the development of a strategy to enhance open scholarship.

1.4 Research objective

The objective of the study was to critically analyse the UCT community's participation in the advancement of open scholarship; and, based on this, to develop a strategy for the promotion of open scholarship.

1.5 Critical questions

In addressing the above objective, the study was be guided by the following critical questions informed by the critical theory and the capability approach framework (detailed in Sections 2.3 and 2.5 of Chapter 2):

1.5.1 To what extent are academics and researchers in the UCT community engaging in open scholarship practices?

1.5.2 If UCT academics and researchers are engaging in open scholarship practices, what are these practices (e.g., data sharing; open access publishing; creation and sharing of open educational resources)?

1.5.3 To what extent are UCT academics and researchers contributing to the openness movement as a social good?

1.5.4 What current strategies are being adopted in support of UCT's open scholarship agenda?

1.5.5 To what extent are these strategies effective in supporting the social responsiveness agenda of the university in the scholarly communication of its output?

1.5.6 Positioning a strategy for the promotion of open scholarship within a critical epistemology, what would be the essential components of such a strategy for the advancement of open scholarship in the interest of information access for marginalised communities?

1.6 Overview of theoretical positioning

Critical theory has been adopted as a theoretical lens to position the study, as the phenomenon under investigation presents some social injustice, which calls for transformative measures to enhance certain situations. The information industry can be described as a dominant industry that classifies information as a commodity in the form of databases, electronic documents, newspapers, books, etc., which can be packaged for sale as any other goods ("Information industry", 2018). In contextualising the traditional scholarly communication model in a

dominant information industry (Das, 2015: 8), critical theory allowed for positioning of the study to provide an analytic lens to describe the political aspects of intellectual property as commercial goods within a traditional scholarly communication context (Pyati, 2007; Beasley, 2016). Critical theory also relates freedom of access to information to new democratic possibilities (Pyati, 2007), which makes open sharing of information a part of social justice for the information deprived. Sen's capability approach (CA) framework (Kuklys & Robeyns 2005: 9) was adopted to guide questions relating to researchers' capabilities to participate in OS. The framework identified factors that influence one's contribution, thus guiding the researcher in probing relevant questions during designing of data collection instruments (see Appendices A, B, C, D and E) and during interviews and focus group and individual discussions.

1.7 Overview of methodology

A case study, as a unit of analysis, was selected as a suitable research design for a study dealing with contemporary issues. Positioning the study within a critical theorist perspective, a case study offered the flexibility of accommodating mixed methods and was suitable for a study grounded in a transformative worldview due to its properties of being able to describe a social contemporary phenomenon extensively and in-depth (Creswell & Creswell, 2018: 4). The approach (convergent transformative mixed methods approach) and the design (case study design) both informed the designing of the instruments for data collection as they both accommodated use of diverse techniques (Creswell & Creswell, 2018: 217) (questionnaires, interviews, focus group/individual discussions and document analysis). A case study allows engagement with human subjects in a dialogue to solicit views and perceptions about the phenomenon under study (Yin, 2012: 6) and interviews and discussions allowed probing. during data collection, of issues relevant to the study's critical questions.

1.8 Significance of the study

Openness is regarded as a social construct required in the process of citizen empowerment as it provides global sustainable solutions that bridge knowledge and digital divides (Nwagwu & Ahmed, 2009; Madalli, 2015). It is also viewed as a means of democratising knowledge creation and dissemination, transforming and improving processes of science (Burgelman et al., 2019: 1) and access to education, and fostering the development of more equitable and transparent scholarly and educational processes (Veletsianos & Kimmons, 2012: 166).

Numerous studies around the globe report the benefits of open scholarship practices in improving visibility of scholarly outputs and access to both knowledge and education (Chan, 2004; Czerniewicz & Goodier, 2014; Nwagwu, 2016; Arthur et al., 2021). HEIs in South Africa have committed to transformation in the post-apartheid era with UCT extending its commitment to sharing of scholarship and teaching services with outside communities, which consequently calls for open scholarship practices within the UCT community for legal sharing of scholarship. However, little voluntary participation in open practices (data and research sharing) has been noted (Tenopir et al., 2011; Raju, Claassen & Moll, 2017). It is therefore significant to conduct research to determine the extent of participation in open scholarship at UCT, especially that previous studies on the subject (globally) seem to have only covered a single component of open scholarship and/or have used the review of literature as a means of collecting data for such studies (Nwagwu, 2013; Czerniewicz & Goodier, 2014; Bello et al., 2016; Herb & Schöpfel, 2018). Openness is regarded as a means to attain social justice, and hence requires engaging with the subjects experiencing the phenomenon in order to understand issues from the study participants' perspectives (Mertens, 2007; Creswell & Creswell, 2018), and therefore the significance of the current study which collected such empirical data relating to multiple components of open scholarship.

A study conducted in Malawi demonstrates lack of interaction between health research and policy makers (Mapulanga, 2018: 243) as accessibility to research findings by decision and policy makers is a "challenge due to unaffordability of subscription fees" (Collyer, 2018: 63). Inflated subscription costs demanded by commercial publishers (Khoo, 2019: 1) affect library budgets for collection development and prohibit access to wider collection of knowledge (Collyer, 2018: 63). The cost of textbooks is also noted for excluding students from economically marginalised communities from higher education (Allen, 2016; Masuku, 2019), while data is highly closed on the Africa continent, which affects further research production and service provision that is supported by access to data (Brandusescu & Nwakanma, 2018; Bezuidenhout et al., 2017b). Open scholarship has been noted for its frugal benefits such as good-quality open textbooks (McGreal et al., 2013: v) and quality research that benefit all members of the community (Raju, 2016). The desire to share scholarship freely online has been acknowledged in Africa (Nwagwu, 2013: 3), while Africans encounter diverse challenges including lack of infrastructure to establish open access platforms to share research output online (Baro & Otiode, 2014: 117). It is anticipated that researchers' experiences and challenges presented from the findings of this study could contribute as lessons for other

researchers to learn from and find means to improve open scholarship with minimal funding to increase access to open collections of research, educational materials and research data to support knowledge transfer, policy development, education and service provision on the continent. The strategy emanating from this study has the potential to guide other universities and researchers with similar experiences to those of UCT academics and researcher, as they work towards advancement of open scholarship within a resource challenged environment.

1.9 Assumptions of the study

The methodological and theoretical assumptions of the study are described in Sections 1.9.1 and 1.9.2, respectively.

1.9.1 Methodological assumptions

According to Punch and Oancea (2014: 16) methodological assumptions are classified under the two types of theory, namely methodological theory and substantive theory, with methodological theory leading to the question relating to method connections. Punch and Oancea (2014: 16) further explain that methodological theory means theory about methods. While understanding that a theory is a set of beliefs that shapes the researcher's thinking, methodological theory or assumptions, therefore, allude to "what is behind the approaches and methods of inquiry" (Punch & Oancea, 2014: 16). Positioned within a transformative paradigm (Camacho, 2020: 305) that adopted a critical theorist perspective, the study rejected any forms of reductionism which considers human subject as merely products of wider forces who do not have influence or responsibility for their actions or character (Sayer, 2010: 7). In an inquiry "participants are regarded as active subjects who can make sense of the circumstances to mould their environment" and human subjects should be at the centre of the study (Held, 1980; Crossley, 2005). Therefore, interview and focus groups participants were selected to participate as they engage in research production and understand the experiences in the scholarly communication field. Methodological assumptions considered that the position of the participants as human subjects has great potential to shape their own history or future in their professional environment. The study adopted a parallel or convergent mixed methods approach with academics and researchers responding to structured questionnaires; interviews (with representatives of faculty research committees and key informants); and, focus groups/individual discussions with research students (see Section 4.5.3.3 of Chapter 4).

1.9.2 Theoretical assumptions

This study views traditional scholarly communication as a dominant field that facilitates a culture of commodification of knowledge as highlighted by Pyati (2007) which excludes the information deprived. Therefore, the study was positioned within a critical theorist perspective that aims to include content creators, who are by default original copyright holders/owners. The assumption is that researchers in the global south understand better the frustrations of barriers caused by paywalls as their institutions have limited funding (Jurchen, 2020: 161). Global south researchers are excluded and are information marginalised in one way or the other as they face APC challenge during publishing (Samberg et al. 2018; Khoo, 2019). Researchers' views are, therefore, regarded as useful in the development of a strategy that enhances open scholarship, as they have learnt from their experiences in the research field. Open scholarship can provide opportunities through bridging the information divide and disrupting the monopoly in the information industry (Madalli, 2015; Das, 2015); therefore, critical theory informed this study because of its emancipatory role.

1.10 Clarification of concepts

Various terms could be developed into concepts with varying meanings depending on individual experiences and context. Every concept has the potential to hold a unique meaning for every individual, community or organisation. What follows are explanations and clarifications of some concepts within the context of this study.

1.10.1 Open scholarship

Open scholarship refers to an openness philosophy that "encompasses open access, open data, open educational resources, and all other forms of openness in the scholarly and research environment" (Arthur et al., 2021: 795). Das (2015: 11) specifies that in openness, usage rights of content/work should permit re-use, revision, remix and redistribution, and therefore content can be accessible with no discrimination of person, groups or disciplines.

1.10.2 Open access

Open access (OA) refers to free access to scholarly content for the end-user and its foundation is argued to be underpinned by a philanthropic philosophy that supports sharing of research for societal benefits (Raju, Classen & Moll, 2017: 37). According to Raju, Classen and Moll (2017: 37) OA is critical in supporting UCT researchers' social justice obligation of sharing research

as UCT is a leading research university on the African continent. Among the diverse models of OA, gold open access requires an author to pay an article processing charge (APC) to make an article freely available upon publication in an open access journal that makes all its content freely available to the end user (Rodrigues, Abadal & De Araújo, 2020: 5). When an author pays fees or APCs to publish in a closed journal, the model is known as hybrid and the diamond model "does not charge readers access fees, neither does it charge authors publication fees", which means the journal does not earn money through publishing (Gajović, 2017: 261). Green open access (also called delayed open access) is a process of self-archiving copies on institutional (Gadd & Troll Covey, 2019: 106) or subject repositories, allowing authors to freely share publications mostly from subscription journals at the expiry of a set embargo[11] period imposed by the publisher (Laakso & Björk, 2013: 1323). In many universities, institutional repositories (IRs) have become a conduit to share electronic theses and dissertations (ETDs) produced by their research students (Van Wyk & Mostert, 2014: 100). Karadia and Sahoo (2021: 57) note another model, bronze open access which makes articles freely available to read on the publisher's website without an explicit open license, and the access could be temporal. For the purpose of this study, bronze OA is excluded as content shared is not open licensed to support re-distribution and re-use and the accessibility has no time frame.

1.10.3 Open data

Open data refers to private or public data that is published with an open license to allow either commercial or non-commercial use without restrictions while users are still required to make an attribution (Barns, 2016; Scholarly Publishing and Academic Resources Coalition, 2021). According Lnenicka and Nikiforova (2021: 5) open data promote public engagement and has potential to support collaboration between governments and citizens thus enabling the transformation of raw data into knowledge valuable for use by society. Data are acknowledged to be used in different formats, both human- and machine-readable, and definitions of data may be discipline specific while some can be open and other types remain closed for security, privacy and other reasons (Lnenicka & Nikiforova, 2021:5).

[11]An embargo is a publisher-imposed delay on access to full text and most periodicals are susceptible to embargoes (Brooks, 2003: 243).

1.10.4 Open educational resources

Open educational resources (OERs) are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free [re-use] and re-purposing by others (The William and Flora Hewlett Foundation, 2015; Das, 2015). As Adala (2016: 9, 33) asserts, access to OERs transform teaching and learning and improve quality of education as these high-quality digital course materials are intentionally created and evaluated by experts with the intention to achieve a set of intended learning outcomes.

1.10.5 Research-intensive

Research-intensive describes an institution whose main goal is to make ground-breaking discoveries and to transmit knowledge through bringing various resources that include research, education and (knowledge exchange) technology transfer into the same physical space for the creation a of knowledge ecosystem (International Alliance of Research Universities, n.d.: 1). A research-intensive university is also viewed as a community of scholars, driven by the aim to develop students as researchers, in an environment where research and teaching enhance each other, thus demonstrating the interdependent relationship between research and teaching (Brennan et al., 2019: 301). UCT (the case study unit of analysis selected for this study) is categorised as a research-intensive university and its participation in open scholarship would be beneficial to many information marginalised communities. OS would make the university's wide range of scholarly output freely accessible for re-use.

1.10.6 Serials crisis

The serials crisis is a phenomenon resulting from the spiralling costs of scholarly journal publications charged by commercial publishers to sell research publications to university libraries (Björk, 2021: 177). Authors and peer-reviewers of research papers are not paid by the commercial publishers. The serials crisis' persistence is still acknowledged after the emergence of the openness movement (Björk, 2021: 177) and has resulted in cancellation of journals every year, mostly by academic libraries. The exclusion of the information marginalised by the serials crisis, led to the emergence of the openness movement, with three of its components (open research, open educational resources and open data) being investigated in this study.

1.10.7 Social justice

Social justice refers to the promotion of fair allocation of community resources by focusing on the less privileged or those with lesser native resources and trying to fix all the inequalities (Robinson, 2016). In the South African context, where this study is located, social justice refers to the extension of the principles of human dignity, equality and freedom to participate in all political, socio-economic and cultural spheres of society (Raju, Claassen & Moll, 2017: 38). UCT has committed to social responsiveness, which includes utilisation of its scholarship to improve education and other services for less privileged communities (University of Cape Town, 2012: 6), as a means to support development.

1.10.8 Strategy

Strategy is defined as "the way in which a business, government, or other organization carefully plans its actions over a period of time to improve its position and achieve what it wants" ("Strategy", 2020). The proposal of a strategy is part of the objective of this study and such a strategy could be useful in supporting the advancement of open scholarship at UCT and at other institutions with experiences similar to those of UCT.

1.10.9 Transformation

Transformation refers to a "complete change in the appearance or character of something or someone, especially so that the thing or person is improved" ("Transformation", 2020). Within the South African political context, Vorster (2006: 731) views transformation as the "process of structural change that is implemented on the political, social and economic levels of South African society". The aim should be to eliminate the socio-economic and racial inequalities of the past and to provide access to information that supports re-use of knowledge for human development and transformation.

1.11 Delimitations of the study

According to Simon and Goes (2013), delimitations are characteristics that define the boundaries of the study and the conscious decisions made on what to include and exclude in the study. UCT was selected as a case study as the institution is a research-intensive university committed to utilising its resources (cutting-edge teaching, research and facilities) to address major development challenges on the continent (University of Cape Town, 2020c) and is a top ranked university in Africa in terms of research output (Bothwell, 2020). UCT is also top-rated

in Africa and is among the top-rated universities worldwide in terms of research excellence (Bothwell, 2020; The World University Rankings, 2022). UCT's commitment to sharing scholarship suggests egalitarian principles of open scholarship at UCT. This study focussed on a single case in order to have an in-depth understanding of UCT's milestones in open scholarship, which links to the university's commitment to utilising its resources to address major development challenges in South Africa and on the continent in order to contribute to transformation and social justice (social responsiveness) (University of Cape Town, 2012: 4).

Researchers have the choice to engage in a single case or multi-case study alternatively named multi-site case study (Bishop, 2012: 589). A multi-case study investigates a contemporary phenomenon common to two or more real-world settings or offers means to understand a phenomenon in more than one setting, which is more suitable in a comparative study (Bishop, 2012: 589). A multi-case would have been useful in comparing experiences of two institutions; however, this study is intended for a single case of UCT in order to have in-depth understanding of the contemporary phenomenon of open scholarship and was cognisant of UCT being located in the global south with the potential for challenges to access essential information resources. Therefore, UCT's basis of participation in open scholarship could be driven by unique factors and obligations.

The population within the UCT case was limited to researchers and/or academics, post-doctoral fellows, and post-graduate (Masters and PhD) students as these identified categories are obliged to produce research for professional growth, for promotion purposes, and in the case of post-graduate students, for degree awarding purposes. The UCT case, while unique because of its institutional context, may also be useful for other universities in the global south to draw lessons from, especially because of its special research related characteristics explained earlier in this section. Further, adopting UCT as a case study allows for contribution to African literature and literature in general, on the three selected aspects of open scholarship (that is, open access, OERs and open data) which this study focuses on.

1.12 Outline of the research report

This research report comprises of seven chapters with Chapter 1 covering the introduction and background to study, the research problem, objective of the study and the critical questions guiding the study. The first chapter provides the context of the case (University of Cape Town). As part of the background of the study, open scholarship is identified as an emancipatory

activity relevant to any audience aiming at achieving social justice, and hence the need to develop a strategy for further growing such activities. Chapter 2 discusses the study's theoretical positioning unpacking the elements of critical theory and explaining how the theory relates to the study. The capability approach framework is also discussed as both this framework and critical theory informed the generation of the study's critical questions. In Chapter 3, the researcher presents a critical review of the literature relevant to the study to interrogate issues that challenge and hinder social justice in scholarly communication. The literature reviewed also covers strategies used by other research institutions for the purpose of informing the development of a strategy to advance open scholarship. Chapter 4 covers methodology and deliberates on how the study's research philosophy relates to the selected research approach, design and methods of the study. Research methods and tools, research population and sampling procedures are also discussed in this chapter, including validity and reliability issues. The chapter also unpacks the research philosophical assumptions of the study. Presentation of findings, based on analysis of data collected, is done in Chapter 5 and Chapter 6 focuses on the discussion of main findings, paying attention to the findings that support the development of a strategy that promotes open scholarship. Chapter 7 presents conclusions and recommendations based on the discussion of findings, in the context of reviewed literature and the study's theoretical positioning. A reference list is included as well as appendices.

1.13 Chapter summary

This chapter introduced issues affecting Africa as part of the study background and discussed the need for the openness of content to support development on the continent. The challenges experienced on the continent were largely crafted by both apartheid and colonialism and are engraved into socio-economic classes and income imbalances, which demand the need to sustain members of the African community with tertiary education, as such higher education is envisaged as a significant democratic tool in providing solutions to many development challenges. The discriminative and oppressive elements of the traditional scholarly communication culture position the study in a transformative worldview that seeks to emancipate humanity through open knowledge (open scholarship). The chapter also presented the objective of the study and critical questions that guided the inquiry in the analysis of the UCT community's participation in open scholarship as the openness of content has potential to support education and other development programmes outside higher education institutions, thus enhancing transformation for marginalised communities. Scholarly products included in

the scope of the open scholarship definition used in this study were identified as valuable in improving the lives of marginalised communities (and their contribution in human development are further discussed Chapters 2 and 3). The background to the study presented the position of the University of Cape Town, a research-intensive institution committed to sharing its scholarship for human emancipation in South Africa and across the continent. This affirms the need to develop a strategy that enhances open scholarship as free access to knowledge, which is critical for most African countries as many such countries are still grappling with poverty and inequalities in the post-apartheid and post-colonial eras. The next chapter discusses the worldview, theory and framework which informed the study.

CHAPTER 2
THEORETICAL POSITIONING

2.1 Introduction

Methodological assumptions comprise of "methodological theory" (see Section 1.9.1 of Chapter 1) and "substantive theory (assumptions about the nature of reality or what constitutes knowledge)" (Punch & Oancea, 2014: 20). A substantive theory is content based, and its purpose is to explain and describe the phenomenon being studied (Punch & Oancea, 2014: 35). Creswell (2022: 11) emphasises making theories explicit when engaging in mixed methods studies to provide a description of the theory and explain a specific phase of the study that is informed by the theory. Creswell and Creswell (2018: 62) explain that theoretical lenses within the transformative worldview emphasise aspects relating to marginalised groups, such as, womxn (or gender), low socio-economic status groups, ethnic groups, the disabled or groups of specific sexual orientation while guiding researchers on the type of research questions and methods of data collection, and data analysis. Both the methodological and substantive theories of the study were informed by a "transformative worldview" and critical theory was adopted as an epistemological lens (Creswell & Creswell, 2018: 62) to position this study. Therefore, a critical inquiry should intentionally engage in a political discourse to challenge power and oppressive structures in order to advance social justice, public good, etc. (IGI Global, 2022a).

Critical theory was preferred over other transformative theoretical lenses as it embraces humanity, irrespective of gender or race (Creswell & Creswell, 2018: 62) to achieve human emancipation of heterogenous communities (Strydom, 2011: 9). Critical theory is explanatory, practical, and normative in nature to explain what is currently wrong with the social reality, identifying the stakeholders to change the situation and clarify norms or practical achievable goals for transformation (Nel, 2018), empowerment and social justice (Creswell & Creswell, 2018: 62).

Within a transformative perspective, other theoretical lenses similar to critical theory emerged to guide researchers studying subjects related to unique marginalised groups, for example, gender, class or race (Creswell & Creswell, 2018: 62). Feminist theory is a transformative lens that argues against the notion that womxn's social existence can be derived from their physiology (Butler, 1988: 520), which becomes the foundation of undermining and oppressing womxn in society (Creswell & Creswell, 2018: 62). Neuman (2014: 111) describes concepts

that can be interrogated including “sources of inequalities, social control and power relations”. The intention of all transformative inquiries is an ultimate goal of bringing social change and researchers are required to reflect on personal biases during such inquiries (Creswell & Creswell, 2018: 62) to avoid prejudices. Critical race theory is a different transformative perspective that seeks to investigate race as a significant determining factor for societal inequities (Creswell & Creswell, 2018: 62) including control of production (Ladson-Billings & Tate, 1995: 47). The theory would have been relevant in interrogating white supremacy and the impact of its social structures in South Africa. Queer theory is another transformative perspective that supports justice of individuals known as gays, lesbians, transgender or bisexuals, and which advocates for social inclusivity of queer groups without judging individuals’ sexual orientation and would have been relevant if the focus of this study was on the information needs of Queer people (Creswell & Creswell, 2018: 62).

The literature also presented a theoretical model called Organisational culture model that is used to describe success in knowledge management and sharing (Suppiah & Singh Sandhu, 2011: 462). Four cultures which include clan; adhocracy; market; and hierarchy have been identified within the Organisational culture model and as influential in knowledge sharing in an organisation. However, some of the cultures in the model promote competitiveness and multiple bureaucratic structures (Suppiah & Singh Sandhu, 2011: 467), and therefore, the Organisational culture model excludes some critical components of transformation.

A framework called capability approach (CA) framework was coupled with critical theory to inform this study as the CA framework facilitates a rich assessment on individuals’ capabilities to undertake valued and valuable activities. According to Walker (2005: 103) the CA framework is about the development of an environment suitable for rapid development. Therefore, the CA framework was adopted to guide the study in designing instruments that assisted to identify factors influencing researchers’ participation in open scholarship at UCT (see also Section 2.5). Critical theory and the CA framework were combined to inform the study, with critical theory being the substantive theoretical perspective informing approach, design and methods (including the designing of the instruments), while the CA framework supported sections of the instruments relating to the strategy elements supporting (or factors influencing) participation in open scholarship at UCT.

2.2 Critical theory: a historical perspective

Critical theory originated from the Institute of Social Research (also named the Frankfurt School), established in 1923 in Frankfurt in Germany (Held, 1980: 13). However, the term 'critical theory' was only coined in 1937 (Bronner & Keller, 1989: 1) when the School and the theory were already popular. The social and philosophical work of the School was inspired by Karl Marx's philosophy (Marxism[12]) that was immensely influential across disciplines (Held, 1980: 13; Crossley, 2005: viii). Horkiemer, Ordono, Marcuse and Habermas were identified as prominent and key figures of the Institute of Social Research (Held, 1980: 15). However, major research related contributions of Carl Grunberg, the first director of the Frankfurt School from 1923-1929 were influential in the development of the Institute (Held, 1980: 29).

Critical theorists emphasise multidisciplinary integration of philosophy with scientific inquiries in order to provide theoretical instruments intended to transform politics, society, the economy and everyday contemporary life (Bronner & Kellner, 1989: 4). Frankfurt scholars were prominent for criticising conformism in managerial capitalism, bureaucratic oppression of people (Arneson & Bowle, 2009), mass culture and mass conformity (Held, 1980: 35) with the main goal of achieving human emancipation and social justice (Creswell & Creswell, 2018). The social justice nature of critical theory made the School vulnerable and experienced threats in Germany during Hitler's Nazism[13] as it had its foundation in aggressive capitalist expansion; and Frankfurt scholars also faced criticism during Mussolini's Fascism[14] totalitarian government in Italy from 1933 (Held, 1980: 15). The Nazi government utilised propaganda and mass culture to make the majority conform to newly introduced oppressive laws and cultures (Bronner & Kellner, 1989: 3), whereas critical theorists were opposed to the capitalist economy and its oppression of the proletariat (workers) (Bronner & Kellner, 1989: 3).

[12]Marxism is a philosophy that interrogates inequalities in society which are a result of capitalist modes of production that contribute to exploitation and domination in society (Ferguson, 2013: 68).

[13]Nazism the totalitarian government system adopted by the National Socialist German Workers' (Nazi) Party under Adolf Hitler's leadership, which could be also described as Hitler's dictatorship and total control of Germany, including banning other parties, Jews and Marxists to avoid criticism and to maintain a pure German race (History.com, 2019).

[14]Fascism described a dictatorial government system that holds complete power to suppress opposition and criticism forcefully, regulating all industry, commerce, etc., and emphasising an aggressive nationalism as well as racism ("Fascism", 2020). This was common initially when Mussolini rose to power in Italy (Held, 1980).

The Nazi government was against democracy and would not accommodate criticism of oppressive social structures from the Frankfurt School (Bronner & Kellner, 1989: 3). Therefore, human emancipation principles led to the displacement of the Frankfurt School. A major contribution of critical theory was its influence on radical protest movements that challenged political structures (Held, 1980; Bronner & Kellner, 1989) during Nazism and Fascism in Europe in the 1930s (Bronner & Kellner, 1989: 3). Critical theory was a result of a series of critical dialogues with contemporary philosophers and social scientists within "an interdisciplinary research context" (Held, 1980: 16).

Critical theorists emphasise the need to trace people's history and interpret societal issues in a way that facilitates transformation while drawing lessons from the past (Held, 1980), which is also crucial in this study as the history of South Africa is characterised by experiences of oppression and inequalities (Sguazzin & Wilson, 2021) which are currently influencing scholarly communication and knowledge access issues. This study drew from various critical theorists' contributions to inform various sections of the inquiry and used critical theory to explain aspects of alienation, exploitation, exclusion, and conformism reflecting in scholarly communication and that open scholarship can achieve the critical theory goal of social justice and human development (empowerment).

2.3 Critical theory concepts

Critical theory is mainly concerned with challenging forces that are oppressive to society in order to move towards rational institutions to "ensure a true, free and just life" (Held, 1980: 15) and seeks to achieve human emancipation (How, 2003). The attributes of critical theory, presented in various sections which follow, include resistance to alienation, power control, conformism, exploitation and discrimination (Crossley, 2005; Creswell & Creswell, 2018) and are discussed in this chapter to explain the dominant aspects of the information industry that contribute to information marginalisation. The CA framework is explained in Section 2.5 and is useful in identifying factors that influence either just and equitable participation in OS or inequalities affecting those participating in OS due to lack of resources as guided by factors (personal, funding, organisational or institutional support and infrastructural) identified by Bezuidenhout et al. (2017b: 468). These factors are some of the constructs used in this study as strategies adopted or constructs to develop a strategy to support OS and these are presented in Table 2.1.

2.3.1 Exploitation and alienation aspects of critical theory

Capitalism is noted for dividing society into "property owners and propertyless workers" (Marx, 1932: 28), and alienates people from their communities (Crossley, 2005: 3). The concept of alienation refers to a separation or estrangement from others, life or society (Crossley, 2005: 3). The separation is described as subjective (meaning agents are aware) or objective, being unaware of the separation (Crossley, 2005: 3) which negatively affects those who cannot access resources or resourceful people separated from them. Sayers (2011: 288, 290) describes alienation as a scenario when a product of someone's labour or something created from their action or effort takes a form which is independent of them. This means a product of one's labour stands opposed to the producer as something alien, as a power independent of the producer/creator and works against them (that is, being used for a purpose that it has not been created for) (Held, 1980; Bronner & Kellner, 1989). This explains the creation of a product that one has no control over, whereas humans are known for creating products with passion for a particular purpose and to transform themselves and their world (Sayers, 2011: 289).

In this study alienation is regarded as being similar to the imposing of access barriers to scholarship through demanding subscription fees and copyright restrictions or scholarship distribution barrier imposed by commercial publishers as noted by Matushek (2017: 258). Research institutions and funders provide grants to support research related activities for science to be more responsive to societal challenges (Burgelman et al., 2019). Creators of scholarly content submit papers to identified journals and are not paid by publishers (Kallio, 2017: 1) and papers are sent for peer-review. Reviewers, who are subject experts in the field, are recruited on a voluntary basis for rigorous evaluation of the submitted scholarly papers (Rose & Boshoff, 2017: Kallio, 2017), yet the final product is subject to monopoly and commodification as research is accessible on subscription bases (Pyati, 2007; Beasley, 2016: 169). This counts as labour exploitation and alienation of scholarship behind paywalls as both researchers and reviewers are not paid for their labour, whereas the output generates income with large profit margins for publishing companies (Bosch, Albee & Romaine, 2019).

In defining labour, the understanding is that human beings commit time and effort to produce something to transform their environment (Crossley, 2005: 5). Creativity is viewed as more than mere satisfaction as this reflects humanity and the individual subjective nature of being able to manage and improve one's own environment (Crossley, 2005: 5). Therefore, selling

labour to employers in return for a wage under routine work is reducing labour to a commodity (Crossley, 2005: 5); similarly, researchers produce knowledge for innovation to support development, service delivery and policy development, but their labour of intellectual property is converted into commodities for sale to libraries (Pyati 2007; Jurchen, 2020). In this way, capitalists regard labour as an object independent from human life and subjectivity as the final product is commodified thus alienating humans from their creative works (Crossley, 2005: 3).

Authors are prohibited from sharing the fruits (publications) of their labour with their communities "due to embargoes and copyright restrictions" (Czerniewicz & Goodier, 2014: 1, 7). Scholarly products are not always accessible to stakeholders who are in need of research findings, which dismisses the notion of "scholarly output as a public good" as alluded to by Raju, Claassen and Moll (2017: 34). Democratisation of the process of generating and dissemination science (Veletsianos & Kimmons, 2012: 168) is extensively deliberated on in the Berlin declaration of open access and was regarded as critical to improve access to knowledge (Max-Planck-Gesellschaft, 2022). However, capitalists and political spheres are aware of the power of knowledge in socialising and empowering humanity, and this reflects in the history of South Africa when the apartheid oppressive government banned and burnt books (Mncwabe, 1990; Abdi, 2002) to suppress human liberation. Commercial publishers control distribution of science knowledge and make more a profit with science, technology and mathematics (SMT) journals (Das, 2015; Bosch, Albee & Romaine, 2019). Therefore, big commercial publishers have created a tradition of a closed culture of signing away copyright. This study, similarly, inquired into the publishing culture in research and educational resources to ascertain if UCT's commitment to share its resources (scholarship) widely with the African community is being achieved.

2.3.2 Power control and oppression aspects in scholarly communication

To contextualise open scholarship (the phenomenon under study) within a critical theory perspective, Pyati (2007) highlights the crisis of increased commodification of information that enhances global capitalism and large commercial publishers have been increasing control over science processes (Larivière, Haustein & Mongeon, 2015: 15). Commercial publishers' package scholarly content as pockets of commodities indexed in databases (popular ones being Scopus, EBSCOhost and Web of Science (WoS) (Fyfe et al., 2017: 5) that permit access to information and sophisticated calculation of metrics in databases that universities devote large proportions of budget to (Larivière, Haustein & Mongeon, 2015: 15). This allows publishers

to monopolise the information industry (Das, 2015: 18) attaining full distribution licenses that accommodate generation of income through knowledge commodification (Pyati, 2007). Willinsky (2018: 197) raised awareness about the commercialisation of open access publishing by large corporate academic publishers through charging hyperinflated APCs (Rodrigues, Abadal & De Araújo, 2020: 2) to publish gold open access. Most subscription journals have been turned into hybrid[15] journals to generate income from both subscriptions and APCs thus benefitting from double-dipping (Baldwin & Pinfield, 2018: 6; Rodrigues, Abadal & De Araújo, 2020: 4).

In the information industry, the political side of the scholarly process reflects in African authors' experience of papers often being rejected, if they submit scientific papers focussing on African theories or indigenous knowledge (Abdeljaoued, 2018: 355) that may not be marketable to global north[16] users. Commercial journals are likely to influence authors to focus on trending or marketable scientific debates (Abdeljaoued, 2018), which may exclude much-needed African knowledge. Research communities at global level joined hands to transform scholarly communication through signing of the global openness declarations (explained in Section 3.3 of Chapter 3) (Das, 2015: 43; Max-Planck-Gesellschaft, 2022). However, the challenge with open scholarship is that open access has been hijacked by commercial publishers and researchers pay APCs as high as 5,000 US dollars to publish open access (Larivière, Haustein & Mongeon, 2015: 15) and commercial publishers remain key players in the publishing business controlling access to science (Orlandi et al., 2019: 58). This study inquired into the publishing experiences at UCT to ascertain factors influencing participation in open scholarship and availability of funding for publication fees and other research related activities.

Dependence on the databases developed into a mass culture that stretches across research institutions; and authors conform to use of journal metrics like high impact factor (HIF) as an indicator of quality of science published, thus influencing decisions for hiring and promotion in HEIs (McKiernan et al., 2019: 5). Mass culture is neither established because of the

[15]Hybrid journals are subscription-based journals that publish individual articles as open access if a fee (article processing charge) is paid (Jahn, Matthias & Laakso, 2022: 104).

[16]Global north refers to countries that are technically and economically advanced (IGI Global, 2022b).

experiences of the community nor does it develop from their concerns; mass culture is dictated from above (from authorities) (Bronner & Kellener, 1989: 10) and is followed with minimal questioning. The behaviour of citing high status scholars became engraved as a scholarly conformity culture among researchers (Zhang & Dhing, 2012: 2) and this culture links to the prioritisation of metrics like journal impact factor, despite its shortcomings (Cox et al., 2019: 747). Use of commercial databases for bibliometrics may not soundly describe mass culture as users are not forced to subscribe to databases, however, the marketing strategy and lack of alternative freely available comprehensive metrics tools leave institutions with no choice but to conform to use of commercial databases (Kupe, 2019; Paterson, 2020). The use of metrics is globally recognised as a social norm and researchers conform, which becomes a social conformity that can be equated to scholarly conformity as the behaviour or culture is a result of group influence or expectation, as noted described by Zhang and Dhing, (2012: 3.).

Targeting prestigious, HIF journals (Von Solms & Von Solms, 2016: 46) forces authors to sign away their copyright and transfer exclusive distribution and reproduction rights to publishers (Czerniewicz & Goodier, 2014: 1). Researchers who have the desire to share knowledge are restricted by copyright laws (Matushek, 2017: 258), as publishers hold rights on authors' behalf. Publishers become significant beneficiaries of science through large profit margins (Raju, 2016: 2) which restricts the flow of information (Hoskins & Stilwell, 2010: 24). Commercial publishers are confirmed to have the market pricing power in the scholarly communication industry with marketing strategies that shape the market of research journals (National Academies of Sciences, Engineering and Medicine, 2018: 41). This gives publishers autonomy to control the information industry, which positions the industry as being among dominant capitalist (Pyati, 2007) sectors. This affects libraries particularly in the global south due to limited budgets (Kupe, 2019) which further excludes or marginalises authors and alienates their knowledge from users. The current study has the potential to also disclose if the publishers' monopoly is affecting the UCT research community.

2.3.3 Social exclusion and discrimination

Most critical theory concepts discussed earlier have adversative effects as they contribute to social exclusion. Many institutions and individual researchers have limited or no access to the main commercial databases, that is, Web of Science (WoS) and Scopus (Pagell, 2014: 142) owned by Elsevier and Clarivate (Singh et al., 2021: 5116) respectively, due to financial constraints. According to Rispel, Molomo and Dumela (2008: 19) social exclusion is a multi-

dimensional phenomenon driven by imbalances in power relations, which excludes people or groups of a particular experience from adequately engaging in community or social life. They further indicate the development of diverse policies in the post-apartheid period in South Africa intended to address historical injustices, acknowledging that disparities remain extensive in the country (Rispel, Molomo & Dumela, 2008: vii); and broad access barriers to scholarship may continue to perpetuate inequalities in South Africa as lack of access hinders acceleration in innovation and education development (Cloete et al., 2011: 3) to eradicate poverty.

The fear related to scholarly communication and policy development is lack of relevant knowledge and the level of representation of the marginalised in accessible science since Africa's research findings are said to be "lacking visibility or online presence"' (Duermeijer, Amir & Schoombee, 2018: n.p.). The pay-to-publish open access model is viewed unfeasible in the global south (Poynder, 2018), and therefore African authors are excluded due to lack of funding. Most of the social injustice aspects identified in scholarly communication contribute to the exclusion of low-income communities, which UCT falls under; and UCT Libraries, like other African HEI libraries, battles to maintain subscriptions due to budgets cuts (Davis-Evans, 2019: 12).

2.3.4 Empowerment and social justice traits – social inclusion

While OA is perceived to bring transformation, capitalist aspects of commercialisation of scientific research via hyperinflation of APCs by commercial publishers, are also excluding authors (Khoo, 2019: 3). Open access has not addressed issues of social injustice and author exclusion as the business model demands unaffordable APCs (Beasley, 2016: 163; Rodrigues, Abadal & De Araújo, 2020: 2). Therefore, Leckie and Buschman's (2010: xi) emphasis on a more "critical-theoretical approach" would be useful in Information Studies as a means to correct the epistemological assumptions relating to power and social justice through different means. Challenges of restrictive licenses have motivated many academic libraries to establish scholarly communications services to provide alternative research dissemination means (Schonfeld, 2015). Such services have the potential to increase visibility, discoverability and accessibility of scholarship, thus supporting human emancipation though open sharing of scholarly outputs.

Recent studies (Bosch, Albee & Romaine, 2019; Masterman, 2020) indicate that there have been radical open access global initiatives including Open Access 2020 (OA 2020)[17] and Open Access Plan S[18]; however, 85% of the world's scholarly content is still closed behind paywalls. In the context of South Africa, the commercially dominated information industry further enhances inequalities as the country is still facing racial income imbalances (Sguazzin & Wilson, 2021) which could improve if knowledge is openly accessible for innovative means to empower marginalised low-income communities. The undesirably high subscriptions costs intensify the information divide (Raju, Raju & Claassen, 2015: 264) and a transformation agenda would require collaborative efforts to make the process of science publishing open by default.

The researcher views the 'open scholarship agenda' of UCT, which entails a commitment to disseminate and share all forms of scholarship (University of Cape Town, 2020b), as a democratic strategy to reach out to information marginalised communities. Bearing in mind the experiences of apartheid and colonialism in South Africa and Africa, respectively, the adoption of the Social Responsiveness Policy Framework (SRPF) (University of Cape Town, 2012: 6) at UCT is a strategy to support social justice and transformation. On the same note, critical theorists value research while understanding the role of critical theory in expounding the interconnections that reproduce or transform society, culture, economy and consciousness (Held, 1980). Therefore, critical theory aspects are significant in this study as it would assist in understanding whether scholarly communication culture at UCT is contributing towards transformation or supporting the capitalist system of commercial publishers in the information industry.

Veletsianos and Kimmons (2012: 172) view open scholarship as having its basis rooted in a moral pursuit for democratisation, fulfilment of fundamental human rights, justice and equality. With the availability of open-source software, opportunities have been created to freely disseminate knowledge through establishing affordable infrastructure (Pellien, 2019).

[17]Open Access 2020 (OA2020) is a global initiative to advance open access through transformation of scholarly journals from subscription or paywall system to open access publishing models to remove cost access barriers and to support re-use of scholarly outputs and ensure sustainability of publishing costs (Open Access 2020, 2021).

[18]Plan S is an open access initiative supported by an international consortium of research funding called cOAlition S to propel open access by ensuring that from 2021 research funded by public grants must be published immediate open access in open access journals or platforms (European Science Foundation, 2022).

Therefore, alternative open models and practices that emerged as a result of the open movement to increase access to scholarly output, such as research articles, data and related codes, and educational resources, are required (McKiernan, 2017: 25).

In emphasising the significance of research, Ruano-Borbalan (2017: 3) supports an economic and political doctrine, disseminated through public policies in the late 1960s, that endorsed scientific knowledge as the major driver of innovation and growth. The economic and political doctrine posits that disseminated knowledge assumes a role in growth, innovation theory[19], meaning research should facilitate innovations that influence economic growth of society at large (Ruano-Borbalan, 2017: 3). A concept of democracy is visible in critical theory and is viewed as a tradition that aspires to replace possessive individualism as a basis for democratic politics (Bohman, 2005). Open scholarship has a broad global community as its beneficiary as it emphasises re-use of knowledge (Raju, Claassen & Moll: 2017: 39). Therefore, critical theory aspects that relate to open scholarship should equally reject individualism (commercialisation of knowledge) as openness should promote access for all (Suber, 2019) thus fulfilling critical theory concepts of "universal freedom and equality" (Bohman, 2005: n.p.). Through open scholarship content creators allow open licensing of intellectual property to allow others to redistribute, copy and re-use, thus enabling empowerment of fellow content creators and social inclusion. The current study is useful in identifying if UCT academics and researchers strive to empower the marginalised through open scholarship practices.

Inclusivity is significant in the information economy and its achievement calls for equitable access to information and equal opportunities to empower the community (including womxn, youth and rural population) and catering for unique needs (European Bank, 2021). This demands major research stakeholders to adopt information dissemination strategies that promote social inclusion for the attainment of social justice. Empowerment and human development can be achieved by ending poverty and other deprivations directly linked to the 17 SDGs (United Nations, 2015), which are calls of action for human development. According to Wastl et al. (2020: 5, 7) the SDGs have reached a level of prominence within policy and research communities, which indicates the presence of vast SDG-related research across the world, while there is information deprivation due to commercialisation of knowledge. Hence

[19]Also known as the theory of endogenous growth which means the growth of the economy is influenced by internal forces like forces governing the opportunities and incentives to create knowledge (Howitt, 2010: 68).

the need to investigate participation in open scholarship that can potentially increase access to SDG-related research across disciplines.

Engaged scholarship within the social responsiveness agenda of UCT (University of Cape Town, 2018) is a call for participation in open scholarship to support "real democracy", which is linked to the goal of self-creating and self-constituting humanity noted by Bohman (2005: n.p.). Academic institutions in South Africa are making efforts to end the serials crisis through managing open access journals through a library publishing service (Raju & Pietersen, 2017). According to Raju and Pietersen (2017) the role of publishing open access taken up by academic libraries is driven by a social justice agenda to achieve diversity, inclusion and equity in accessing infrastructure and through removing the APC cost barrier (Kupe 2019), thus addressing the dearth of scientific knowledge in Africa.

This section highlighted diverse critical theory aspects that have assisted in the positioning of scholarly communication as a dominant industry with components that need to be interrogated as well as highlighting the potential that openness has to empower communities. Power control and dominance experienced through traditional commercial publishing was also discussed in this section. The demand from commercial publishers to have authors' exclusive distribution rights was also highlighted as it instantly turns scholarship into an income generating commodity, thus positioning the scholarly communication industry as a capitalist (commercial) sector. Alienation of scholarship and its impact on users as well as journal cancellations were also discussed. Openness of scholarship as a means of empowering communities and supporting human development or social justice was also covered. The section that follows covers the methodological assumptions of critical theory.

2.4 Methodological assumptions of critical theory

Creswell (2014: 10) points to the existence of methodological aspects in critical theory as a transformative lens. Critical theory prioritises a systematic research inquiry as the basis of gathering facts and is regarded suitable for multidisciplinary research (Held, 1980). Critical epistemology has been globally adopted to respond to questions in diverse fields including information systems, medical education, theology and library studies (Hirschheim & Klein, 1994 [USA]; Sandars, 2016 [(UK]; Boucher, 2014 [Australia]; Raju, 2016 [South Africa]). This section presents some methodological assumptions of critical theory as relevant to the current study.

Critical theory supports a just means of engaging in an inquiry which suggests inclusive methods of listening to the voice of those experiencing the phenomenon (Held, 1980: Crossley, 2005), thus facilitating an informed discussion. Critical theory highlights the risk of distorting reality if one research approach is adopted, which suggests the need to draw from mixed methods to allow research approaches to supplement one another in a systematic investigation (Held, 1980: 34), and hence the adoption of a convergent transformative mixed methods approach in this study (detailed in Section 4.3 of Chapter 4). Leckie and Buschman (2010: xi) argue that critical theory has interdisciplinary research traits and is important to Library and Information Science (LIS) scholarship; however, they also confirm that LIS has no strong culture of producing theory in the field.

During an inquiry, the history of people is argued to be essential for understanding aspects related to the phenomenon under study (Strydom, 2011: 39). In relation to this, a history of collection development that deprived students of information (through banning and burning books (Dick, 2018; Sguazzin & Wilson, 2021)) in former black university libraries in South Africa (Sehoole, 2005; De Villiers, 2019) and who could now be in academia, makes transformative convergent mixed methods approach suitable in guiding methods for the current study. This theoretical lens is deemed suitable as the study involves the democratic role of access to information, which benefits the previously marginalised. Apartheid advocated for inferior education for the black community in South Africa, using knowledge as a tool of oppression and for the production of apartheid social classes (Mncwabe, 1990; Abdi, 2002) There was information deprivation among black South Africans caused by apartheid education of separated racial groups (Sehoole, 2005) which makes open scholarship a crucial subject to be investigated using a critical inquiry.

2.5 Sen's capability approach (CA) framework

The capability approach (CA) framework was developed by the economist Amartya Sen in the early 1980s to assess people's welfare in their functionings; and capabilities are defined as one's potential and actual activities (Kuklys & Robeyns, 2005: 9). The approach links to freedom, development and quality of life (Oosterlaken, 2015: 222), which assists to explore capability, functioning, human diversity and agency in public participation (Walker, 2005: 103). According to Oosterlaken (2015: 222), the CA framework can be viewed as a normative approach that has relevance for designing or shaping a new system, particularly in cases to do with enabling human action. Walker's (2005: 103) view of the CA is that it prioritises human

diversity as individuals' ability to convert resources into valued outcomes differ. Explaining this further, Walker describes capabilities as what people are actually able to do and be (Walker, 2005: 103), or as positive freedom that people must enjoy valuable "beings and doings"; and these are also called functionings (which include being literate, being healthy, being part of the community, etc.) as expressed by Oosterlaken (2015: 223). Therefore, in the case of this study, the CA classification scheme would be used to analyse different factors like skills to produce research, ability to use the available open systems, the availability of supporting resources (funding, technologies, etc.).

The CA framework was first applied in economics research and has been developed and enhanced to be applied to various other research fields (Bezuidenhout et al., 2017b). Within the lens of this framework, participation can be achieved if participants have equal opportunities, are equally skilled and are provided with equal access to resources (e.g., time, funding, etc.). Bezuidenhout et al. (2017b: 468) present a modified classification scheme drawn from the CA framework that categorises capability factors influencing participation in a project, successfully into "personal, funding, organisational [institutional or environmental], communal and infrastructural factors". This holistic classified scheme of the CA framework is echoed by Oosterlaken (2015: 222.) who describes the scheme as suitable for designing or redesigning a system based on the existing resources, thus creating a conducive environment that supports individual capabilities in making a contribution. This classified scheme of factors guided Critical Questions 4, 5 and 6 (see Section 1.5 of Chapter 1) of this study that inquired into strategy elements or factors influencing participation in open scholarship at UCT. In Table 2.1, both critical theory and the CA framework are mapped to the critical questions they informed and to related constructs.

Table 2.1: Mapping of theories (critical theory and capability approach framework) to critical questions they inform and expected constructs

Critical questions	Related constructs	The informing theory/ies
To what extent are academics and researchers in the UCT community engaging in open scholarship practices?	Sharing via green, gold or diamond OA, sharing OERs and open data to some extent (democratisation of knowledge)	Critical theory
	Not sharing scholarship, sharing in closed outlets or creating with no licenses (alienation or closing away of knowledge)	Critical theory
If UCT academics and researchers are engaging in open scholarship practices, what are these practices (e.g., data sharing; open access publishing; creation and sharing of open educational resources)?	Publishing open access, sharing OERs, sharing open data, desire to share, motivated by social justice imperatives	Critical theory
	Publishing closed, not sharing data, resistance to share knowledge and OERs (social exclusion, deprivation or discrimination of the marginalised communities)	Critical theory
To what extent are UCT academics and researchers contributing to the openness movement as a social good?	Sharing grounded in social justice imperatives or open publishing culture (supporting human development, etc.)	Critical theory
	Lack of link of OS activities to social justice and human development, closing publishing culture	Critical theory
What current strategies are being adopted in support of UCT's open scholarship agenda?	Strategies adopted/factors influencing participation in OS: (resources used, quality and sustainability) – funding, skills, infrastructure, etc.	CA framework & critical theory
To what extent are these strategies effective in supporting the social responsiveness agenda of the university in the scholarly communication of its output?	Effectiveness: rating availability and sustainability of resources (increased or no support of OS by adopted strategies)	CA framework & critical theory
Positioning a strategy for the promotion of open scholarship within a critical epistemology, what would be the essential components of such a strategy for the advancement of open scholarship in the interest of information access for marginalised communities?	Identification of resources and needs required for OS strategy development Determining use and effective support of resources	CA framework & critical theory

2.6 Chapter summary

This chapter identified and discussed principles of critical theory that relate to the study's research problem. The chapter demonstrated how the control of power in the scholarly communication field affects and further marginalises low-income communities. Hence critical theory as an epistemological lens is useful as a positioning tool for the study to interrogate dominating and marginalising social structures, as mapped to critical questions in Table 2.1. The addressing of these critical questions assists in ascertaining if UCT participants in the study are advancing towards the democratisation of scholarly communication processes. Concepts drawn from critical theory were discussed both to position the study and to create an awareness of the impact of the dominant traditional scholarly publishing industry as it exploits, alienates and excludes researchers from contributing to the democracy of their communities. The study findings can also assist in reflecting on critical theory concepts relating to social justice, if the study participants are engaging in diverse open scholarship practices, and on constructs that were derived from the capability approach (CA) framework that capacitated participation in OS. Elements of the CA framework were also mapped in Table 2.1 to critical questions they were designed to guide. Critical theory also guided in the selection of a suitable research approach, a convergent transformative mixed methods approach which is recommended within a transformative worldview for an in-depth understanding of a phenomenon. The following chapter reviews literature relevant to the study and further clarifies commercial publishers' influence, monopoly and commodification of knowledge.

CHAPTER 3
REVIEW OF LITERATURE

3.1 Introduction

This chapter reviews literature related to participation in open scholarship including practices, initiatives and strategies adopted to support openness of scholarship. The first part of the reviewed literature explores scholarly communication history and concepts related to the topic. The second part reviews literature on open scholarship practices and initiatives being engaged in by different research communities globally, including research productivity and research governance. In this chapter concepts from the theories informing the study are integrated in the reviewed literature. As affirmed by Punch (2013: 96) reviewed literature serves to identify key theoretical and philosophical sources, which assists the researcher to locate the study in a comprehensible global context. Therefore, literature relating to previously recorded empirical evidence is reviewed and organised in this chapter while reflecting on key concepts of adopted theories, as guided by Creswell and Creswell (2018: 26, 29). This chapter also reflects on new ideas relating to the topic (Neuman, 2014: 125). An extensive review of the literature was also valuable in broadening the researcher's knowledge of the topic and in the framing of the six critical questions that guided the study and which detailed in Section 1.5 of Chapter 1

3.2 Literature search strategy

Literature related to open scholarship (OS) was sourced using the following search strategies: ((open scholarship) OR (open science) OR (open research)) AND (higher education OR university* OR research institute*) ((open access OR (open research) OR (openness practices)) AND ((open data) OR (open data sharing) OR (open data practices)) AND ((higher education) OR (universit*) OR (research institut*)) and ((open educational resources) OR ("OER") or (open educational practices)) AND ((higher education) OR (universit*) OR (research institut*)) (Higher education AND apartheid or colonialism AND curriculum AND South Africa).

The search excluded sources on open education pedagogies and open-source software as these were not part of the scope of this study. Literature searches found open scholarship related titles published in South Africa and internationally mostly between 2000 to 2022. Older sources were also included for a wider overview of theories and for the history of scholarly communication. Various relevant databases were selected and searches were conducted in

Academic Search Premier; Africa-Wide Information; eBook Collection (EBSCOhost); ERIC; Humanities International Complete; Library, Information Science & Technology Abstracts; PsycINFO; and Google Scholar.

3.3 Scholarly communication progression

Scholarly communication involves publishing and dissemination of research findings by academics and researchers after a systematic inquiry, in order to make research available to the broader research community (Das, 2015: 3; Saroja, 2019: 870). Common methods of communicating science include publishing findings in journals, conference proceedings, research monographs, dissertations, research reports and personal memoirs (Das, 2015: 6). An author or collaborating author submits a manuscript to a journal for rigorous peer-review by subject experts and practitioners who are experts in the field (Das, 2015: 6). Journals and conference proceedings became popular, primary channels for knowledge dissemination (Saroja, 2019: 871), with the first journal published about 350 years ago in the global north (Ball, 2011: 1; Das, 2015: 6).

The literature (Beverungen, Böhm & Land, 2012; Das, 2015: 7; Orlandi et al., 2019: 57) ascertains that traditionally, most academic journals were published by non-profit publishers including academic/disciplinary associations, research councils, research institutions, learned societies, university presses, research and literary academies. According to Das (2015: 7, 8) learned societies that became known as Royal Societies established subject specific not-for-profit periodicals to disseminate research findings of society members. Some studies identified disciplinary associations, university libraries and university presses as the forerunners of the first scholarly communication publishing model (Orlandi et al., 2019: 55) and university presses have been acknowledged for prestigious non-profit academic publishing (Beverungen, Böhm & Land, 2012: 934; Orlandi et al., 2019: 55). Historically, associations and university presses solely published research, while libraries buy or subscribe to journals at a subsidised affordable cost.

According to Saroja (2019: 871) the invention of flexible print infrastructure by Gutenberg facilitated print journals being a norm in establishing intellectual property (Swan, 2006: 5) and print became a preferred model over old (handwritten) manuscripts and over ancient oral means of communicating science (Ball, 2011: 1). Print also became a formal means to establish intellectual property (Swan, 2006: 5) for protection by copyright laws. Sharing of research

findings became crucial as professional and academic growth depended on increased scientific publications (Das, 2015: 6). Scholarly publishing was not-for-profit as the production and printing costs were covered through sponsorship, and prices for serials were subsidised (Das, 2015: 8, 9; Fyfe et al., 2017: 5). The sharp rise of scholarly research after World War II posed a challenge of information explosion and increased the demand for publishing, thus leading to delays that prompted increase in printing fees due to the demand of published science (Das, 2015: 12). Fyfe et al. (2017: 5) assert that historically the publishing of research depended on availability of printing infrastructure, including publishing skills as well as booksellers' expertise. The demands created opportunities for commercial publishing companies and multinational enterprises in the publishing industry (Das, 2015: 18), and combined serials as packages for subscription by libraries, thus contributing to the commodification of knowledge and alienation aspects of critical theory. Competition from commercial enterprises reduced the presence of university presses in the journal market (Beverungen, Böhm & Land, 2012: 933), thus solidifying knowledge as a commodity or labour (in the case of knowledge creation) for the commercial market and thus relating to the labour exploitation concept of critical theory. The commercialisation of knowledge by private firms for high profits existed since 1945 (Fyfe et al., 2017: 5), and introduced capitalist aspects of critical theory that reduced intellectual property to what Crossley (2005: 3) and Sayers (2011: 288) describe (see Section 2.3.1 of Chapter 2) as mere commodity equated to labour alienated from humanity for profit making.

Commercial publishers own infrastructure and resources needed to publish, disseminate research and evaluate research impact in metrics form (Von Solms & Von Solms, 2016: 46). At present, the big five commercial publishers, Elsevier, Taylor & Francis, Springer, Wiley and SAGE own 70 % of chemistry, psychology and social sciences journals in Europe and the USA (Macdonald, 2015; Bosch, Albee & Romaine, 2019.). The science, technology and medicine (STM) journals remain in total control of these monopolistic corporations (Bosch, Albee & Romaine, 2019) and have promoted marginalisation of economically challenged communities, thus hindering the human emancipation aspect of critical theory that should be achieved by the signatories of the openness declarations. The possibility of retaining the non-profit publishing (or open access) is emphasised by Orlandi et al. (2019: 55) through the adoption of emerging enabling technologies supported by an on ongoing community-driven development of open-source software (OSS) that is freely accessible and open licensed to support re-use and customisation (Steinmacher et al., 2017: 2). OSS and increased access to the internet (Das, 2015: 4; Orlandi et al., 2019: 55) have led to the emergence of the open access

movement to bring a radical democratic means (Pyati 2007) of disseminating publicly funded research as a public and philanthropic good (Rappert & Bezuidenhout, 2016: 209). OSS allowed the establishing of journal and monograph hosting solutions that have proven to support affordable open publishing services (Poulter, 2010; Pellien, 2019; Burgelman et al., 2019), thus promoting access to knowledge relevant to supporting societal engagement, policy making and other information needs (Tennant et al., 2016: 7).

Three key openness declarations known for supporting the open movement are the Budapest Open Access Initiative (BOAI) of April 2002, the Bethsaida statement of June 2003 and the Berlin declaration of October 2003 (University of Pittsburgh, 2020). The BOAI declared the need for openness through self-archiving research in open repositories (green or delayed open access) and a new range of open access journals (Budapest Open Access Initiative, 2002:). OSS has also widely supported OA repositories infrastructure globally (Nwagwu, 2013: 8). The openness declarations aimed at stimulating OA discussion and they guide on OA practices to support knowledge sharing. Several research institutions (about 744 to date) became signatories of the Berlin Declaration (Max-Planck-Gesellschaft, 2022: n.p.), which motivated participation in OA initiatives including open data (Das, 2015: 6) and policy development. Initiatives related to OERs were strengthened by the Cape Town Open Education Declaration of 2007 (Hodgkinson-Williams, 2018).

This section covered scholarly communication history and transition of publishing into different models and its diverse stakeholders, while identifying different media that were used for knowledge dissemination. The section also noted the developments that emerged due to technological and political changes leading to the commercialisation of knowledge and how they contributed to the emergence of the openness movement that is being advocated for by diverse research stakeholders. The section that follows reviews literature relating to political changes in South African higher education as open education fits very well in the transformation agenda of South African higher education and that of other African countries due to inequalities created by apartheid and colonial legacies.

3.4 Political challenges in South African higher education and power control in the publishing industry

South Africa experienced apartheid under the 1948 regime that promoted white supremacy, reinforced by the adoption of the Bantu Education Act of 1953 that worked as an oppression

tool (Abdi, 2002: 39). The education offered a curriculum for blacks that was designed to maintain the subordinate and marginal status for black South Africans on racial grounds (Thobejane, 2013: 2). The higher education system created groups consisting of four white, one Indian, one 'coloured' and ten black universities to facilitate apartheid education on a racial basis (Sehoole, 2005: 23). The curriculum for black universities did not include technical subjects and did not support critical thinking (Mncwabe, 1990: 23) and was therefore viewed as "liable in nature" (Abdi, 2002: viii, 48). Bantu education created academic deficiencies and marginalised black students to remain servants for academically skilled white graduates (Abdi, 2002: 111). This shows that education can either support democracy or support oppression and social injustices, for example, Bantu education academically and economically marginalised black races in South Africa (Abdi, 2002: 111) while colonial education imposed Eurocentric and Christian mission values and philosophies to "brainwash African people" (Mart & Toker, 2010: 362, 363).

Black students transitioned into post-apartheid South Africa while educationally handicapped (Abdi, 2002: 21) and many South Africans are still living in poverty (Sguazzin & Wilson, 2021). Therefore, there is an urgent need for decolonisation of education and knowledge (Saurombe, 2018: 122), which needs to address Eurocentric philosophies and theories of apartheid and colonial education (Mart &Toker, 2010: 362; Shay, 2016; Moyo & Hadebe, 2018: 256). The current curricular do not adequately equip graduates with problem-solving skills (Jansen & Walter, 2019: 23) or relevant skills for job markets (Shay, 2016).

In the post-apartheid period, South Africa saw the rise of the 'fallist' anti-colonial movements, #RhodesMustFall (#RMF) and #FeesMustFall[20] (#FMF), with the former movement characterised by the attack on the statue of Rhodes (the British imperialist pioneer in Africa) (Murris, 2016: 274). Murris (2016: 274) views the action of students as a demonstration on how apartheid education continues to affect black South Africans. Shay (2016) and Murris (2016: 274) argue that the presence of the Rhodes' statue on the University of Cape Town campus was a symbol of glorifying racism and was humiliating for students; therefore, their

[20]The #FeesMustFall movement is a rallying cry against tertiary financial exclusion and debt traps for economically disadvantaged students in South Africa. The movement started in 2015 with university students protesting against unaffordable increase of fees and demanding the scrapping of fees debts and tuition for all students (Pillay, 2016: 156).

reaction was an objection to the perpetuation of British imperialist education by their institution. Shay (2016) clarifies that the #FMF and #RMF movements were related to issues of inequalities in education and that decolonisation in South Africa was long overdue.

In the post-apartheid era, the crisis is affordability (cost barrier) of prescribed higher education textbooks (Masuku, 2019) and the textbook cost challenge was also confirmed in low-income communities in the USA (Allen, 2016). In the African context, the creation of textbooks is crucial for the decolonisation of the curriculum to support education development on the continent (Moyo & Hadebe, 2018: 256). Masuku (2019) highlighted that months of low-income parents' wages are being channelled towards purchasing of prescribed books, thus depriving family members of decent lives as income is not enough to support their children's higher education, thus perpetuating academic alienation or exclusion of black communities that critical theory aims to address.

In concluding this section, it is critical to emphasise the challenges of both apartheid and colonialism legacies that are still impacting historically marginalised African communities due to the commodification of knowledge that further discriminates the economically marginalised. The subject of open scholarship has a crucial role to play in development issues and social justice goals of the African continent as access to research, OERs and data are of both philanthropic and public good as these aspects have a potential to empower humanity and address development issues (Verhulst & Young, 2017; Grojec, 2018).

3.5 Research productivity and related factors

Higher education worldwide is under pressure to publish (Abdeljaoued, 2018: 347) as research and economic progress are viewed as intertwined concepts indicating research productivity's link to a country's intellectual and economic wealth (Jaffe et al., 2020: 1, 2). According to Bezuidenhout et al. (2017a: 39), free accessibility of data has greater chances to support research productivity and the principles of egalitarianism (alluding to access to knowledge being a contributing factor to the social justice component of critical theory). Availability and accessibility of articles also contributes to research productivity (Ezema & Onyancha, 2017: 111), which makes open scholarship an essential component of research productivity (Raju, 2019). Al Hamzy et al. (2019: 461) emphasise the link between access, research productivity and knowledge translation. Producing and applying of knowledge effectively is also noted for its potential to strengthen socio-economic goals as knowledge is regarded a driving force for

development (Cloete et al., 2011: 3). In support of this, the Africa Action Plan proposed at the G8 summit of 2009, prioritised higher education capacity, research production and communication technologies as a development programme (Cloete, 2015) and Cloete and Maassen (2015: 108) supported the need for physical infrastructure and professional skills in higher education.

African universities were confirmed to be lagging behind in knowledge production and require far-reaching changes to connect academic and research activities much more productively to national or regional development and innovation networks (Cloete, Maassen & Bailey, 2015: xii). African researchers are described as being at the periphery of the world's research production (Raju, Claassen & Moll, 2017: 37; Abdeljaoued, 2018: 353) with African research being minimally visible online (Duermeijer, Amir & Schoombee, 2018). A study in the field of back pain conducted in 2018 through a systematic review and meta-analysis using hypotheses tests with data drawn from Web of Science, showed that global north countries were leading in research productivity, with the USA being the most productive followed sequentially by England, Germany, Canada and Australia (Wang & Zhao, 2018: 2). Some global south countries like South Korea and Brazil were positioned among the top 20 research productive countries (Wang & Zhao, 2018: 2). In 2018, Zaman et al. (2018: 636) confirmed global north countries' leadership among the top 20 nations in research productivity in both the sciences and social sciences. A different study conducted in 2020 on research productivity by country and discipline using 1962 to 2017 data drawn from Elsevier journals, also identified global north countries as leading in research productivity with their publications being more visible online (Jaffe et al., 2020: 5, 6). India, Brazil, Taiwan, Japan, China, South Korea, Canada and Australia are among the identified top 20 leading countries in the study conducted by Zaman et al. (2018: 636).

A study conducted in the applied sciences disciplines (engineering and computer science, agriculture and medicine) indicated high research productivity among applied science researchers in Europe due to the quality of the scientific environment at their universities (Bonaccorsi, Belingheri & Secondi, 2021: 21). According to Bonaccorsi, Belingheri and Secondi (2021: 21) the existence of equitable opportunities allows researchers in both less developed regions and advanced regions of Europe to compete on the same basis in research productivity. Another study noted dominance of researchers located in the global north in some of the global south research fields focusing on topics from the southern hemisphere

(Haelewaters et al., 2021: 1). Wolhuter (2019: 144) highlighted the use of English language as a barrier in research productivity, mostly for researchers in Francophone and Lusophone countries as English may be a third language. The challenge of using one language (English) in scholarly communication is also debated in Europe in fields such as classical archaeology, reflecting that Greek, Turkish and Spanish researchers are compelled to turn to English for science communication (Hempel, 2013: 130). The ese of English to communicate science is similarly noted for posing potential threats in cultural coherence and attainment of social justice in the global south and use of a foreign language may influence communities to consume science more than producing science due to language related challenges (Nguyen & Tran, 2019: 974). This study inquired into challenges relating to use of English in communicating science.

A study conducted in Saudi Arabia on research productivity in health sciences used 2008-2017 data that provided evidence of 14.1% increase in research productivity over the ten years with some universities being more productive than others (Ul Haq et al., 2020: 147). Sufficient budget allocation was noted as a supporting factor in research productivity, and researchers were also noted for publishing in local medical journals (Ul Haq et al., 2020: 147, 153). A recent finding in Bangladesh shows that researchers are increasingly publishing in locally based peer-reviewed journals (Irfanullah, 2021). However, there is not much linking of open scholarship to research productivity, but global south researchers may need to increase the extent of producing research to increase online presence while considering openness to support higher education students from low-income communities.

3.6 Research governance

Universities subscribe to commercial databases, among other things, to trace academic footprint “to explore measures related to research impact, researcher’s productivity (in terms of number of publications and research quality” (Põder, 2022: 1) for collaboration and hiring/recruitment, or for promotion purposes (Fyfe et al., 2017: 6). Therefore, researchers would opt to publish in journals owned and indexed by commercial publishers, as they are regarded to be high quality, whereas commercial journals exclude readers and libraries with low subscription budgets (Bosch, Albee & Romaine, 2019; EBSCO, 2021). Libraries are offered licenses that restrict sharing and hence readers outside academic communities are excluded in accessing academic library collections that are of subscription basis as licenses are for specified users (Schonfeld, 2015). This exacerbates the dearth of African knowledge

(Raju, Claassen & Moll, 2017: 34) as commercial databases hinder the purpose of sharing knowledge as accessibility is restricted for non-subscribers.

Conformism (another critical theory component) is a common characteristic that moulds behaviour in academia (Zhang & Ding, 2012: 2) as academics and researchers' performance evaluation rely on bibliometrics (Englund & Gerdin, 2020: 913, 914) that exclude OS achievements. Scholarly conformity is traced back to human culture with humans tending to behave in ways that are approved by people in their field (Zhang & Ding, 2012: 2). In South Africa, the National Research Foundation (NRF), one of UCT's funders, supports use of bibliometrics including metrics such as journal HIF is prioritised as part of the criteria for promotion to higher UCT academic ranks and for the South African Research Chairs Initiative (SARChI)[21]. SARChI promotions and researchers conform to the use of HIF (University of Cape Town Libraries, n.d.). The research funding model in South Africa also classifies publishing into two categories, one in journals that earn state subsidy (listed in the South African Higher Education and Training (DHET) accredited indexes like SCOPUS, Web of Science, SciELO SA, etc.) and another category in the journals that do not receive subsidy (not on DHET index lists) (Von Solms & Von Solms, 2016: 45), which indirectly suggests that UCT may be better funded due to extensive research production as a research-intensive institution. In this process the DHET, which is the main source of research funding for South African universities through subsidies, supports bibliometrics statistics like publication counts for financial support (Von Solms & Von Solms, 2016: 46), which does not push for an openness culture. This results in having research governance indirectly contributing towards more research being behind paywalls, a capitalist income generation aspect of critical theory which is achieved through commodification of intellectual property labour. Most research impact assessment criteria do not emphasise openness of research as a basis of achieving research impact or research goals or re-use; authors are interested in the number of research outputs as this carries weight during promotion (Sadiq et al., 2019: 426).

Researchers are under pressure, globally, to publish in HIF international journals mostly for promotion and for other professional reasons (Abdeljaoued, 2018: 347; Sadiq et al., 2019: 438).

[21]SARChI is a collaborative initiative designed and established in 2006 by NRF and Department of Science and Technology (South Africa) to attract and retain excellence in research and innovation at South African public universities and is based on high quantity and quality of publications in good impact journals, products and artefacts (National Research Foundation, 2019: 6).

A study published in Canada shows that academic journal rankings play a significant role in the evaluation of research impact during promotion and research funding application (Currie & Pandher, 2020: 2). The dependence on so called "reputable" international journals makes researchers conform to the culture of journal metrics drawn from popular commercial databases, Scopus and Web of Science (Ingwersen, 2014: 107; Currie & Pandher, 2020: 4). The need to adopt a holistic approach in evaluating research impact during research governance is recommended to the global research community and should include societal impact (Declaration on Research Assessment, n.d.) which requires research governance to value openness of research to support accessibility of knowledge by society for re-use.

3.7 Participation in open access

This section reviews literature relating to open access initiatives in different regions of the world and factors (or strategies) influencing participation in open access (OA). OA to research was intentioned to bring radical change and transform the publishing landscape and to be an alternative for subscription-based business models (Pimm, 2014: 1) to make publicly funded research freely accessible. Among the earliest efforts to improve access to knowledge are: the establishment of an open access pre-print repository (the ArXiv.org established in 1991), the launching of the Open Society Institute (1993) now known by the name Open Society Foundation, launching of SciELO in Brazil (1997) to manage open access journals from Latin America countries, the establishment of the Public Knowledge Project (PKP) committed to the development and improvement of open-source software such as Open Journal Systems (OJS) and Open Monograph Press (OMP) to support free scholarly communication (Raju & Pietersen, 2017; Poynder, 2019). There is also evidence of efforts to increase visibility of African scholarship and openness practices in Africa in different disciplines, for example, in biochemistry (Rappert & Bezuidenhout, 2016: 208; Bezuidenhout et al., 2017b: 465), environmental sciences (Adriaanse & Rensleigh, 2017: 31), emergency medicine (Al Hamzy et al., 2019: 461) and across disciplines (Raju, Claassen & Moll, 2017: 40). Researchers in other health fields (including otolaryngology) are publishing both in open access and subscription (closed) journals (Crossley et al., 2022: 1). The desire from global south scholars to adopt new technologies to establish open research publishing models has been noted (Allen & Marincola, 2021).

Diverse open access initiatives were noted by Nwagwu (2013: 8) to have emerged from the African continent, which saw the registration of repositories and establishment of open journal

platforms, which indicates the adoption of both green and gold or diamond open access by African academics and researchers. A random search conducted in 2018 on the OpenDOAR[22] database showed 143 institutional repositories registered from different parts of Africa (Fourie, 2018: n.p.), confirming an assertion by Asadi et al. (2019: 35244, 35252) that green open access continues to evolve and increase rapidly for knowledge sharing globally to support green open access. Another similar registry, the Directory of Open Access Journals (DOAJ), a community curated directory showcases an increase of open access journals globally (Directory of Open Access Journals, 2022a). Nwagwu (2013: 8) argues that the existence of African based open platforms on DOAJ is evidence of Africa's participation in open access. An increase of open access journals and open access practices have been noted from countries in Sub-Saharan Africa too (Nwagwu, 2013; Iyandemye & Thomas, 2019) and this could be an indication of increased participation in OS to support social good.

Green open access is critical for Africa's knowledge sharing as most universities encounter funding challenges, which makes gold open access quite excluding due to "APC hyperinflation" (Khoo, 2019: 3). Institutional repositories (IRs) have become part of the information services in many universities (Van Wyk & Mostert, 2014: 99). Europe, Asia, Australia and North America are noted to have accelerated in establishing IRs and in Africa, South Africa and Kenya are leading with regards to IRs, although there is a significant growth in other parts of Africa too (Nunda & Elia, 2019; International African Institute, 2020). A study that adopted a mixed methods descriptive research design found an increased adoption of IRs for use in identifying reading materials by post-graduate students in Tanzanian universities (Nunda & Elia, 2019: 60). However, post-graduate students who participated in the study were noted to lack awareness on open sharing and self-archiving on the IRs (Nunda & Elia, 2019: 60). The low uptake or response to green open access seems to be a common trend noted by various studies (Van Wyk & Mostert, 2014; Jackson 2017; Nunda & Elia, 2019) and hinders the critical aspect of democratisation of knowledge through sharing legacy scholarship. This might be an indication of conforming to traditional closed publishing that hinders sharing due

[22]OpenDOAR is a global directory of academic open access repositories that enables browsing and searching to find such repositories (Karadia & Sahoo, 2021: 57).

to embargo restrictions. The issue of participation via green OA and related challenges are also addressed in the current study.

According to Kwarteng (2021) open knowledge initiatives have also gained traction since the beginning of the COVID-19 pandemic. The development came as a revolution to end the pandemic through sharing COVID-19 related knowledge (Kwarteng, 2021); and to allow continuity in academic activities online and for the satisfaction of other information needs (Sonn et al., 2021; Kwarteng, 2021; Waruru, 2020). The observation shared by Kwarteng (2021: n.p.) is that "throughout the pandemic, researchers have embraced open publishing platforms and pre-print servers to disseminate their findings as rapidly as possible". Increased knowledge sharing has been noted during the COVID-19 pandemic to support the production and distribution of vaccines across the world (Wouters, et al., 2021: 1025). Sharing of pre-prints has become a trend that is considered to play a transformative role through accelerating the accessibility of science prior to official publishing (Chiarelli et al., 2019: 5), which has also satisfied information needs during the COVID-19 pandemic (Raza, 2020: 167), thus supporting academic progress.

In a different setting a study conducted in the biomedical sciences to compare open access publication rates in different low-income countries, found that open access is relatively high in Sub-Saharan Africa and vastly lower in other regions including "Middle East and North Africa, South Asia, and East Asia and the Pacific" (Iyandemye & Thomas, 2019: 1). This is a reflection of fulfilling a democratic role of opening up science in Sub-Saharan Africa for human emancipation after apartheid and colonialism. Research findings of a study that adopted quantitative data mining and bibliometrics research methods to identify trends, patterns and behaviour in publishing showed a rise of open access articles at UCT (Raju, Claassen & Moll, 2017: 40), which is the research site identified for the current study and which is also located in Sub-Saharan Africa. However, the different studies conducted in Sub-Saharan Africa do not explain the extent to which academics and researchers are focusing on immediate open access. This study inquired into participation in green and immediate open access focusing on the extent of participation as participation to a greater extent is of significance to regions like "Africa experiencing extreme poverty" (Aikins & Mclachlan, 2022: n.p.; Sguazzin, 2021: n.p.).

Radical movements are emerging within open access movements. In Europe open access has had a strong base since 2011 after the League of European Research Universities Open Access Working Group convened a meeting with 21 universities and developed a European roadmap

for open access that influenced the adoption of different open access mandates (Ayris et al., 2014: 284) to support knowledge sharing, mostly in the United Kingdom (UK). Important research stakeholders (research councils and funders) in Europe supported open access since then (Ayris et al., 2014: 284-285). The Higher Education Funding Council for England also established an open access policy in 2016 for journal articles and conference proceedings, and researchers working in the UK comply with this policy via green and gold open access (Eassom, 2016). Open access initiatives in the UK were also highly influenced by the Finch report (Ayris et al., 2014: 284), an outcome from a forum (also known as the Finch Committee of 2011) that recommended the adoption of gold open access. The Finch report influenced a buy-in from the UK government that led to the development of OA policies by some research and funding councils (IOP Publishing, 2016).

Open access continues to evolve with recent transformative agreement deals that are promoting pay-to-read and publish-for-free (Hinchliffe, 2019). The advantage of transformative agreements (also known as 'read and publish' or 'offsetting') (Borrego, Anglada and Abadal, 2021: 216) is that university libraries subscribe to hybrid journals, sign agreements and in turn, authors affiliated to the universities publish immediate open access without paying APCs in the journals that are identified in the agreements (Stewart, 2020; Vahed, 2022). The transformative agreements model is mostly adopted in the global north by library consortia to move towards the read-to-publish or flip model (Hinchliffe, 2019) and such agreements are Plan S compliant (Stewart, 2020). Some African countries (Botswana, Namibia and South Africa) have signed transformative agreements (South African National Library and Information Consortium, n.d.) and UCT (the research site for the current study) has started participating in such agreements with effect from January 2022 (University of Cape Town Libraries, 2022); benefits of such agreements are yet to be established.

A German consortium, Projekt, also signed a transformative agreement deal with Wiley (publisher) to allow German researchers to read and publish in Wiley hybrid journals (Stewart, 2020). According to Borrego, Anglada and Abadal (2021: 218) Greece also, between 2019 and 2021, adopted terms of license renewal to combine access and publishing through transformative agreements, and such agreements are likely to be extended if they are viewed to be beneficial in improving open access. Some Latin Americans view Plan S as a European initiative that is harmful to global efforts to advance non-commercial open access initiatives (Debat & Babini, 2020: 8). Some research universities contested gold open access due to the

extra publication cost (Ayris et al., 2014: 284). Similarly, South Americans are against the gold OA business model and view "Plan S as a European initiative that is harmful to global efforts to advance non-commercial open access initiatives" (Debat & Babini, 2019: n.p.). Therefore, Latin Americans established AmeliCA, a communication infrastructure for scholarly publishing and open science, which is a non-profit publishing model to move away from commercial means of knowledge dissemination (Becerril-García & Aguado-López, 2019: 14). The current study also probed factors influencing academics and researchers' participation in OS and activities engaged in through adoption of emerging technologies to support open scholarship. In 2018, the Plan S open access initiative supported by cOAlition S[23] was announced to publish open access all scholarly publications funded by public or private grants that are provided by national, regional and international research councils and funding bodies with effect from 1 January 2021 (European Science Foundation, 2022). Some member organisations that joined cOAlition S are from the USA, Australia and two are from Africa.

Japan has a well-established platform, J-STAGE, developed and managed by the Japan Science and Technology Agency to promote OA publishing of content from Japan's academic societies and research organisations (Hosokawa, 2021: iv; J-STAGE, n.d.). DOAJ is working with J-STAGE to support the indexing of open access journals (Directory of Open Access Journals, 2022b). J-STAGE has supported increased online access to more than 3,200 journals, conference proceedings and other academic publications from more than 1,800 publishers in Japan. Asia is promoting both gold and green open access with Indonesia leading in publishing open access journals in the world and Japan is positioned third in the adoption of repositories (Seo, 2018: 26). BanglaJOL, an online open access scholarly publishing platform for Bangladesh, is functioning with many of the journals publishing OA (Irfanullah, 2021) using Open Journal Systems (OJS), an open-source software, to publish open licensed publications using Creative Commons licenses to allow re-use of scholarship on the platform (Bangladesh Academy of Sciences, n.d). The current study also probed open access related practices being engaged in by academics and researchers.

[23]cOAlition S is an alliance initiated by a group of national funders for implementation of Plan S to achieve immediate open access, and the European Commission and the European Research Council are members of the coalition (Schiltz, 2018: 4).

Data collected from DOAJ in 2018 showed that Europe has the highest number of open access journals, followed by Asia with North America in third position; there is increased participation in immediate OA in these regions (Seo, 2018: 27). In the global north, coalitions and consortia are constantly working to establish a breakthrough in immediate open access and have support from funders (Doctorow, 2016; American Association for the Advancement of Science, 2019). Eleven European funding agencies supported by the European Commission and the European Research Council endorsed a principle of mandatory open access (Science Europe, 2020) to all scientific papers, which restricts researchers from publishing in about 85% of journals that do not provide immediate open access (Else, 2018: n.p.). The Germany-wide consortium of research libraries had announced the boycott of Elsevier journals in January 2017 to demand transformation of commercial journals to open access (Doctorow, 2016: 99). UK, Netherlands and eight other European nations also boycotted subscription journals and publishing with Elsevier, the largest commercial publisher and thus unveiled a radical open access initiative to support immediate open access of science (Else, 2018). Carnegie Mellon University in Pittsburgh, Pennsylvania, in the USA has succeeded in signing a first open access deal with Elsevier (American Association for the Advancement of Science, 2019). These are strategies adopted to stop capitalist elements of knowledge commodification (as espoused in critical theory) in order to increase democratisation of knowledge and support access for all, in support of critical theory goals of empowerment (human emancipation) and social justice in the research landscape. This study also inquired into strategies being adopted to support openness as well as means that can support the development of a strategy for the advancement open scholarship.

An overview provided by D'Agostino et al. (2018: 5) on open access initiatives shows the adoption of OA policies in the USA and in some Latin American countries. Countries such as Brazil (in 2011), Argentina and Peru (in 2013) and Mexico (in 2014) adopted OA policies as a strategy to advance open access. OA policies have also been established on the African continent with Ethiopia being the first country to establish a national OA policy that led to the adoption of institutional repositories by Ethiopian universities (Makoni, 2019). Most of the OA policies in other regions of Africa are linked to green OA which is intended to also mandate the publishing of electronic theses and dissertations (ETDs) on IRs and other publications (Van Wyk & Mostert, 2014: 99). Policies have been noted as important elements in the development of a strategy to support OS (Arning, 2022). This study was guided by the CA framework to

investigate factors (including policies) motivating participation in OS and to investigate other elements to develop an OS strategy.

Data collected from OpenDOAR also indicated growing initiatives of institutional repositories in Latin America and in OA policies, and the registration of institutional mandates on the Registry of Open Access Repositories Mandatory Archiving Policies (ROARMAP) (Becerril-García & Aguado-López, 2018: 2). Ghosh and Das (2007: 230) highlighted that OA initiatives in India had started since 2004 and had progressed tremendously in OA journals and central repositories such as the government-funded Shodhganga theses repository and the CSIR-Central repository (Misra & Agarwal, 2019; Madhan, 2019). Efforts from some online Indian journals had gone as far as digitising back issues (Ghosh & Das, 2007: 238) to increase the presence and accessibility of local knowledge online. Such efforts reduce critical theory challenges of power control, supported through the signing away of copyright to commercial publishers and copyrighting of publications as noted by Bodó, Gervais and Quintais (2018: 322) for commercialisation of knowledge (Pyati, 2007). Such challenges also alienate knowledge and exclude low-income families affected by income inequalities (Sguazzin, 2021). The current study inquired into academics and researchers' perceptions of OS being critical in supporting human development and social justice.

Libraries are rendering diamond publishing services and in cases where publication fees are charged, the purpose could be for cost recovery or to cover print costs (Lippincott, 2017: 43). The development of open-source software (OSS) such as Open Journal Systems (OJS) has supported infrastructure and OA publishing in the global south and has greatly improved (Raju & Pietersen, 2017; Poynder, 2019.). According to Raju and Pietersen (2017), funding challenges in the global south have motivated academic libraries to embrace the 'library as a publisher' trend and the adoption of OA publishing services using OSS, with Stellenbosch University in the Western Cape province of South Africa leading in this service (Tise, Raju & Adam, 2015: 8; Raju & Pietersen, 2017). A similar library service at UCT Libraries also serves as proof of concept with a functional diamond open access platform established and launched in 2015 to support equity and egalitarian agendas of open research (Raju & Pietersen, 2017). UCT has opened this diamond open infrastructure (a new Continental Platform) for use by other African universities and academic libraries that are in need of infrastructure to support OA publishing of research, monographs and textbooks in Africa; and hence the name Continental Platform to reflect the infrastructure's openness for use by fellow African

academic and research communities (University of Cape Town News, 2021). Open access has been noted as a philanthropic and public good (Rappert & Bezuidenhout, 2016: 209) and the current study too inquired into academics and researchers' participation in the openness movement as a social good. The Library Publishing Coalition[24] (LPC) and the International Federation of Library Associations and Institutions[25] (IFLA) have taken a strong position to support library publishing. The current study also looked into the adoption of emerging technologies to support the democratisation of knowledge.

Dissemination of knowledge on academic social network sites (ASNS) or academics' social media networks like ResearchGate, Acadedmia.edu and others have also gained momentum (Manca, 2017: 20). The use of ASNS supports access to full text copies and private exchange of copyrighted materials by peers for professional learning and growth across disciplines (Manca, 2017: 26). Mentorship in open access activities through workshops, and through managing journals at institutional level have also been noted to have increased (Smith, 2019) for purposes of developing African peer-reviewers (eLife, 2021). The literature (Abdeljaoued, 2018: 347; eLife, 2021; Oronje et al., 2022: 2) highlights mentorship as a need for new contributors (emerging researchers) in research projects, emphasising the importance of skills for project sustainability (Steinmacher et al., 2021: 1). The current study also investigated other activities that researchers are engaging in to support open scholarship.

This section reviewed literature on open access initiatives from different regions of the world and these include adoption of OSS for open journals and the increase of OA journals registered with OA directories and OA repositories. Open access, particularly gold OA has been noted to be popular in the global north due to support from funders and a buy-in from national governments. Establishment of infrastructure to support diamond open access publishing in the global south (Latin America, Bangladesh, India, etc.) and adoption of open access policies both in the global north and global south have been noted. Some initiatives were envisaged as suitable for global north countries due to the need of large amounts of funding, for example,

[24] The Library Publishing Coalition (LPC) is a membership association that caters for the distinct needs of library publishers (Lippincott, 2017: 2).

[25]IFLA (International Federation of Library Associations and Institutions) is a world library organisation and a leading international body representing the interests of library and information services and their users with members in over 140 countries (Sinnott, 2019).

gold open access of Plan S and open access transformative agreements. The literature also highlighted the 'library as a publisher' trend supporting diamond open access publishing using open-source software. The section that follows reviews literature on initiatives related to the open scholarship component of open data sharing.

3.8 Participation in open data sharing

Open data is categorised into three, that is, publicly available academic data collected by researchers during research inquiry, citizen-generated data collected collectively by community members (citizen science) and open government data collected through public-private partnerships by government entities (Attard et al., 2015: 408). Research data sharing is viewed as return on investment by funders as access to data is the cornerstone of knowledge production, learning and innovation (Corti et al., 2014: 1). Data sharing is also described as a philanthropic good and as a public good (Rappert & Bezuidenhout, 2016: 209) due to its potential to address humanitarian crises (Verhulst & Young, 2017; Grojec, 2018). Fecher and Friesike (2014: 26) argue the need for mandates to properly manage data and promote its free accessibility to a wider audience to prevent duplication in data collection and to allow research synergies. Discipline specific data, for example, big climate data, weather data, agriculture data, etc. are also noted as useful in enhancing human lives (Kamilaris, Kartakoullis & Prenafeta-Boldú, 2017: 23), for example, supporting farming in rural remote areas. Data were noted to have been useful since ancient times in enhancing crop growing conditions for local Egyptians and Babylonian farmers, and currently other big data types harvested online are critical for supporting companies in marketing and sales (Foster, Diamond & Jefferies, 2015: 3). Therefore, data sharing is significant in Africa for development and the current study also included inquiring into sharing of data as a social good (that is, supporting human development and social justice).

Data sharing is noted on the African continent to be in its infancy stage due to diverse barriers including dearth of data policies, lack of ICTs (infrastructure and related skills) and lack of funding for resources (Bezuidenhout et al., 2017b: 468-479; Kaewkungwal et al., 2020: 534). However, research data sharing in general-purpose repositories like Zenodo has gained traction to make data accessible to communities in need (MacFarlane, 2022: 71). Research data management (RDM) services are also being implemented by university libraries in the Western Cape province of South Africa, with the Cape Peninsula University of Technology Library leading in developing and integrating RDM services into institutional research workflows

(Chiware & Mathe, 2015: 2). Another quantitative study conducted at a resource-constrained research institute in South Africa, showed that emerging researchers had no knowledge about their institution's RDM policy, research data related ethics requirements, and data citation procedures; and about 75% of them had never created a data management plan (DMP) online (Patterton, Bothma & Van Deventer, 2018: 18). The current study probed academics and researchers' (including emerging researchers') extent of participation in open data and related open practices.

Community data-driven projects have also been noted in the literature, such as Nepal's open data-driven project that was adopted to create open maps to respond to the Nepalese earthquake of 2015, Colombia's open climate and meteorological data project that supported rice production and data-driven health care projects in Uganda (Verhulst & Young, 2017: 45, 50, 52) for health support services, as well as the data-driven open street maps in Kenya used to improve service delivery (Forget, Linard & Gilbert, 2018: 7). Blazek (2020) highlighted the existence of the portal called Open Data for Africa Portal which was developed by the African Development Bank (AfDB) in response to the increasing demand for statistical data and indicators relating to development in Africa. Some communities have been established on the African continent, for example the Humanitarian OpenStreetMap Teams, to keep critical open projects, such as the OpenStreetMap and open-source malaria, progressing for better access to geographical locations, improved service delivery and to increase medicine discovery (Forget, Linard & Gilbert, 2018:1, 2; Todd, 2019: 1805) and many other humanitarian projects. Most African communities are using data that is crowdsourced through global positioning system (GPS) devices, aerial photography and other free open-sources devices made freely available under the Open Database License (HOTOSM Community, 2018). Hence, the data collection instruments for the current study were designed to allow academics and researchers to share such openness practices they are engaging in to support social justice.

In Tanzania, open data services are being achieved through crowdsourcing to support mapping projects to develop village maps, which are utilised to rescue young girls who are scheduled for female gender mutilation[26] (FGM) (Tremblay & Carson, 2017; Grojec, 2018). FGM is

[26]FGM or female sexual mutilation is a common practice that involves "partial or total removal of external female genitalia, or injuries to genital organs of females for non-medical reason and this usually targets girl children from infancy to age 15" (World Health Organisation, 2022: n.p.).

classified as a humanitarian crisis and a violation of human rights as the practice has harmful consequences that range from chronic illnesses to loss of lives (Yusuf & Fessha, 2013: 357; Andro & Lesclingan, 2016: 259). An overview on data driven initiatives in different global south countries such as India, Nepal, Burundi, Paraguay, Jamaica and others highlighted some developments that were achieved through access and re-use of data (Verhulst & Young, 2017: 31-33). The current study too inquired about activities related to data sharing to identify patterns related to data sharing culture at UCT.

In India, SHRUG is a national open data platform that releases datasets to non-commercial users under Open Database License allowing Indian researchers to share data (related to public good, economic activities, politician characteristics and others) from different villages on this platform (Asher et al., 2021: 854). An international data sharing collaboration between UK universities (Oxford, Leicester and Durham) and researchers in the Middle East and North Africa (MENA) region, applied remote sensing methods to identify, document and monitor archaeological sites and landscapes (Fisher et al., 2021: 280). Some of the of 20 countries from the MENA region that collaborated include Tunisia, Morocco, Iran, Syria, Iraq and Libya (Fisher et al., 2021: 280). However, the World RePORT[27] database reports the scarcity of health research data from MENA regions due to limited health research projects in the region. Open data initiatives were also noted in the USA and some Latin American countries have developed principles of sharing open government data both in North and South America, including public health data within required ethics considerations (D'Agostino et al. 2018: 1). Some researchers in Spain are sharing research data across research fields (Aleixandre-Benavent et al., 2020: 10) and in Turkey data are being shared on the Aperta repository developed for the Scientific and Technological Research Council of Turkey by health and agricultural science researchers participating in publicly funded projects (Dogan et al., 2021: 58). However, the levels of experience for creating data management plans among Turkish researchers were noted to be quite low, which might suggest the need for more training (Dogan et al., 2021: 60). The current study too probed the availability of necessary skills as part of the strategy elements adopted to support data sharing.

[27]World RePORT is an open-access, online interactive database of health research projects hosted by different global north funders and health research donors (Hammad et al., 2019).

Open data projects intended to support civil engagement were recorded since the 2017 Open Data Week in different European and USA cities (Murray, 2017). In the USA open data became part of federal and local government to promote political transparency and proactive civil engagement (Kassen, 2020: 208). Open data projects in Chicago city also assisted the local communities in maintaining a safe, open and healthy green space and some data portals were useful for research and journalism purposes (Kassen, 2020: 511). Similarly, the City of Cape Town in South Africa recently engaged in its first municipal-level open data initiative to establish data driven public engagement and activism; however, the outcome showed minimal engagement with citizens (Ricker, Cinnamon & Dierwechter, 2020: 359). In 2018, evidence on research data sharing and growth of repositories in different disciplines, such as life sciences, natural sciences, engineering sciences, humanities and social sciences in the UK was reported (Open Research Data Task Force, 2018: 21). A task force, Open Research Data (ORD), was established in the UK and works in collaboration with international organisations such as Committee on Data of the International Science Council[28] (CODATA) and Research Data Alliance[29] (RDA) and other relevant data working groups, in advancing open science and facilitating research data sharing and re-use (Open Research Data Task Force, 2018: 2, 15). It was also critical for the current study to probe issues related to open sharing of research data in various disciplines to support re-use.

In summary, this section reflects diverse open data projects presented in the reviewed literature that include research data, government data and citizen-generated data and these types of data support research production, policy development and service delivery, including services to support humanitarian crises. Sharing supports various developments in different sectors including health, agriculture and are also directed towards humanitarian crises. The section that follows reviews literature relating to open educational resources.

[28]Committee on Data of the International Science Council (CODATA) is an international organisation that promotes international collaboration to advance open science to improve the availability and usability of data for all research areas (Committee on Data of the International Science Council, 2018).

[29]Research Data Alliance (RDA) is an international community-driven initiative launched in 2013 to build the social and technical bridges to enable the open sharing and re-use of data (Research Data Alliance, 2016).

3.9 Participation in open educational resources practices

Open educational resources (OERs) provide a strategic opportunity to improve the quality and affordability (Hodgkinson-Williams & Trotter, 2018: 209, 217) of education as well as to facilitate policy dialogue, knowledge sharing and capacity building (Das, 2015: 7). OERs are high quality teaching, learning or research materials, such as curriculum courseware, lecture notes, etc., that are open licensed to allow free access, re-use, re-purpose and redistribution by others (The William and Flora Hewlett Foundation, 2015: i). OERs emerged with the open education philosophy, a social justice notion intended to eliminate cost and legal barriers to education by providing every human being with high quality educational experiences and resources (Opensource.com, 2019). The high cost of textbooks has affected students' registration for some courses or degree programmes and has led some students to drop a course or opt for a different degree due to failure to purchase prescribed textbooks (Florida Virtual Campus, 2019: 4). The aspects of OER creation and sharing are positioned within a social justice context as they are learner centric and transformative in nature (Raju, 2019; Bali, Cronin & Jhangiani, 2020: 3) and OERs contribute towards the advancement of human development, particularly among low-income communities that cannot afford educational materials as pointed out by Masuku (2019) and Luo et al. (2020: 140).

OERs also present "an extraordinary opportunity for increasing access to education, sharing knowledge, fostering instructional innovation, and supporting personalised learning", thus lowering the cost of educational materials (The William and Flora Hewlett Foundation, 2015: i). The OER movement was strengthened by the Shuttleworth Foundation funded workshop that took place in 2007 in Cape Town, South Africa and led to the birth of the Cape Town Open Education Declaration (CTOED) (Hodgkinson-Williams, 2018.). The CTOED of 2007 declared a "global revolution, planting the seeds of a new pedagogy, where educators and learners worldwide create, shape and evolve knowledge together, disseminating diverse educational resources on the internet, open and free for all to use" (The Cape Town Open Education Declaration, 2022).

Technological developments over the years and improved access to internet have led to significant contributions by academic institutions, particularly during the COVID-19 pandemic (Shenoy et al., 2021: 3208). According to Tuomi (2013: 58) internet-based resources came into use in the late 1980s and have grown rapidly ever since the availability of multimedia formats on the internet. Among the various types of OERs, are massive open online courses (MOOCs),

which are flexible massive open online courses that allow learners to enrol from any geographical location (Opensource.com, 2019). The administering of MOOCs is viewed as of 'public good' as they bridge educational inequalities, particularly on global, regional and national levels (King, Pegrum & Forsey, 2018: 8); and these are being shared mainly via Coursera[30], including the courses, video lectures and reading materials (Tuomi, 2013: 58; White et al., 2021: 235). MOOCs have been noted for supporting education at extremely low cost via the internet infrastructure (Tuomi, 2013: 58) and the term was coined in 2008 (Blagojević & Milošević, 2015: 380). Research has shown diverse OER (and MOOCs) initiatives across the globe, although most leading institutions identified are in Europe and North America (Tuomi, 2013; Luo et al., 2020). A popular OER initiative and collaboration in the global north is the EdX, a product of MIT, Harvard and Stanford universities with several other institutions joining (Kolowich, 2013) and it offers tuition-free opportunities for students to enrol in diverse courses. In the global south OERs have the potential to provide solutions for distinct educational challenges and a need for increased OER initiatives to support global south communities has been acknowledged (Tlili et al., 2022: 2, 15).

Various OER initiatives have been noted in global south countries including Somalia, Uganda, South Africa, Kenya and other African countries (Tlili et al., 2022: 2). OER collaborative efforts have been observed between the Kenyan government, UNESCO and the Commonwealth of Learning (COL) with the intention to integrate ICTs with education to enhance quality and access to education for all (Tlili et al., 2022: 2). Some of the OER projects that African communities benefitted from include the AVU Teacher Education OER Initiative (involving 10 African universities), the TESSA OER Initiative (a Sub-Saharan project) and OER Africa (Adala, 2016; Pete, 2019; Tlili et al., 2022). These initiatives promoted the development and use of OERs, and educator training on OER production or adoption across the African continent (Tlili et al., 2022). An international study that drew data from both global north and global south countries (Ecuador, Spain, UK, Greece, Ireland, Turkey, Uruguay, Tunisia and Italy) showed little evidence of participation in OER practices to support equity and diversity through support of accessibility of OERs by learners with disabilities and the outcome showed lack of consideration of inclusivity (Zhang et al., 2019: 1). Evidence shared

[30]Coursera is platform founded by a computer scientist from Stanford University to support online education through opening courses to wide participation (Severance, 2012: 8).

from a mixed methods study that collected data from experienced OER higher education academics in Germany showed lack of commitment to publish all materials as OERs, however there was willingness among the academics to transform from closed to open practices (Otto, 2021: 354). The study also showed that academics expected incentives and support from their organisations as motivation as participation in openness was not driven by mandatory policies (Otto, 2021: 354). In a cross-country study conducted in Kenya, South Africa and Ghana, Pete (2019: 116) reports mixed feelings from students and lecturers on the satisfaction with internet connectivity cost to contribute to OER creation. The study also highlights that there is creation of OERs by lecturers and students in different formats (*Word*, *Power Point* and *Excel*) and that MOOCs across the three countries are mostly in the urban areas, and that no evidence of sharing was found from participants in rural areas (Pete, 2019: 115-116). There was willingness from the study participants to engage in other OER opportunities (Pete, 2019: 114). A different study conducted in India showed evidence of 68% of 260 participants (social scientists) from selected higher education institutions sharing OERs, 77% were planning to share and there was willingness to collaborate with peers from other parts of their country, and from other regions and countries (Kumar, Baishya & Deka, 2021: 6, 7). Some of the OERs being created by the social scientists in India include open textbooks, module handbooks, scholarly journal articles and interactive teaching objects (Kumar, Baishya & Deka, 2021: 16).

Open textbook initiatives have been acknowledged in the USA to support students from marginalised communities excluded by the high cost of textbooks (Allen, 2016.). The department of education in the USA is running an open textbook pilot programme for higher education institutions that have increased enrolments, to provide open textbooks (U.S. Department of Education, 2020.). Siyavula, a South African open textbooks project, is known to have supplied millions of books to different schools in South Africa (Beckett, 2014; Lambert, 2019: 279). By open licensing the textbooks, the Siyavula project has opened opportunities for educators in South Africa and other regions to adapt the open textbooks to suit the unique needs of their students (Lambert, 2019: 283). The CTOED influenced the initiatives of several open education projects including the UCT Open Educational Resources project funded by the Shuttleworth Foundation (Hodgkinson-Williams, 2018). The CTOED also influenced research engagements in the OER field including the Research on Open Educational Resources for Development (ROER4D) in the global south. ROER4D networked 18 independent research projects investigating the adoption and impact of OERs in selected

countries in South America, Sub-Saharan Africa and south and southeast Asia (Hodgkinson-Williams, 2018).

The Digital Open Textbooks for Development (DOT4D) is another OER initiative started to investigate the current ecosystem and publishing of open textbooks (International Development Research Centre, 2021). The DOT4D project aimed at supporting various stakeholders in the development of policy frameworks that guide open textbook publishing at institutional or national level (International Development Research Centre, 2021). Organised access to open access books including open textbooks is made possible through the browsing of the Directory of Open Access Books (DOAB) repository (Lamani, Patil & Kumbar, 2018: 141), which represents an important achievement for OER creation. Both OER related research and creation of OERs are crucial for the economically marginalised in Africa and contribute to critical theory issues of inclusivity as research is likely to influence policy and new student-centric pedagogies. The current study inquired into whether such practices as OER related research, creation of textbooks and other OERs, are being engaged in.

Researchers in Africa are participating in the creation of educational resources, particularly open textbooks published in OER repositories and relevant websites catalogued on the OER Africa website (OER Africa, 2020). As HEIs halted face-to-face classes in 2020 due to the COVID-19 pandemic (Katsande, 2020), OER Africa shared platforms across the globe that housed open educational resources. Such repositories include KNUST OER (Kwame Kruma University), FundaOER (a platform in South Africa), OpenUCT OERs (UCT) and many other links to African OERs listed by *University World News* (Katsande, 2020.). These African initiatives during the pandemic serve as evidence that researchers are making contributions in supporting social justice through sharing knowledge for progress in education, which is a need for the African continent due to poverty issues raised by Aikins and Mclachlan (2022).

Another study showed that high school teachers have benefitted from the OER initiative at Darakht-e Danesh Library (DDL) established in 2014 in Afghanistan and in turn the teachers were motivated to produce and share OERs which have improved the extreme lack of educational materials for teachers in the country (Oates et al., 2017: 552). The OER initiative at DDL was intended to improve quality of basic education in Afghanistan, a country with a devastated economy and infrastructure due to civil war, while teachers experience a daunting lack of resources and students survive in school without textbooks (Oates et al., 2017: 550, 551). This reflects a critical theory component of extreme marginalisation that has changed due

to open scholarship practices. Teachers in Afghanistan have supported the OER initiative through multilingualism as they translate OERs from English into Dari and Pashto local Afghan languages (Oates et al., 2017: 553), which improves an excluding (critical theory) experience of alienation from knowledge due to language barrier. However, the study showed no deliberate efforts in finding and using of OERs by teachers in Afghanistan (Oates et al., 2017 553). In USA higher education, the challenge is the accessibility of classical archaeology teaching resources written in languages other than English as libraries often do not consider acquisition of literature written in languages that are understood by the minority (Hempel, 2013: 130), thus compromising impact due to language barrier. This also reflects a critical theory component of academic exclusion for minority non-English speakers. The current study also looked at factors influencing participation and use of English was also investigated as a factor in communicating science.

In summary, MOOCs, textbooks and other OERs are supporting education both in the global south and in the global north. Use of OERs was noted for supporting education in Africa during the COVID-19 pandemic. Some OER initiatives identified were intended for teachers' development in the OERs field. OER related research has been noted for informing initiatives and some institutional projects and the OERs field continues to evolve. The section that follows reviews literature on factors influencing participation in open scholarship (open research, OERs and open data).

3.10 Factors influencing participation in open scholarship

Following the capability approach (CA) classified scheme (Bezuidenhout et al., 2017a), this section reviews literature on various factors influencing participation in open scholarship components selected for this study (open access, open data and OERS). There are various factors that influence all three open scholarship components, despite there being a few dynamics due to the uniqueness and nature of each of these scholarships. The sub-sections that follow present literature related to factors influencing participation in open scholarship:

i. Policies

Policies have been identified as critical in establishing and emphasising an emerging culture (Okemwa, 2013: 24) and in supporting open access through providing guidelines (Arning, 2022). An increased adoption of open access and open data policies at institutional or national level to support open scholarship has been noted both in the global south and global north

(Iyandemye & Thomas, 2019: 1). In the global south a few countries have adopted national policies (Ogunlaja, 2019: 5), including India (Priyadarshini, 2014) and Ethiopia (Mekonnen, 2019: 6). Most policies in the global south relate to green open access, which encounters challenges of working around embargo requirements from publishers (Tennant et al., 2016; Koley & Lala, 2022). In India, the challenge of publishers' embargoes is also interfering with the mandatory self-archiving OA initiatives being driven by DST-DBT OA policy that was established by primary science funding agencies, Department of Science & Technology and the Department of Biotechnology (DST & DBT) to support green open access (Koley & Lala, 2022: 175).

Some individual government data policies are known for limiting data sharing for use within the country (Fisher et al., 2021: 285) and open data policies are needed to drive and support an open sharing culture (Abdeljaoued, 2018: 356). The literature suggests that more research policies should be in place to support accessibility of African research (Okemwa, 2013; Abdeljaoued, 2018; Ogunlaja, 2019). Pimm (2014: 1) also asserts that open access is driven by funder mandates; and many funders with mandatory open policies are based in the global north and most of these funders supported the emergence of Plan S, a funder open access initiative set to mandate immediate open access to all funded research (European Science Foundation, 2022). Global south researchers have less funding as compared to their global north peers, which compromises the extent of participation in OS in the global south. Policies have also been discovered to accelerate the process of OER adoption in some communities (Tlili et al., 2022: 13); however, lack of policy and strategy to support OER creation has been noted (Cox & Trotter, 2016: 157, 158). Mishra (2017: 374,378) emphasises the need to develop both institutional and national policies while Raju, Claassen and Moll (2017: 43) recommend the establishment of open access national policies monitored by ministries responsible for HEIs, to guide the sharing of publicly funded scholarships with open licenses.

ii. Funding and infrastructure

Support for research productivity leans heavily on funding as research production depends on acquiring adequate infrastructure (Bezuidenhout et al., 2017a: 44) and infrastructure is also flagged as critical for sustainable open science projects (Arinto et al., 2017: 7). Researchers in the global south are facing funding challenges to support research activities and openness practices (Abdeljaoued, 2018; Mutapi, 2021). Infrastructure provides researchers with an opportunity to collaborate via internet connections (Bezuidenhout et al., 2017a: 46) and

Bezuidenhout et al. (2017b: 464) identify the poor provision of ICTs as a cause for concern for the promotion of open data in Africa Technology is noted for affording researchers opportunity to engage in research, to openly disseminate research and for companies to mine and collect massive data (Clobridge & Hinsdale, 2018: 66). Some researchers do not possess computer devices, lack internet off campus (Bezuidenhout et al., 2017a: 42, 45) and in general, there is low internet penetration and low internet users in low- and middle-income countries (LMICs) (Bezuidenhout et al., 2017b: 465). Buabeng-Andoh (2012: 148) highlighted lack of pedagogical teacher training for educators to be able to integrate ICTs in education. Chou et al. (2019: 66) point out the lack of practical experience and practice-oriented curricula, which demonstrate teachers' lack of exposure to adequate experience in training colleges. The current study also investigated the availability of support to participate in the creation of OERs. Internet connectivity is a major challenge in Africa, and in Kenya and South Africa some connectivity issues are due to power cuts and unaffordability of bandwidth (Bezuidenhout et al., 2017b: 467-468).

Access to ICTs (computers) and the internet also influence participation in online courses in a context of technology enhanced learning (Blagojević & Milošević, 2015: 381; King, Pegrum & Forsey, 2018: 9). Access and use of technology could be a barrier for educators and students from marginalised communities (Baro & Otiode, 2014: 117) as they may lack skills to participate online with electronic devices. Therefore, provision of ICTs is crucial as access to education and unaffordability of educational materials are a common challenge for higher and basic education at global level (Oates et al., 2017; Pete, 2019; Luo et al., 2020). In the USA (Luo et al., 2020: 140), Canada (Carson, 2020) and in South Africa (Masuku, 2019), barriers to accessing textbooks have been confirmed to hinder progress in higher education. The need for inclusive design practices have been also regarded significant to support equitable learning experiences and accessibility to educational resources for disabled students (Zhang et al., 2019: 19). This emphasises the need for adoption of enabling or adaptive technologies that cater for learners with diverse and unique needs, including the blind (Brophy & Craven, 2007: 961). However, it has been pointed out that inclusive design practices have not been adequately adopted (Jhangiani, 2019: 58) and OERs are mainly published in PDF formats without alternative inclusive multimedia to support students with disabilities (Brophy & Craven, 2007: 963). Inclusive design supports the achievement of social change and human emancipation of those living with disabilities, which in turn supports the critical theory agenda of social justice.

Re-use and adaptation of OERs depend on content being open licensed (Baas & Schuwer, 2020: 527), yet a study conducted in Sub-Saharan Africa shows high percentages of lecturers and students do not use open licenses for educational resources (Pete, 2019: 76). Therefore, copyright education and issues on re-use are factors to consider (Mishra, 2017: 372; Luo et al., 2020: 144; Kumar, Baishya & Deka, 2021: 14, 18) to support OER creation. Creators may not be aware that retaining of copyright gives the author the right to open license and allow re-use of sources (Mishra, 2017: 372) and that reserving rights to re-use content becomes a barrier during OERs creation (Pete, 2019: 41). The norm of targeting publishing in prestigious international HIF, closed journals (Abdeljaoued, 2018: 352) also hinders participation in OER creation. Most academic institutions already experience the serials crisis (Das, 2015; Bosch, Albee & Romaine, 2019; Björk, 2021), which is the commercialisation of knowledge that hinders access to knowledge to support production of research.

Funding restrictions are argued to be a major factor pushing African researchers to the periphery in research production (Abdeljaoued, 2018: 361). Iyandemye and Thomas (2019: 1) explain that African researchers resort to international collaboration with global north authors to increase open access publishing due to the fact that there is more OA funding in the global north. Lack of funding to support APCs to publish open access (Debat & Babini, 2020: 5) and to support data collection devices or to sponsor data collection processes, have been noted for global south countries.

iii. Fears and myths

The emergence of open scholarship raised some fears and myths that have discouraged some researchers from engaging in open practices. Some researchers from Spain have expressed fears of exposing their data to peers before they exhaust publishing from the data as well as fears for data misinterpretations by others (Aleixandre-Benavent et al., 2020: 11). Attitudes towards RDM practices were noted, for example among Turkish researchers, of having no interest to share (Dogan et al., 2021: 51). The emergence of open access has been linked to predatory publishing, a concept that has raised much debate, fear and discouragement in the scholarly communication field for those opening up scholarship (Nwagwu, 2016: 61; Cukier et al., 2020: 2). The predatory concept describes publishers who demand APCs and publish research without peer-reviewing as promised to the author or as expected (Nwagwu, 2016: 61). Some researchers equate predatory journals with low-quality journals, for example, Misra and Agarwal (2019: 1) phrase the concept as “low-quality or predatory OA journals” which makes

authors hesitant to publish open access. However, Raju (2018) argues that unethical, fake or fraudulent publishing has always been in existence and should not discourage participation in open access or deem emerging journals to be of lower quality. Despite the negative debate on predatory journals, online media continue to grow and support open communication of scholarship (Nwagwu, 2016: 58; Raju, 2018); therefore, a means to identify credible journals would be significant.

iv. Time constraints

In Africa, some factors related to research productivity include the challenge of balancing time between teaching and research, as academics (teaching staff) carry heavy teaching loads (Bezuidenhout et al., 2017a: 42; Wolhuter, 2019: 144) due to reduced senior teaching staff resulting from increased brain drain (Abdeljaoued, 2018: 353). In some parts of the global north, researchers pointed out that highly paid researchers are productive in terms of research, whereas their lowly paid counterparts struggle to be productive (Kwiek, 2018: 6); and low salaries were also noted as contributing factors to low research productivity in Africa (Mutapi, 2021), hence compromising increased sharing.

v. Organisational support

Organisational or peer support (Abdeljaoued, 2018; Wolhuter, 2019) and incentives (Oronje et al., 2022: 16) influence participation open scholarship. An organisational culture has the potential to increase individuals' motivation to engage in available activities (Chou et al., 2019: 68) and research stakeholders including universities and research institutions need to support skills development to equip researchers. Lack of teacher training to support OER creation has been noted (Brophy & Craven, 2007: 961). Stakeholders should also equip data communities with standards and principles, such as FAIR principles that support findability, accessibility, interoperability and re-usability of data (Hodson et al., 2018: 6,13). Skills related to processes of data collecting, storing, documenting, metadata standards (applicable to open access and OERs too), formatting, ethical and licensing aspects are significant in supporting OS (Committee on Data of the International Science Council, 2018.; Hodson et al., 2018: 6, 13). Lack of clarity on or awareness of the availability of platforms to share data and limited resources, have been identified as data sharing barriers (Data Republic, 2020).

Lack of awareness of research data sharing issues has been noted (Bezuidenhout et al., 2017b: 465). Research stakeholders should take responsibility to create awareness about data sharing

and its impact. Dogan et al. (2021: 59) point out that the diversity of norms, languages, cultures and practices complicate issues of data access and sharing ecosystem among research communities, particularly when international stakeholders need access to indigenous community's cultural data which might need to be translated to foreign vocabulary.

On the African continent brain drain is a major challenge affecting research productivity and sharing and researchers raise issues of lack of conducive environment to support research production and lack of incentives (Abdeljaoued, 2018: 353, 356; Mutapi, 2021). Academic writing was also observed as a complex process that is challenging for researchers due to lack of adequate writing skills and research culture that sustain science production (Abdeljaoued, 2018: 353).

vi. Political factors

Inequalities and colonial oppressive legacies also impose issues of mistrust towards open data sharing initiatives with fears of distortion of data and possibilities of global north researchers stealing data from less privileged communities of Africa (Abebe et al., 2021: 336). Indigenous local African people have experienced historical exclusion and this experience continues in the data ecosystem in Africa and in Australia (mostly felt by Aboriginal and Torres Strait Islander peoples) (Walter et al., 2021: 144). Ethical, legal barriers and political factors also contribute to lack of data sharing (Aleixandre-Benavent et al., 2020; Walter et al., 2021). Historical political experiences, for example, loss of land through land grabbing by white settlers during colonialism, in the case of African countries, hinders data sharing on land fertility with global north stakeholders in the post-colonial period due to lack of trust (Abebe et al., 2021: 334). Political tensions are noted for their impact on scientific and cultural collaborations and impact the ability of researchers in sanctioned countries (such as Iran) to participate in research data and research writing collaborations (Rezaee-Zavareh, Karimi-Sari & Alavian, 2016; Fisher et al., 2021). Wars in some African regions and in MENA regions are also argued to have impact on research productivity and on the data ecosystem.

3.11 Strategies that enhance open scholarship

This section reviews literature on various elements regarded as essential in developing a strategy to enhance open scholarship. This section is guided by the classified scheme presented by Bezuidenhout et al. (2017b: 468) as capability strategies or factors influencing successful participation in a project (including "personal, funding, organisational (also known as

institutional or environmental) and infrastructural factors"), drawn from the capability approach framework. A strategy is a detailed plan that leads to the success of an event or programme ("Strategy", 2020). Patterton, Bothma and Van Deventer (2018: 23) also highlight the need for a strategic plan to guide an organisation in executing a developed strategy and according to Tennant et al. (2018: 4) it could guide an individual, group, institution or nation. Tennant et al. (2018: 2) explain that an open scholarship (OS) strategy describes how the end goal is achieved through setting objectives, mobilising resources (also factors) and determining action plans to be executed collaboratively by different communities (stakeholders).

Fecher and Friesike (2014: 18) highlight the complexity of the openness discourse due to the diversity of research stakeholders, which should work as communities to support objectives of the OS strategy (Tennant et al., 2018: 3). Learned societies, research institutions, researchers, funders, libraries, publishers and interested public are considered as active stakeholders in open research practices (Research Libraries UK; Bothma, Pienaar & Hammes, 2008; Fecher & Friesike, 2014; Patterton, Bothma & Van Deventer, 2018) and roles of stakeholders need to be clearly stated during strategy development to establish working groups for different structures (Research Libraries UK). Collaboration of working groups or communities is emphasised by Tennant et al. (2018: 4, 13) while workshops and training are encouraged to be part of a strategy as well as the inclusion of open scholarship programmes to be part of the graduate school programmes to orient emerging researchers. The science community is encouraged to build OS structures into open-source and free software as such software does not restrict sharing of infrastructure with others during research collaboration (Tennant et al., 2018: 4).

Diverse working groups taking part in developing a strategy need to identify researchers' needs and challenges encountered in the research cycle when accessing knowledge (Research Libraries UK. n.d.) for further improvement of open access services. Figure 3.1 summarises the elements of an open scholarship strategy as put forward by Research Libraries UK (n.d.) and these elements were similarly investigated in the current study to establish a strategy to enhance open scholarship.

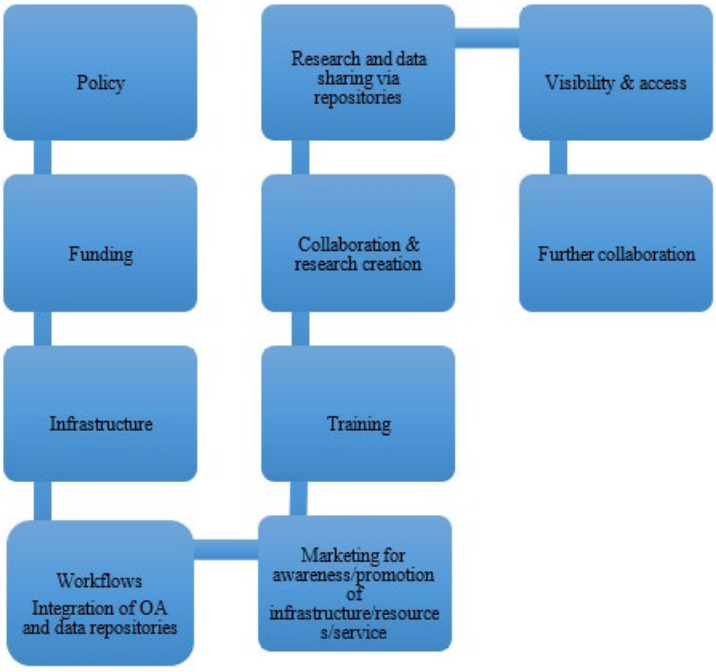

Figure 3.1: A summary of noted elements of an open scholarship strategy (Research Libraries UK, n.d.)

Bothma, Pienaar and Hammes (2008: 282) emphasise the need for policy as part of the elements that build a strategy for open scholarship. The adoption of open access policy is regarded crucial by Arning (2022) as policy provides concrete guidelines on OA publishing and ensures open science is integrated as a core part of the research community's daily work. Policy development is also regarded as key in the growing of open access, open data (Committee on Data of the International Science Council, 2018) and OERs (OER Africa, 2020) and various organisations, committees, working groups, etc. have been established to support policy development in open scholarship internationally (International Federation of Library Associations and Institutions, 2021).

Availability of diverse infrastructure, for instance, open journals and other open platforms has been highlighted as supporting participation in open access (Research Libraries UK: n.d.). Elements for an open scholarship strategy broadly explained by the Research Libraries UK (n.d.), acknowledge the need for resources (including funding), computer hardware and software that allow researchers to communicate or disseminate diverse scholarly products. ICTs including hardware, software and internet connectivity, power supply (Ahmed, 2007; Bello et al., 2016; Arinto et al., 2017; Bezuidenhout et al., 2017b) are also considered significant in Africa for the establishment of repositories, diamond open dissemination/publishing platforms and other collaborative platforms. The adoption of SWOT

analysis to present strengths, weaknesses, opportunities and threats, when developing a strategy has been acknowledged in order to identify the existing resources in the institution and externally and to analyse existing trends or patterns that may influence activities being aimed at (Namugenyi, Nimmagadda & Reiners, 2019: 1145). In the current study such an analysis is used to evaluate resources identified as essential elements to develop a strategy based on the study findings, to be able to propose action after highlighting possible weaknesses and threats.

Critical skills to support open scholarship that may be achieved through workshops include literacy to use infrastructure, use of open licenses for research sharing and use of copyrighted materials during research production and literacy on data handling and management (Tennant et al., 2018: 24). This section reviewed literature relating to elements regarded essential in developing a strategy to enhance open scholarship. Some of the elements noted are infrastructure, funding and skills development, which could be supported by different working groups from among the diverse research stakeholders that are open scholarship advocates and who will work collaboratively to support the openness movement. This study, similarly, investigated elements critical in developing an open scholarship strategy.

3.12 Chapter summary

This chapter reviewed literature (both conceptual and empirical) to identify issues or gaps related to the phenomenon under study. Historical norms and cultures, and new emerging trends in scholarly publishing, as reflected in the literature, were covered. Historical aspects of South Africa were also presented to demonstrate the need for open scholarship due to the complexities of income imbalances and poverty caused by legacies of apartheid; and such experiences are also noted on the African continent due to experiences of colonialism that led to underdevelopment among black communities as education was Eurocentric. The need for decolonisation of education was also noted. Open scholarship is growing, especially gold open access in the global north due to availability of funding but African countries, due to lack of funding, may remain consumers of knowledge from the north, and this hinders progress in the critical theory aspects of decolonisation and access to relevant knowledge. Open data efforts and OER production and adoption are increasing at the global level as challenges of access to textbooks have been noted both in the global south and in the global north. As established from the literature, traditional practices in scholarly communication do not prioritise visibility of and accessibility to scholarly content, thus establishing inequities among communities of different socio-economic classes. The chapter also presented factors influencing participation in open

scholarship and reviewed literature relating to the elements regarded essential for the development of a strategy to support open scholarship. As observed from the literature, the advancement of open scholarship would present opportunities for equal access, if institutions develop sustainable strategies for their communities to equitably participate in open scholarship as researchers may emanate from diverse and complex backgrounds. However, as also observed from the literature, the development of strategies would require consideration of challenges associated with the new trends of open scholarship, for example, the high APCs charges and the readiness of researchers to adopt open scholarship practices. The next chapter presents the research philosophy, approach, research design and methods adopted for the study.

CHAPTER 4
RESEARCH PHILOSOPHY AND DESIGN

4.1 Introduction

This chapter presents the worldview that informed the study, research approach, research design, methods of data collection and process of data analysis adopted for this study that aimed to critically analyse the UCT community's participation in the advancement of open scholarship; and, based on this, to develop a strategy for the promotion of open scholarship. The chapter also discusses the ethical considerations pertaining to data collection that was intended to address critical questions of the study outlined in Section 1.5 of Chapter 1.

4.2 Epistemological and philosophical underpinnings of the research

According to Punch (2013: 15), and as mentioned earlier, a study has to be underpinned by both methodological theory (method of inquiry) and substantive theory (referring to substance or content), which are both based on assumptions (or paradigm). A paradigm, being a set of abstract beliefs (philosophy) and principles, shapes how a researcher views the world, and the researcher's interpretation and action, thus defining the researcher's worldview (Kivunja & Kuyini, 2017: 26). Therefore, a paradigm can also be referred to as worldview (Punch, 2013; Kivunja & Kuyini, 2017). The philosophical assumptions within a paradigm include ontological assumptions (social reality) and epistemological assumptions (how reality can be known) and these are useful in guiding the assumptions about ways (or methods) to achieve the objectives of the study (Punch, 2013: 15). The transformative worldview was seen as a suitable philosophical worldview to inform the study and critical theory was adopted as the theoretical lens as it emphasises creating an opportunity to engage with marginalised groups experiencing the phenomenon under study (Creswell & Creswell, 2018: 9, 62).

Camacho (2020: 309) argues that a transformative worldview identifies the socio-political power structures that preserve discrimination, marginalisation and abuse of historically marginalised populations. With critical theory, the emphasis is to combine theoretical analysis and sets of different approaches (mixed methods research) in an empirical study for an in-depth understanding of the social reality from diversified data (Held, 1980: 31, 34). The voice of the marginalised is key in addressing social issues including inequality, empowerment, suppression, alienation and domination (Mertens, 2007; Creswell & Creswell, 2018). The scholarly communication field poses issues of marginalisation or exclusion due to

commodification (via subscription fees) and copyright restriction of knowledge (Pyati, 2007). Harle and Warne (2020: 2) affirm that lower- and middle-income communities' researchers, for example in Africa, currently encounter a dual barrier due to unaffordable subscription costs leading to serials cancellations (EBSCO, 2021: 1, 4) and unaffordable APCs to publish gold open access (Jurchen, 2020, 161). This, therefore, make transformative worldview and critical theory relevant in interrogating exclusion and marginalisation relating to access to and publishing of knowledge.

4.3 Research approach

Methodological assumptions related to a transformative worldview reveal a potential strength in mixed methods as the qualitative dimension collates individual perspectives, while the quantitative aspect brings the opportunity to demonstrate credible outcomes from a wider population (Mertens, 2007: 212). Therefore, adopting a transformative mixed methods approach is viewed as having a potential to enhance human rights through a research agenda, serving those traditionally excluded by giving them a voice (Mertens, 2007; Creswell & Creswell, 2018). This study adopted a convergent transformative mixed methods approach and used both qualitative and quantitative methods to explore in-depth, a single case of UCT community's participation in open scholarship. The researcher paired a transformative worldview with a mixed methods approach in interrogating social injustices within scholarly communication as Creswell and Creswell (2018: 62) affirm that a mixed methods approach supports a transformative/critical inquiry.

According to Axinn and Pearce (2006: 1), the revolution in data collection methods resonates in mixed methods, as this facilitates the eliciting of insights of the basis and consequences of views and behaviour of individuals as there is integration of methods to eliminate bias that may come with each of the methods. In support of this, Creswell and Creswell (2018: 14) assert that every method has its own weakness and biases, therefore mixed methods can make up for the weaknesses of each method through integrating diverse data. From a critical theory perspective, the consideration of statistical data alone would not reach the depth of the phenomenon as Held (1980: 29) emphasises the need to engage with participants to understand the phenomenon from perceptions, beliefs and feelings shared, which can only be drawn from qualitative data. According to Creswell and Creswell (2018: 69), in a convergent transformative mixed methods approach, an in-depth understanding of the problem is achieved since communication of results

has the potential to disclose diverse experiences of the phenomenon to support social change (transformation).

The objective of this study (see Section 1.4 of Chapter 1) required both a general understanding of study participants' views and opinions which together provide an in-depth understanding of a contemporary phenomenon. This made a structured online questionnaire (see Appendix A) suitable to collect quantitative data from a census of UCT academics and researchers (see Section 4.5.2) for a general overview of the phenomenon being studied (that is, participation in open scholarship), while participants' points of view through interviews and open discussions were used to collect qualitative data. Hence the choice of mixed methods to achieve the objective of the study through triangulation of diverse data.

4.4 Research design

A researcher is expected to choose a research design within an approach selected to inform the study, which provides specific guidance with procedures in a study (Creswell & Creswell, 2018: 11). As mentioned earlier, the study adopted a case study design, which Creswell and Creswell (2018: 14) describe as a type of inquiry found in many fields, particularly for in-depth case analysis. The design is classified under the qualitative approach (Creswell & Creswell, 2018: 14), however, Yin (2018: 4) affirms the relevance of case studies in describing a social contemporary phenomenon extensively and in-depth. Schoch (2020: 245) emphasises that in terms of scope, an in-depth analysis of a contemporary phenomenon should be in its real-life situation, and hence this study identified a contemporary phenomenon in the context of marginalised, global south under-resourced research community in terms of subscription fees (serials crisis) and research funding.

In a case study, diverse features of the case (Neuman, 2012: 21) can be examined and the analysis can be confined to a single entity, like an individual, organisation, programme, particular event or social unit phenomenon which serves as a unit of analysis (Schoch, 2020: 246-247). The study design allows use of mixed sources of data and techniques in the data gathering process (Soy, 2006; Zainal, 2007: 2) to allow multiple perspectives, exploration and project uniqueness (Thomas, 2021: 10). A case study has frequently been used in mixed methods inquiries to allow researchers in-depth understanding of case through merging quantitative and qualitative data (Yin, 2018: 4). Thomas (2021: 3) highlights the aptness of a case study across the disciplinary and methodological spectrum. A study conducted in 2015

within the scholarly communication context focusing on the dissemination of health information at a Zimbabwean academic institution, National University of Science and Technology, adopted a case study design using a mixed methods approach for an in-depth analysis of information dissemination practices for undergraduate students at the university (Matingwina, 2015: 99). A case study was similarly adopted in this inquiry for an in-depth analysis of the identified case (UCT, a research-intensive university) as open scholarship is a contemporary and real life issue exposing researchers to inequalities of unaffordable OA publishing fees (Harle & Warne, 2020: 2). Also, communities that should be beneficiaries of scholarship, for example, students and readers from low-income families, are experiencing exclusion due to unaffordability of education (Oates et al., 2017; Wangenge-Ouma, 2021) and high cost of textbooks (Allen, 2016; Masuku, 2019).

4.5 Research methods

Research design and the conceptual framework connect research questions to data (Punch, 2013: 138), which influence a choice of research methods and instruments for data collection in a study. Data collection methods refer to instruments used to collect data and the instruments are a mechanism to evaluate the study phenomenon through facilitating the gathering and recording of data for evaluation, ultimate understanding and decision making (Colton & Covert, 2007: 5). Convergent, transformative mixed methods (Creswell & Creswell, 2018: 217) adopted for this study allow the researcher to collect both quantitative and qualitative data concurrently. Colton and Covert (2007: 5) elucidate that combining quantitative and qualitative methods of data collection provides both factual (objective) and subjective data for in-depth understanding of a phenomenon. Research methods guide the researcher in selecting forms of data collection, means of analysis and interpretation that best suit the study (Creswell, 2022: 7). A structured questionnaire, interviews, focus group discussions and document analysis (see Appendices A, B, C, D and E) were used as data collection methods for the study.

4.5.1 Population

The target population of a study comprises of the entire set of individuals, organisations, groups or other entities which the researcher seeks to understand or conduct research about and draw conclusions from (Casteel & Bridier, 2021: 344). With a population, the researcher identifies individuals or entities intended for the study (Creswell & Creswell, 2018: 150). A population

has boundaries that create natural delimitations for the scope of the study to allow the identification of a sub-population that the study can focus on (Casteel & Bridier, 2021: 343).

The population of this study consisted of all post-doctoral fellows, post-graduate students (Master's and PhD students) and UCT academic and research staff from all the university faculties: Centre for Higher Education Development (CHED), Commerce, Engineering and Built Environment (EBE), Graduate School of Business (GSB), Health Sciences, Humanities, Law and Science. Academics (teaching staff) at UCT are also classified as researchers as they also produce different scholarship including educational resources and research articles used for educational advancement and for other information needs. Post-doctoral fellows, post-graduate students (Masters and PhDs) and PASS (professional, administrative and support staff) also produce research at UCT (University of Cape Town Human Resources, 2014). UCT's intellectual property (IP) policy's Section 3.1 refer to both employees and students who create copyright protected works as authors (University of Cape Town, 2011: 15). According to UCT's Open Access Policy, an author (producer/creator of content) is any student enrolled at UCT or any staff member employed either on contract or on permanent basis that produces research (University of Cape Town, 2022b). The population of this study included UCT researchers, academics, post-doctoral fellows and post-graduate students. However, purposively selected PASS members (who are not part of the target population) participated in the study as key informants to provide data relevant to the study as they serve researchers and support research activities at UCT.

Considering guidance provided with regards to a transformative inquiry to consider the voice of the marginalised (Mertens, 2007; Creswell and Creswell, 2018), the study population identified earlier were regarded suitable "units of analysis" (Babbie, 2021: 99; Casteel & Bridier, 2021: 340) as they should (by choice or coincidentally) be participating in the phenomenon (that is, open scholarship) being studied. The 'units of analysis' in the population identified for the study in Tables 4.1, 4.2 (researchers and academics) and 4.4 (post-doctoral fellow and post-graduate students) are contracted (if staff) or enrolled (if students) at UCT and have a mandate as creators of intellectual property to produce new knowledge (thus participating in scholarly communication) for professional growth. PASS members and undergraduate students were excluded from the identified population as they have no obligation to produce research at UCT. A similar principle applied to honours and other level four post-graduate students whose programmes generally do not focus on research output.

During population selection, the researcher's assumption was that researchers included may range from seasoned or National Research Foundation (NRF[31]) highly rated researchers to emerging researchers engaging in research publishing. The NRF in South Africa has an established rating system, which is a national indicator of research excellence (University of Cape Town Research Office & Innovation, 2017). NRF rated researchers at UCT comprise of A-rated, P-rated and those rated B, C & Y (University of Cape Town Research Office & Innovation, 2017) spread across faculties. P-rating is intended for young researchers, usually younger than 35 years, with potential to become leaders in their fields.

4.5.2 Sampling

The sample for this study included researchers, academics, post-doctoral fellows and post-graduate students, which Neuman (2014: 246) defines as a selection of a few cases or units from the population that can be examined and findings from the selected cases can be used to understand the larger population of the study. Researchers can decide to examine a few cases (a sample from the target population) or all cases (a census of the target population) (Neuman, 2014: 40). Casteel and Bridier (2021: 347) highlighted the existence of two common sampling methods namely probability (mainly quantitative) and non-probability sampling, which is qualitative in nature. There are diverse factors to consider when drafting a sample from a sampling frame, a list of the elements generating the study population (Yin, 2018: 56). A researcher can select a suitable probability sample or engage in a census for a quantitative inquiry, and a non-probability sample can be selected for the qualitative component. This study used a census for the quantitative component and utilised some non-probability sampling techniques (purposive and a combination of convenient and snowballing sample) for the qualitative aspect of the study. UCT academics and researchers were scheduled for the quantitative component of the study, while post-doctoral fellows and post-graduate students were scheduled for the qualitative component through focus group discussions. As stated earlier in Section 4.5.2, some PASS staff (not part of the study population) were identified from different UCT departments to participate in the study as key informants (see Section 4.5.3.2)

[31]The National Research Foundation (NRF) is an independent statutory body established as the research and science development agency through the South African statute, National Research Foundation Act (Act No 23 of 1998) (National Research Foundation, 2022: 8). NRF has the mandate to fund research and support human capacity development through provision of critical research infrastructure to promote knowledge production across all scientific fields including indigenous knowledge (National Research Foundation, 2022: 8-9).

providing information on the population being studied as they engage with the population through research support services.

A census is an exercise in which a researcher attempts to collect data from all elements in the target population of the study rather than choosing a sample (Jupp, 2006). A census has an advantage over a sample as all members of the population are provided an opportunity to respond to the questions. Allowing all members of the population to participate in a study presents an opportunity to provide detailed information on the phenomenon being studied (Lavrakas, 2008) According to Daniel (2011: 53) a census works well where there is heterogenous population, which avoids biases. Open scholarship (OS) is a contemporary issue, and the study adopted a transformative mixed methods approach, which supports the investigation of contemporary issues and encourages the provision of an equal opportunity for the voice of the marginalised to address social injustices (Mertens, 2007; Creswell and Creswell, 2018) and hence census was considered to provide an equal opportunity for all UCT academics and researchers to share personal views as a sample would have excluded some of the participants. Considering a history of low response rate with structured questionnaires (explained in Section 5.2 in Chapter 5), the researcher opted for a census as there were anticipated COVID-19 global pandemic challenges during the time of data collection, which led to the closure of universities on different occasions (Tamrat & Teferra, 2020: 28) affecting academic processes in one way or the other. Most UCT academic communities, like others across the world, were forced to work from home due to the lockdown regulations and some individuals had limited or no internet access at home (Broom, 2020). However, the researcher proceeded with the assumption that UCT's provision of internet connection to its community members using personal cell-phone networks as indicated in its "interim remote connectivity [GEN006]" approved in July 2021 (University of Cape Town Finance System and Policy, 2021: n.p.) would afford academics and researchers participation in the study.

A census was conducted to survey 1154 UCT academics and researchers (University of Cape Town Human Resources, 2020) as shown in Table 4.1 to collect data from all members of the population identified for the quantitative component of the study. Previous studies on the UCT community's participation in open scholarship used small samples and some had no inclusion of human participants (Czerniewicz & Goodier, 2014; Raju, Claassen & Moll, 2017; Jackson, 2017). Data collection from a census was also intended to provide all academics and/or researchers with a platform to freely share their views and perceptions on the open scholarship

phenomenon. A census was considered ideal through use of an online structured questionnaire (see Appendix A) to provide a holistic overview on how UCT researchers and academics perceive participation in open scholarship and to allow participants to share elements they envisage as essential for the development of a strategy to advance OS at UCT.

Table 4.1: Target population for the quantitative aspect of the study

Target population	Population size	Census
Academics/researchers	1154	1154

Purposive sampling, also known as judgemental sampling (Neuman, 2014: 273; Schoch, 2021: 249) was adopted in this study to identify representatives of faculty research committees as interviewees as the researcher saw them as having a good overview on what is happening in their faculties with regards to scholarly communication, including open scholarship. The researcher received lists of members of the research committee from two faculties which was used to ascertain prospective interviewees. For the faculties that could not provide lists of their research committee members, the researcher approached members in the faculty who were open scholarship advocates (identified on departmental websites and *UCT news*); therefore, representatives of faculty research committees and those who volunteered to participate from certain faculties were also seen as faculty representatives. The researcher also used faculty and personal websites to carefully identify interview participants who could best inform the study. The sample required a representative with in-depth knowledge on research production (including open practices) of a faculty. Two faculties were represented by two individuals each as some participants decided quite late to contribute to the study after the researcher had opted for a different candidate to allow progress in data collection. Table 4.2 shows the purposively selected faculty representatives who participated in the study.

Table 4.2: Purposively selected sample of faculty research committee representatives that participated in interviews

Faculty	UCT Rank	No. of participants
EBE	Lecturer & Senior Lecturer	2
CHED	Senior Lecturer	1
Commerce	Senior Lecturer & Associate Professor	2
GSB	Professor	1
Health Sciences	Professor	1
Humanities	Professor	1
Law	Professor	1
Science	Professor	1
Total		**10**

Purposive sampling was also used to carefully identify six key informants for interviews to share views on UCT academics and researchers' participation in OS. The researcher selected key informants on the basis that they would provide insight into the phenomenon of OS as they support researchers during research production. Table 4.3 is a representation of key informants whoa are not part of the study's target population that were selected and who participated in interviews. The table reflects the specific designation (Information specialist) of one out of the four key informants from University of Cape Town Libraries (UCTL). The remaining three are described generally as 'Manager' (see Table 4.3) – this is to preserve the anonymity of the respondents.

Table 4.3: Purposive sample for key informants that participated in interviews

Department	Designation	No. of participants
Research Office (RO)	Manager	1
UCT Libraries (UCTL)	Manager	1
UCT Libraries (UCTL)	Manager	1
UCT Libraries (UCTL)	Manager	1
UCT Libraries (UCTL)	Information specialist	1
UCT Press Board (UCTPB)	Board member	1
Total		**6**

Convenient sampling is a sampling strategy used to identify cases or individuals that are easily accessible to the researcher to participate in the study (Casteel & Bridier, 2021: 349). The researcher did not have access to a sampling frame for post-doctoral fellows and post-graduate students (Masters and PhD students) as UCT policy only allows the Department of Student Affairs (DSA) to communicate with students for research purposes. The researcher planned to engage with students who would have responded to the call (via DSA) to participate in the study as focus group participants, which would have been convenient sampling. However, the researcher did not receive any responses from post-doctoral fellows and post-graduate students invited by DSA to participate in the study. Therefore, the sampling strategy was changed to snowballing, a non-random sampling method that allows some participants to recruit more participants for the researcher from their sphere of influence (Casteel & Bridier, 2021: 349). Most individuals who participated in this part of the study were invited by fellow students and librarians. Table 4.4 presents the sample of post-doctoral fellows and post-graduate students who were identified to participate in the study through snowball sampling.

Table 4.4: Sample of research students (post-doctoral fellows, Masters and PhD students that participated in focus group and individual discussions

Focus group and individual discussion participants	No. of participants
Masters participants	
Commerce	**1**
Engineering & the Built Environment	**3**
Graduate School of Business	**1**
Humanities	**3**
Law	**1**
Science	**1**
PhD participants	
Engineering & the Built Environment	**1**
Graduate School of Business	**3**
Health Sciences	**2**
Humanities	**2**
Science	**4**
Post-doctoral fellow participants	
Graduate School of Business	**2**
Health Sciences	**2**
Humanities	**1**
Law	**1**
Sciences	**2**
Total	**30**

Data were also collected from systematically selected documents retrieved from UCT websites using a 'document analysis guide' (see Appendix E). Document analysis is the review of documents by the researcher to identify content that speaks to the critical questions of the study and for the researcher to decide how such content informs the study (Marutha & Modiba, 2019: 502). Table 5.5 in Section 5.3.1.3 of Chapter 5 presents a list of documents that were retrieved for data collection through document analysis. The document analysis method used is explained in Section 4.5.3.4 of this chapter.

4.5.3 Research instruments

Research instruments are tools that researchers use in social sciences to measure constructs or variables (McClure, 2020: 19) to respond to the research questions of the study. Different sources provided examples of research instruments that can be adopted to suit the nature of the research inquiry, and such instruments include questionnaires, interviews, observations, focus groups and document analysis (Creswell & Creswell, 2018; Babbie, 2021). This study collected data using a structured online questionnaire, interviews, focus group (and individual) discussions and document analysis (see Appendices A, B, C, D and E) in a single-phase approach to address the critical questions within a "convergent transformative mixed methods approach" (Creswell & Creswell, 2018: 217). Punch (2013: 174) views the mixing of group

interviews with surveys as a common practice in the mixed methods approach and use of multiple data sources from mixed methods findings assist with triangulation that substantiates perspectives (Flick, 2018: 532). Hence the reason for utilising of both qualitative and quantitative research techniques in this study.

4.5.3.1 Questionnaire

A questionnaire is regarded as a suitable technique for large populations that cannot be reached by the inquirer for face-to-face engagement. A questionnaire is also regarded "the best method in collecting original or primary data for describing a population too large to observe directly" (Beukman, 2006: 221) and hence was useful for this study as UCT has campuses that are geographically separated. Additionally, the COVID-19 pandemic required social distancing which did not allow for the norm of interaction in the same spaces for a scientific observation study. A disadvantage noted with questionnaires is the issue of a low response rate (Van de Mortel et al., 2020: 9) since some members of the sample/population may decide against responding (see also Section 5.2 of Chapter 5). A structured online questionnaire (see Appendix A) for this study was administered through the *SurveyMonkey* cloud platform to collect data from a census of 1154 UCT academics and researchers, shown in Table 4.1, to mitigate a possible low response rate. A census route was opted for to reach out to the UCT target population while working from home due to the COVID-19 pandemic. A questionnaire is known for yielding inaccurate results as question wording may mean different things to different participants due to background diversity (Neuman, 2014: 322). To guarantee data accuracy, the researcher ensured that the items in the instruments were clear and unambiguous; and also offered elaboration of concepts in various instances (see Appendix A). It was critical for the researcher to ensure that the questionnaire was measuring the constructs intended to be measured and that all items were guided by the critical questions and the two theories identified for a transformative inquiry. The researcher also pre-tested the questionnaire instrument with three experts in the open scholarship field from different academic institutions using both the online and Word versions to check for reader-friendliness in the online version, identify ambiguity issues and ensure clarity of questions. The feedback received from the pre-test respondents was used to improve the questionnaire.

4.5.3.2 Interviews

An interview is a technique used to collect mainly qualitative data that expresses feelings or perceptions in a face-to-face, telephone or computer-aided environment through a guided conversation while recording responses (Babbie, 2021: 256, 274). Schoch (2020: 251) emphasises the use of an interview protocol or a list with interview questions to ensure consistency and prompts to probe for in-depth responses across interviews (Schoch, 2020: 251). Respondents in an interview can range from one person to a group while the virtual environments could be supported by information and communication technologies (ICTs) like *Zoom*, *Microsoft Teams*, *Skype*, etc. for communication (Salmons, 2021: 45, 63). This study conducted interviews via *Microsoft Teams* to collect data, using an interview schedule (see Appendix B) of semi-structured questions, from 10 faculty research committee representatives (see Table 4.2). The same strategy was also used to collect data from six purposively selected key informants who were part of UCT research support services (see Table 4.3). An interview protocol or schedule (see Appendix C) that guided interviews with key informants was used across the six interviews. Conducting interviews virtually was a mandatory health care requirement stipulated by UCT-HR office to protect both the researcher and study participants from the coronavirus as data was collected during the peak of the second wave of the COVID-19 pandemic in 2021 in South Africa.

There are several challenges relating to face-to-face interviews that still apply to virtual settings, like the approach and tone of the voice and nonverbal facial expressions (Neuman, 2014: 347). Challenges of transport cost to travel to meet interviewees are raised in the literature (Neuman, 2014: 348), however, these were not relevant to this study since virtual meetings were made mandatory by the pandemic environment. Challenges that emerged were related to loss of internet connection in a few cases, but participants were able to reconnect and finalise conversations. The need for training to conduct interviews were also noted (Creswell, 2022: 75). The researcher also pre-tested the interview instruments with volunteer experts (open scholarship advocates) with all pre-test sessions recorded to evaluate and ascertain the availability of interview management skills and to identify other skills still needed by the researcher. Feedback received from the pre-test respondents on the structure, quality of interview instruments and relevance of content was used to improve the quality of the instrument (interview schedule). Questions in the interview schedule were also guided by the study's critical questions (CQs) and by the theories that were identified to informed the study

and these also informed the designing of the data collection tools to ensure content validity as themes and concepts were used across the qualitative and quantitative instruments.

4.5.3.3 Focus group discussions

A focus group is an informal gathering of five to fifteen individuals brought together in a conducive environment through a nonprobability sampling strategy to engage in a guided discussion (Babbie, 2021: 317) from a semi-structured 'focus group schedule' (see Appendix D) about a specific subject under investigation. This study conducted focus group and individual discussions with post-doctoral fellows and post-graduate students (Masters and PhDs) (see Table 4.4 in Section 4.5.2) who were gathered through snowball sampling. The discussions were conducted though virtual communication via *Microsoft Teams* to fulfil COVID-19 health mandates and a directive from UCT's Department of Student Affairs (DSA) for the researcher to engage with students virtually during data collection to maintain social distancing during the pandemic. Snowballing was the only option after the first call initiated by DSA to recruit participants through convenience sampling yielded a non-response.

A focus group enables the exploring of perceptions, feelings and attitudes, and individuals could reconsider views based on new information received through the discussion forum (Pickard, 2013: 244). Focus groups are useful for in-depth exploration of various issues, however, the moderation of a focus group and the control of participants with strong characters that may take over the discussion and influence others, could be challenging (Pickard, 2013: 244). The researcher supported data collection during focus group discussions through clarification of open scholarship concepts to solicit relevant data. Similar to other virtual communications, internet connection was equally a challenge during focus group discussions and participants were encouraged to use audio communication instead of videos to mitigate for heavy use of bandwidth. Some of the individuals who lost internet connection during group discussions were able to participate as individuals at a later date. The researcher also pre-tested the focus group schedule with Masters graduates from the Department of Knowledge and information Stewardship at UCT, the academic department in which the study is registered. This was to ensure clarity of the data collection instrument and relevance of content. The researcher received feedback from the pre-test respondents that supported the improvement of the instrument and the focus group discussion moderation skills of the researcher.

4.5.3.4 Document analysis

Gross (2018: 247) describes document analysis as a form qualitative research that uses a systematic procedure for evaluating documentary evidence to respond to research questions of a specific study. According to Salmons (2021: 310) document analysis entails use of content and other analytic methods to extract meaning and understanding from the existing written sources. Flick (2018: 527) describes documents as artefacts designed to provide meaning in the form of words and an affirmation from Gross (2018: 549) indicates that documents of all types can be useful in unveiling insights, identifying relevant theories or acquiring an in-depth understanding of a subject under study and that the context within which a document is created should be considered when engaging in a document analysis. Various relevant documents (see Table 5.5 in Section 5.3.1.2 of Chapter 5) were selected for analysis, including UCT research reports, blogs and news articles (see Appendix E). The document analysis guide was designed with the guidance of the six critical questions of the study and theories that informed the study. The publication dates of the documents identified for review ranged from 2015, a year after UCT had adopted its OA policy to the time of data collection in 2021. According to Gross (2018: 549), benefits of documents as sources of data are numerous including being cost-effective, readily available and non-reactive. The researcher solicited relevant data from the identified documents and data were integrated with other datasets to create meaning collectively.

4.5 Data collection

The researcher conducted a parallel collection of data using a structured online questionnaire for UCT researchers and academics (quantitative data), while qualitative data were collected through semi-structed interviews (with representatives of faculty research committees or faculty representatives and key informants), focus group and individual discussions (with Masters and PhD students, and post-doctoral fellows), and through document analysis (see Appendices A, B, C, D and E).

Instruments used for data collection were designed with the guidance of the six critical questions (CQs) of the study that were informed by two theories, critical theory (see Sections 2.2-2.4 of Chapter 2) and the capability approach (CA) framework (detailed in Section 2.5 of Chapter 2).

Quantitative data collection from UCT academics and researchers through an online structured questionnaire began on 30 November 2020 and ended 1 June 2021. As per UCT protocol, the UCT-HR office, on behalf of the researcher, communicated a request to UCT academics and researchers to participate in this study (see population and sampling in Sections 4.5.1 & 4.5.2). The data collection progression was very slow as it coincided with the second wave of the COVID-19 pandemic in South Africa that led both UCT staff and students to work from home with limited or no access to internet connection. In the first two months of data collection (by end of January 2021), the survey had yielded only 49 responses, and UCT-HR policy does not allow for sending out of research related reminders to academic staff. However, the researcher motivated to the HR office, requesting an exemption to send one reminder to questionnaire participants since the response rate was extremely low – the request was granted. Responses doubled to 100 responses by 28 February 2022. Thereafter, the researcher resorted to sending individual reminders to academics and researchers whose email addresses were accessible on UCT departmental websites. This was resorted to as a mitigation measure, and it increased responses to 218 by the closing date (1 June 2021) of the questionnaire survey.

The structured online questionnaire was administered via *SurveyMonkey,* a cloud-based software application to facilitate the creation and administering of surveys online. Data were also extracted using the *SurveyMonkey* cloud-based database and later downloaded into a comma-separated values (CSV) file for descriptive statistical analysis using *Excel 2016 version* and inferential statistical analysis using *Strata version 16*. From a total response of 218 of 1154), only 207 (18%) questionnaire responses were regarded as usable and were analysed (see Section 4.6) for this study.

Qualitative data were collected through use of interviews and focus group and individual discussions, and engagement with participants began on 28 November 2020 and ended on 1 June 2021. Most of the interviews and all of the focus group/individual sessions were recorded with consent from the participants, except for one interview where the participant did not consent to the recording of the session. Therefore, the researcher resorted to note-taking during this interview. The researcher accommodated discussions with individuals, pairs and groups during the discussions depending on the availability of participants and to cater for those who would have delayed joining due to internet connectivity challenges.

Delays in communication prolonged qualitative data collection as some interview and focus group/individual participants took long to confirm their availability, even after follow-ups and

reminders from the researcher. Some of the interview and focus group participants explained that they had been dealing with COVID-19 related challenges and bereavement within families. Therefore, the researcher exercised patience and accommodated participants at their convenience. All interviews, focus group and individual discussions were conducted via *Microsoft Teams* and the application was also used to record sessions where participants had consented. At the end of the data collection phase (1 June 2021), 30 research students (Masters, PhD students and post-doctoral fellows) had participated in a focus group, pair or individual discussion. A total of 16 interviews were conducted with 10 representatives from eight faculties and six key informants from relevant UCT departments.

Qualitative data were also gathered through document analysis from the numerous documents retrieved mainly from UCT websites. Seventeen (17) documents were considered relevant to respond to the critical questions of the study. Some documents had limited data; however, relevant content extracts (no matter how small) were considered valuable for the study. Data were extracted from UCT research blogs, and news articles retrieved mainly from UCT websites.

4.6 Data analysis

Babbie (2021: 398, 408) notes the availability of diverse software applications that could be adopted for performing complex computations, analysing and sorting data for a refined presentation of findings. In this study both descriptive and inferential statistics were used for the analysis of quantitative data. Quantitative data were migrated from *SurveyMonkey* into to *Microsoft Excel 2016 version* for descriptive statistical data analysis and for easy tabulation during presentation. Data that were cleaned in *Excel* were transferred to *Strata version 16* for inferential statistical data analysis. Descriptive statistics was used to summarise data points through counts, percentages and frequencies presented with the aid of graphs, charts and tables. Quantitative data were further teased out through inferential statistics in *Strata version 2016*, applying hypothesis testing to determine relationships between different categorical data and a few selected dependent variables using Pearson's chi-square (chi^2 or χ^2). A hypothesis test is a statistical procedure that can be run using different variables to support a claim about a population (Rumsey, 2021: 14). The results can either reflect H0 (null hypothesis), which shows no support of the claim or H1 (alternative hypothesis), which support the claim.

The categorical variables are the categories that were selected for a test against each other, for example, UCT faculties being tested against participation in green OA to ascertain the association of such variables. The Pearson's chi^2 hypothesis test results are produced with a p-value, which assists one to determine the existence of a relationship. Rumsey (2021: 80) defines a p-value as a number between 0 and 1. The conventional way to interpret the p-value is to measure its value against a threshold of 0.05 (Di Leo & Sardanelli, 2020: 1). According to this statistical rule, a small p-value (typically ≤ 0.05, that is, smaller than or equal to 0.05) indicates strong evidence against the null hypothesis, so you reject the null hypothesis, while a p-value greater than (>) 0.05 indicates strong evidence for the null hypothesis (H0) that means one fails to reject the H0 (Di Leo & Sardanelli, 2020: 1; Rumsey, 2021: 14). For this study, the Chi^2 statistical results are presented in different sections of data presentation in Chapter 5.

Data analysis of qualitative data (interviews, focus group and individual discussions, document analysis) involves data reduction where the researcher edits, segments and summarises the data (Punch, 2013: 171). Other stages include "coding, finding themes and patterns" that bring meaning to collected data (Punch, 2013: 172). Babbie (2021: 395) highlights that coding of data involves classification and categorisation of pieces of data that could be grouped into concept mapping by identifying concepts that can be grouped into graphical format for sense making. The intent of convergent mixed methods is to analyse two datasets and integrated data during presentation to confirm results or showcase a convergence of findings for an in-depth understanding of the phenomenon (Creswell, 2022: 7). Qualitative data collected through interviews and focus group/individual discussions were first transcribed into *Word* documents. All transcribed qualitative data were analysed using *NVivo version 12* through coding and thematisation of content from scripts drawn from recorded audios. Themes were used to present findings through narratives and tabled common themes that emanated from different discussions.

Summative content analysis, which involves the comparison of content and interpretation of the fundamental context of the content (Hsieh & Shannon, 2005: 1277), was also used, in this case to analyse data from documents selected for document analysis. As expressed by Erlingsson and Brysiewicz (2017: 94), content analysis assists to systematically translate a large volume of text into a well organised and concise summary of key results categories or themes, and this assisted the researcher to identify main data themes relevant to the critical questions, from the reviewed documents.

4.7 Limitations of the study

Limitations are factors beyond the researcher's control that can negatively influence the results of the study (Ellis & Levy, 2010: 115). Such negative possibilities require researchers to consider precautions that support and guarantee reliability of research results. Limitations are also related to constraints beyond the researcher's control encountered during the study and these often originate from methodology and research design selected as each have unique limitations (Simon & Goes, 2013). A questionnaire has a history of yielding low responses (Saleh & Bista, 2017: 64) as respondents may not respond for various reasons thus resulting in a low response rate. As indicated earlier (Section 4.5.1), in this study efforts were made through email reminders to encourage return of questionnaires. The online questionnaire yielded a low response rate, however data collected were considered useful to inform the study and were not being used for generalisability purposes. Further, some of the concepts included in the study were complex and not well known by some study participants as the phenomenon of open scholarship is an emerging contemporary issue. The researcher provided definitions of concepts that needed clarification in the structured questionnaire, especially that the researcher would not be at hand to clarify complex issues. It was anticipated that lack of understanding of some open scholarship concepts could pose challenges to some respondents in responding to certain questions. Hence the researcher defined complex concepts in a simplified way providing examples, where possible, to assist academics and researchers to provide informed responses.

4.8 Validity and reliability

Validity and reliability of research instruments are both considered critical in a study. According to Creswell and Creswell (2018: 153) validity comes in different traditional forms, including content and construct validity. Content validity looks at whether the research instruments measure the content they were intended to measure in a study (Bless, Higson-Smith & Sithole, 2013; Creswell & Creswell, 2018). Construct validity refers to whether the scores measured by an instrument reflect the desired construct (Bless, Higson-Smith & Sithole 2013: 238; Creswell and Creswell, 2018: 153). In an effort to ensure construct validity, the researcher developed data collection instruments that were guided by the six critical questions of the study and relevant literature. The instruments were also designed through the guidance of the theories that informed the study, while utilising concepts related to the phenomenon under study.

According to Bless, Higson-Smith and Sithole (2013: 238) validity can also be achieved through triangulation, that is, using diverse data collection methods to check for complementary patterns in findings from different datasets, thus confirming the trustworthiness of research. Babbie (2021: 282) argues that survey (structured questionnaire in this study) research is generally strong on reliability and weak on validity as the artificiality nature of the survey format strains validity as the population's opinions rarely take controlled forms of responses like strongly agreeing or disagreeing to a specific statement. The recommendation when collecting both quantitative and qualitative data is to establish validity based on both quantitative validity (e.g., construct validity) and qualitative validity (e.g., triangulation) and use of the same concepts for both quantitative and qualitative arms thus reducing potential threats to validity (Creswell & Creswell, 2018: 221). The researcher employed different types of instruments with similar themes and concepts during data collection as a means to achieve data validity. Almanasreh, Moles and Chen (2019: 214) note a three-stage process in assessing content validity that includes the development, judgment and quantifying, and revising and reconstruction process which rely on engaging a panel of experts to evaluate instrument elements prior to data collection and to rate the instrument's relevance and representativeness to the content domain. The researcher pre-tested the instruments using a panel of experts to assess relevance and representativeness of the instruments, and to assist with the improvement of the quality of the instruments to achieve content validity. Feedback provided by the experts was incorporated to improve the content quality and structure of the instruments prior to data collection.

Punch (2013: 236) designates reliability as a central concept in measurement, which merely means consistency and accuracy of the measurement. According to Bello et al. (2016: 104) reliability is the extent to which an instrument produces similar scores, which Creswell and Creswell (2018: 154) call repeatability of an instrument. This means replication of the method used to conduct a study confirms its findings (Neuman, 2012: 126) as it should reproduce the same set of scores. Babbie (2021: 149, 252) encourages researchers to ask clear and specific questions based on issues relevant to the population and avoid being ambiguous or vague as this may influence different interpretation of one question by a participant thus promoting unreliability. The researcher considered all factors that may threaten reliability during the development of the instruments. Pre-testing of the instruments was conducted to ensure clarity and lack of ambiguity, and to verify if questions are indeed measuring the intended variables. After the pre-test process the instruments were revised and improved to rectify issues of

ambiguity identified. During data collection, interviews and focus group discussions were recorded with consent from the participants for accurate capturing of data to achieve reliability.

4.9 Evaluation of research methodology

This section discusses research methods and data collection instruments adopted in eliciting data relevant to respond to the critical questions generated to address the research objective of the study. The researcher also reflects on the relevance of the worldview adopted for the study and its related philosophical assumptions in addressing the study's research problem. The section also analyses the role played by the theories adopted to position the study and to support the framing of its critical questions. LIS as a discipline is known for not having a strong base of theory development, and hence this study adopted two theories (critical theory and the capability approach framework) from other disciplines, which were both considered useful in positioning the study and in guiding the framing of critical questions as well as in the designing of data collection instruments.

The researcher found the transformative worldview and the mixed methods approach to be appropriate in this study to explore the open scholarship phenomenon as both the worldview and approach support an in-depth understanding of a contemporary phenomenon. While the transformative worldview positioned the study in a dominant information industry and provided a suitable theory (critical theory) to interrogate the injustices in scholarly communication, the approach was suitable in providing quantitative and qualitative data for an in-depth understanding of the phenomenon at UCT. The convergent, transformative mixed methods approach (Creswell& Creswell, 2018: 217) proved to be useful as data collected concurrently provided diverse views of how participants perceived the case of open scholarship at UCT. Minor challenges were encountered during the conversion of the *Word* questionnaire into the electronic version using *Survey Monkey* as the Likert scale for Question 16 of the online questionnaire instrument erroneously provided a scale of 0-5, instead of 0-6 as initially reflected in the *Microsoft Word* questionnaire instrument (Appendix A). The researcher made a decision to proceed reporting data in Section 5.3.6 of Chapter 5 using a scale of 0-5 as reflected in data collected via *Survey Monkey*, hence the discrepancy in scales provided in Table 5.38 in Section 5.3.6 of Chapter 5 and in the table for Question 16 in the *Microsoft Word* version of the questionnaire instrument (see Appendix A). The COVID-19 pandemic also posed some communication challenges with prospective participants as data were collected when South Africa was still under lockdown (2020-2021). During this period, the

majority of the UCT community had no access to free campus internet, which compromised gathering of participants for data collection, particularly focus group discussion participants (Masters students, PhD students and post-doctoral fellows). Therefore, the researcher made some changes to the sampling method with regards to focus groups to snowball sampling, which worked well in the circumstances. Data collection instruments captured data that were regarded relevant to respond to the critical questions of the study, despite the questionnaire survey yielding a low response rate of 18.%. The quantitative data collected were considered significant and rich data for reporting and were supplemented by data from four other data collection instruments (two sets of interviews, focus group discussions and document analysis) used in the study.

The study benefitted from interviews and focus group discussions as there was an observation that some participants had no orientation about open scholarship as the concept was new to them, which gave the researcher an opportunity to clarify concepts to solicit relevant data. In view of the low response rate, perhaps a follow-up research study, this time by faculty, would be useful, but after implementing an open scholarship awareness campaign, to ascertain if participation in open scholarship at UCT is progressing.

4.10 Ethical considerations

According to Babbie (2021: 62) ethics of social research refers to principles and norms broadly agreed on as the right code of conducting research. Babbie (2021: 62) further clarifies the ethical-moral dimension of social research that requires the researcher to balance the value of pursuing scientific knowledge and the rights of those being studied (participants) or of others in society. In a list of ethical issues provided by Creswell and Creswell (2018: 89) to be considered during an inquiry, there is a recommendation to seek ethical approval through institutional review boards and permission from authorities (including university authorities) to conduct research. The researcher followed all institutional (UCT) protocols and procedures and applied for the ethics approval, which was granted (see Appendix I) by the Ethics Committee of the Department of Knowledge and Information Stewardship (DKIS) at UCT (on behalf of the Faculty of Humanities and the University of Cape Town) where the study was registered as ethics deliberations at the institution are decentralised in individual departments. Permission to conduct research was also granted by designated authorities, UCT-HR office and DSA (see Appendices J and K), to interact with UCT staff and students, respectively, for research purposes.

Ethical issues were also considered during data collection. Social research deals with human subjects and researchers adopting a transformative worldview particularly, are obliged to follow a code of ethics to ensure participants' security and to observe human rights and dignity (Mertens, Holmes & Harris, 2009: 89). The researcher presented data collection instruments to the ethics review committee, for ethical evaluation to ensure the rights of participants are adequately considered for unbiased data collection (Creswell, 2014: 96) and to circumvent "harmful and exploitative studies" (Punch, 2013: 41). The instruments were scrutinised, and ethics considerations were considered adequate by the ethics committee to engage in an ethical research inquiry as no possibility of harming research participants were detected in the processes and procedures outlined for the study. UCT-HR office encouraged use of virtual meetings as a health precaution to keep both the researcher and participants safe from the infections related to the COVD-19 pandemic.

During data collection, the researcher obtained informed and voluntary consent, and took into consideration the ethical principle of respecting participants as encouraged by Babbie (2021: 63-65) in cases where interviewees did not consent recording. The researcher encouraged voluntary participation by survey participants by allowing for them to proceed with participation after giving consent on the consent form (see Appendix A) embedded in the structured online questionnaire after the explanation of the study purpose. Interview participants were asked to give consent through signing and emailing the consent forms (see Appendices F and G) and in some cases, where necessary, the researcher created an opportunity for participants to sign a consent form after introducing the study at the beginning of the interview. Data collected was anonymised for reporting purposes to protect the identity of participants for safety and security reasons; and to promote confidentiality of what individual participants shared. The researcher declares the possibility of a few of the participants that participated in the study being able to be linked to the data presented in the study, as they are prominent experts in the field and are well-known for their work at institutional level. However, the data collected during the inquiry had no life threatening or security implications since some of these respondents are already openly sharing information discussed in this study. Therefore, data collected may be viewed as significant to stimulate more academic debates related to scholarly communication and open scholarship.

4.11 Chapter summary

This chapter discussed the mixed methods approach and design of the study including the sampling strategies and data collection techniques. The selection of the research design and methods (data collection techniques) in this study was informed by a transformative worldview that aspires to achieve goals of social change, which is assumed to be of need in scholarly communication and open scholarship (phenomenon under study). This chapter also discussed the study population (comprising of academics and researchers, post-doctoral fellows, PhD and Masters students) that was viewed suitable for data collection as they form the identified groups that have mandate to produce knowledge at UCT. Data collection strategies covered in this chapter included the use a census of UCT academics and researchers to collect quantitative data through a structured questionnaire; purposively selected interviewees; and, focus group or individual discussions with post-doctoral fellows, Masters and PhD students. The chapter explained data analysis processes which included statistical data analysis for quantitative data and thematisation of qualitative data from interviews and focus group/individual discussions. Data collection through document analysis was also discussed. The chapter also discussed issues of validity and reliability, and also discussed procedures for ethics clearance to guarantee safety of the study participants. A section to examine research methodology was also included, providing the researcher with an opportunity to share a view on the relevance of the adopted research methodology. The chapter that follows presents the findings of the study.

CHAPTER 5
PRESENTATION OF RESEARCH FINDINGS

5.1 Introduction

The objective of the study was to critically analyse the UCT community's participation in the advancement of open scholarship, and based on this, to develop a strategy for the promotion of open scholarship. In addressing this objective, the study was guided by the following critical questions:

- To what extent are academics and researchers in the UCT community engaging in open scholarship practices?
- If UCT academics and researchers are engaging in open scholarship practices, what are these practices (e.g., data sharing; open access publishing; creation and sharing of open educational resources)?
- To what extent are UCT academics and researchers contributing to the openness movement as a social good?
- What current strategies are being adopted in support of UCT's open scholarship agenda?
- To what extent are these strategies effective in supporting the social responsiveness agenda of the university in the scholarly communication of its output?
- Positioning a strategy for the promotion of open scholarship within a critical epistemology, what would be the essential components of such a strategy for the advancement of open scholarship in the interest of information access for marginalised communities?

Each critical question (CQ) formed a section across data collection instruments (see Appendices A, B, C, D and E) for triangulation purposes, and the presentation of findings is informed by the CQs. Quantitative and qualitative data were collected simultaneously as the study adopted a convergent, transformative mixed methods approach (Creswell& Creswell, 2018: 217) to explore the case of UCT (detailed in Section 4.4 of Chapter 4) and its participation in open scholarship within a transformative paradigm (detailed in Chapter 2).

The quantitative data were collected from UCT academics and researchers (n=207, 18% respondents) through a structured online questionnaire. Qualitative data were collected through

16 interviews; focus group and individual discussions involving 30 research students; and document analysis (17 documents) retrieved mainly from UCT websites. Quantitative data were analysed using *Microsoft Excel* and *Strata version 16* software, while qualitative data from interviews and discussions were thematically analysed with *NVivo version 12*. A further set of qualitative data from reviewed documents was subjected to content analysis. The presentation of findings of the study is aided with the use of charts, narratives, tables and graphs, where applicable.

5.2 Response rate

Data collection was scheduled concurrently using a structured online questionnaire, semi-structured interviews, focus group and individual discussions, and review of selected documents (see Appendices A, B, C, D and E). When collecting data through an online survey, data are considered of value if the response rate is satisfactorily high to be representative of the population cohort (Saleh & Bista, 2017: 64). The target population for the structured questionnaire was a census of 1154 UCT academics and researchers (see Section 4.4.2 of Chapter 4), which yielded 218 responses. Out of the 218, 11 responses were excluded from analysis as respondents did not go beyond the biographical section. The excluded responses did not attempt any of the questions related to the CQs of the study and biographical data provided alone, were not adequate to inform the study. Therefore, 207 (18 %) responses were considered as the actual valid responses for this study. However, respondents did not diligently provide responses as some would choose to skip some of the questions or parts of the questions that had multiple sections. A study conducted in 2017 reported a significant decrease in the response rate of surveys administered via email in the last decade (Saleh & Bista, 2017: 64) and that low response rates could also be a trend in research surveys. In the case of this study, the low response rate could also have been contributed to by the global COVID-19 pandemic as data collection coincided with the second wave (or the peak) of the pandemic in South Africa. Some interviewees confirmed experiencing COVID-19 pandemic related challenges within their families (see also Section 4.6 of Chapter 4) and challenges of access to the internet while working from home due to the pandemic.

A low questionnaire response rate is believed to decrease confidence in probability-based inferential mechanisms, posing challenges to representativeness of results (Stedman et al., 2019: 1140). However, some researchers argue that a low response rate alone does not guarantee bias in a study (Stedman et al., 2019: 1140), particularly if there is no inference of

data to the larger population. Another study conducted in 2020 noted a low questionnaire response rate of 15-25% as a norm, particularly in clinical experience surveys, and that use of open-ended comments from interviewees was regarded instrumental in addressing limitations that come with low survey response rates (Van de Mortel et al., 2020: 9), a scenario which is applicable to the current study. While the response rate yielded in this study may be considered low, the quantitative (statistical) data from the questionnaire responses were considered significant for reporting. The quantitative data were integrated with qualitative data from different datasets for triangulation with no intention for generalisation.

5.3 Presentation of findings

The presentation of findings is organised into eight sections starting with biographical information of the study participants, followed by sections for findings relating to each of the six critical questions (CQs), and ending off with general comments and observations shared from all research instruments including the structured questionnaire, semi-structured interviews and focus group or individual discussions, and document analysis (see Appendices A, B, C, D and E). Findings from all instruments are presented in an integrated way. In some cases, the total number of responses (n-values) vary due to some participants omitting response to some questions. In other instances, respondents also omitted parts of questions with multiple sections or those that required multiple responses. An ethical consideration has been to report all data collected for the study. Where necessary, percentages have been rounded off to one decimal point or to the nearest whole number during reporting.

5.3.1 Biographical information

Biographical or demographic data refer to introductory information that provide basic characteristics about a person or a population such as name, contact information, birthdate and age, gender, languages spoken, occupation, education (Salkind, 2010: 347; Lapum, et al., 2019: 27) and other biographical categories. Salkind (2010: 347) further explains that demographic variables are independent variables that determine if individuals that have participated in the study are a correct representation of the target population for generalisation. In this study, the biographical data were useful in identifying data patterns related to study participants within different biographical categories as the quantitative data could not be generalised due to the low response rate (see also Section 5.2 of this Chapter) but was also not intended for generalisation purposes. The study collected biographical data from questionnaire respondents,

interviewees, focus group and individual discussion participants as well as from the reviewed documents. Such data included participants' faculties of affiliation, departments or research centres, UCT ranks, career level self-categories, years of engaging in research and research ratings by the National Research Foundation (NRF), where applicable. Biographical data drawn from reviewed documents identified type of document, publishing department and publication date. Questionnaire respondents emanated from 67 UCT departments, research centres and research institutes. This section reports all the biographic data from questionnaire respondents, interviewees and focus group and individual participants as well as from reviewed documents.

5.3.1.1 Surveyed academics and researchers' faculties

Academics and researchers who responded to the online questionnaire were asked to indicate their faculties (see Appendix A). Figure 5.1 reports questionnaire respondents' faculties of affiliation. While the study had an overall low questionnaire response rate, as noted in Section 5.2, each faculty had some level of representation in terms of respondents. Interestingly, the total numbers of participants from the Health Sciences (HSci) and Science (Sci) faculties have a very small difference of 3%. It was also interesting to see that the Centre for Higher Education Development (CHED), a non-teaching faculty, had a higher number of participants than some other faculties. Where required for ease of presentation, faculties' names have been abbreviated, for instance, Commerce (Com), Humanities (Hum), Graduate School of Business (GSB) and Engineering and the Built Environment (EBE).

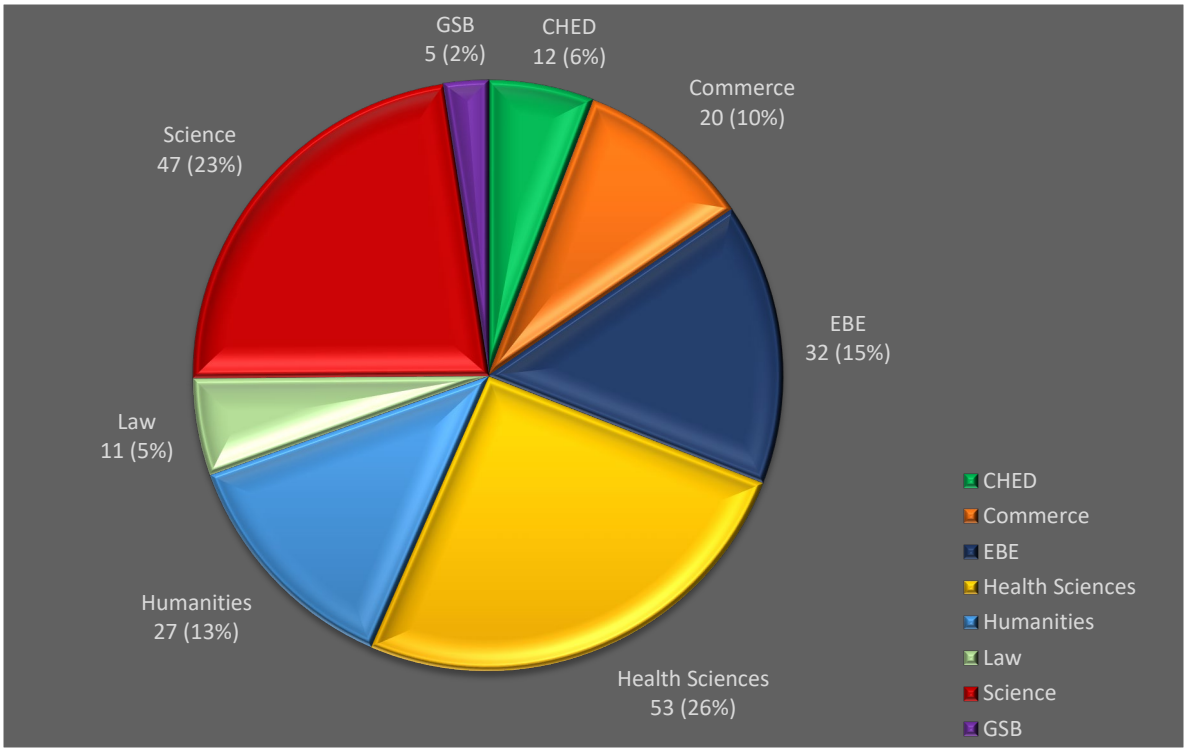

Figure 5.1: Distribution of questionnaire respondents by faculty (n=207)

During interviews and focus group or individual discussions, the study also probed participants' faculties, ranks of interviewees and level of study of research students who participated in focus groups. Table 5.1 presents faculties and ranks of interviewees who were representatives of faculty research committees or volunteers who participated on behalf of the faculties. The interviewees from these faculties are named Researcher #1 to #10 as they all indicated engagement in both research and research supervision. EBE and Commerce faculties had two representatives each, whereas other faculties had one interview representative each.

Table 5.1: Interviewees who represented research committees by faculty (n=10)

Faculty	UCT rank	No. of participants
CHED	Senior Lecturer	1
Commerce	Associate Professor & Senior Lecturer	2
EBE	Senior Lecturer & Lecturer	2
GSB	Professor	1
Health Sciences	Professor	1
Humanities	Professor	1
Law	Professor	1
Science	Professor	1
Total		**10**

Table 5.2 presents faculties and level of study of research students who participated in focus group and individual discussions. CHED is not represented by any research students since this

faculty is not a teaching faculty and therefore does not have students. There were no Masters students from Health Sciences, while the Commerce and Law faculties had no PhD representatives. It is also evident from Table 5.2 that there were no post-doctoral fellows representing Commerce and EBE. The researcher had no access to necessary sampling frames (see Section 4.5.2 of Chapter 4) to adequately follow-up on the participants to make up for the outstanding participants.

Table 5.2: Focus group and individual discussion participants by faculty (n=30)

Focus group and individual discussion participants	Total
Masters participants	
Commerce	**1**
Engineering & the Built Environment	**3**
Graduate School of Business	**1**
Humanities	**3**
Law	**1**
Science	**1**
PhD participants	
Engineering & the Built Environment	**1**
Graduate School of Business	**3**
Health Sciences	**2**
Humanities	**2**
Science	**4**
Post-doctoral fellow participants	
Graduate School of Business	**2**
Health Sciences	**2**
Humanities	**1**
Law	**1**
Sciences	**2**
Total	**30**

This section presented data relevant to faculties of participants and the section that follows reports on study participants' departments, research centres or institutes.

5.3.1.2 Distribution of questionnaire participants and interview key informants by department

The online questionnaire inquired about the departments of academics and researchers (see Appendix A) and responses provided included departments, research centres and institutes. Table 5.3 presents departments, research centres or institutes of questionnaire respondents.

Table 5.3: Questionnaire respondents' departments or research centres (n=207)

Department	Frequency	Percentage (%)	Cumulative frequency (%)
Academic Development Programme	2	1.0	1.0
Academic Support Programme for Engineering.	1	0.5	1.5
Accounting	5	2.4	3.9
African Centre for Cities	2	1.0	4.9
African Climate and Development Institute.	1	0.5	5.4
Allan Gray Centre	2	1.0	6.4
Anaesthesia and Perioperative Medicine	1	0.5	6.9
Anthropology	2	1.0	7.9
Archaeology	2	1.0	8.9
Archaeology/Geology	1	0.5	9.4
Architecture, Planning and Geomatics	6	2.9	12.3
Biological Sciences	6	2.9	15.2
Centre for African Studies	2	1.0	16.2
Centre for Infectious Disease Epidemiology and Research	1	0.5	16.7
Centre for Innovation in Learning and Teaching	8	3.9	20.6
Chemical Engineering	6	2.9	23.5
Chemistry	5	2.4	25.9
Civil Engineering	3	1.5	27.3
Commercial Law	3	1.5	28.9
Computer Science	1	0.5	29.4
Construction Economics and Management	4	1.9	31.3
Economics	1	0.5	31.8
Education	4	1.9	33.7
Electrical Engineering	6	2.9	36.6
Environmental and Geographical Science	9	4.4	41.0
Finance and Tax	1	0.5	41.5
Fine Art	1	0.5	42.0
Gender Studies	1	0.5	42.5
Geological Sciences	1	0.5	43.0
Graduate School of Business	6	2.9	45.9
Drug Discovery and Development Centre	1	0.5	46.4
Health Sciences Education	1	0.5	46.9
Health and Rehabilitation Sciences	13	6.3	53.2
Historical Studies	2	1.0	54.2
Human Biology	7	3.4	57.6
Information Systems	2	1.0	58.6
Integrative Biomedical Sciences	3	1.5	60.1
Knowledge & Information Stewardship	7	3.4	63.5
Management Studies	4	1.9	65.4
Mathematics and Applied Mathematics	2	1.0	66.4
Mechanical Engineering	3	1.5	67.9
Medicine	3	1.5	69.4
Molecular and Cell Biology	7	3.4	72.8

Department cont.	Frequency	Percentage (%)	Cumulative frequency (%)
Nelson Mandela School of Public Governance	4	1.9	74.7
Obstetrics & Gynaecology	1	0.5	75.2
Oceanography	4	1.9	77.1
Paediatrics and Child Health	2	1.0	78.1
Pathology	3	1.5	79.6
Philosophy	1	0.5	80.1
Physics	4	1.9	82.0
Private Law	2	1.0	83.0
Professional Communication Studies	3	1.5	84.5
Psychiatry and Mental Health	5	2.4	86.9
Psychology	4	1.9	88.8
Public Health and Family Medicine	10	4.8	93.6
Public Law	6	2.9	96.5
Radiation Medicine	1	0.5	97.0
Social Development	1	0.5	97.5
South African College of Music	1	0.5	98.0
Statistical Sciences	3	1.5	99.5
Study of Religions	1	0.5	100
Surgery	2	1.0	**101.00**
Total	**207**	**100.00**	

Key informants were purposively selected (see Section 4.5.3.2 in Chapter 4) from specific departments, which are presented in Table 5.4. Four of the key informants were in management positions while two of them indicated that they are experienced researchers in their disciplines. Key informants are named Key informant #1 to #6 for reporting purposes.

Table 5.4: Departments and designations of interviewed key informants (n=6)

Department	Designation	No. of participants
Research Office (RO)	Manager	1
UCT Libraries (UCT L)	Manager	1
UCT Libraries (UCT L)	Manger	1
UCT Libraries (UCT L)	Manger	1
UCT Libraries (UCT L)	Information specialist	1
UCT Press Board (UCTPB)	Board member	1
Total		**6**

Biographical data related to reviewed documents reflecting documents type, year of publication and publishing department or organisation are presented in Table 5.5. At the time of data collection, the 2019-2020 UCT eResearch Report (no longer accessible online) was the latest report on the website and reports published after the data collection phase are not included for review.

Table 5.5: Biographical data of reviewed documents

Document type	Year published	Publishing department /institution/organisation
DLS Report (unpublished)	2021	Digital Library Services, UCT Libraries
DOT4D blog	2021	Centre for Innovation in Learning and Teaching
LPC blog	2021	Library Publishing Coalition
OpenUCT Statistical Report (unpublished)	2020	UCT Information & Communication Technology Services
OpenUCT Statistical Report (unpublished)	2021	UCT Information & Communication Technology Services
UCT eResearch Report	2014	UCT eResearch Department
UCT eResearch Report	2015-2016	UCT eResearch Department
UCT eResearch Report	2016-2017	UCT eResearch Department
UCT eResearch Report	2017-2018	UCT eResearch Department
UCT eResearch Report	2019	UCT eResearch Department
UCT eResearch Report [report no longer accessible online]	2019-2020	UCT eResearch Department
UCT eResearch report	2020-2021	UCT eResearch Department
UCT Libraries Report	2019-2020	University of Cape Town Libraries
UCT Libraries Report	2021	University of Cape Town Libraries
UCT News	2017	University of Cape Town News
UCT Research Report	2014-2015	UCT Research & Innovation
UCT Research Report	2016-2017	UCT Research & Innovation

5.3.1.3 Distribution of questionnaire respondents by NRF rating

The study inquired about academics and researchers' NRF rating (see Appendix A). The findings presented in Figure 5.2 show that the largest category of questionnaire respondents were not NRF rated. Most of the respondents selected the 'Other' option and provided different explanations as to why they were not rated. Most of these responses indicated: nil, N/A, none, not rated or not currently rated. Some participants indicated disagreement with the NRF system or principles, which is the reason why they do not apply for the rating, therefore, NRF exclude many participants of this study and may not be tested further as NRF open access policy may apply to a few individuals from this cohort. Some stated that they were not interested in the ratings, while others indicated "not worth it", "not yet rated" or "have not re-applied".

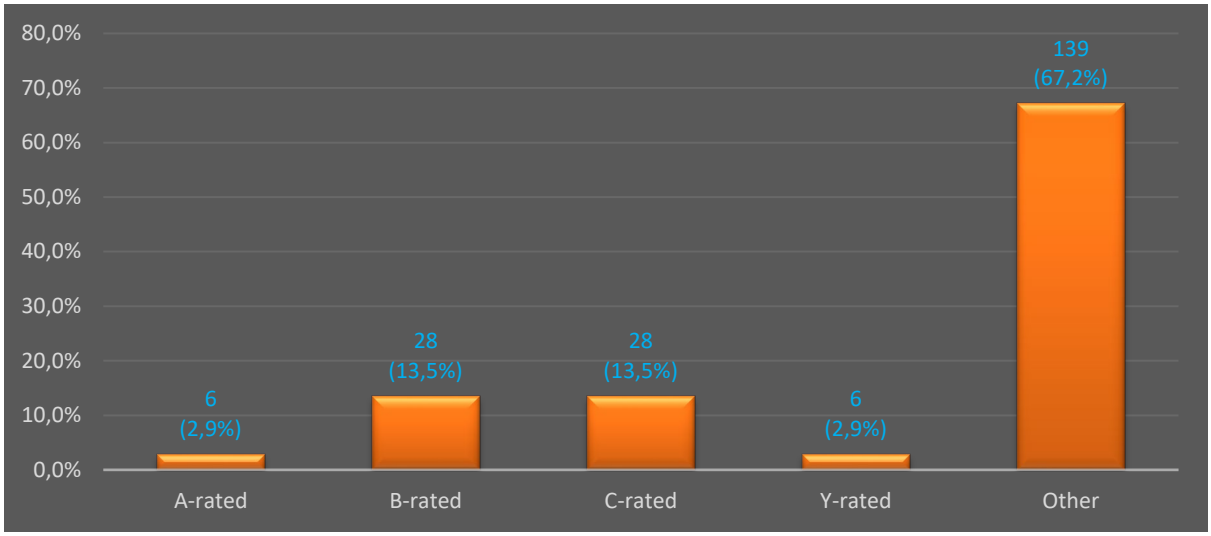

Figure 5.2: Distribution of questionnaire respondents by NRF rating (n=207)

The sections that follow provide some cross-tabulated biographical data that could be representative of career level self-categories to showcase some overlaps within different biographical categories.

5.3.1.4 Cross-tabulation of questionnaire respondents' career level self-categories and UCT ranks

The researcher probed surveyed academics and researchers about their UCT ranks[32] and how they self-categorise themselves in terms of career level (see Appendix A). Table 5.6 visualises a cross-tabulation of data related to two categories (self-categories and UCT ranks). There was a significant number of self-categorised 'established researchers' among the questionnaire respondents, who were predominantly professors and associate professors. Among the 50 self-categorised 'mid-career researchers', 47 were UCT ranked, while 56 (78%) of the 72 early career researchers (ECRs) were also UCT ranked. Only 24 respondents were not UCT ranked as reflected in Table 5.6; however, 24 respondents were able to specify other designations that they were holding at UCT (see Table 5.7).

[32]UCT ranks include Lecturer, Senior Lecturer, Associate Professor and Professor at which academics are appointed and are also a result of recognition of high achievement in the form of ad hominem promotion, which is a process for individual academic staff to apply for personal promotion to these ranks (Sadiq et al., 2018; Green-Thompson, 2020).

Table 5.6: Cross-tabulation of questionnaire respondents' career level self-categories and UCT ranks

UCT rank	Self-categorisation			Total
	Established	Mid-career	Early-career	
Professor	48 23.2%	4 1.9%	0 0.0%	**52** **25.1%**
Associate Professor	22 10.6%	15 7.2%	3 1.4%	**40** **19.3%**
Senior Lecturer	10 4.8%	20 9.7%	19 9.2%	**49** **23.7%**
Lecturer	0 0.0%	8 3.9%	32 15.5%	**40** **19.3%**
Junior Lecturer	0 0.0%	0 0.0%	2 1.0%	**2** **1.0%**
Other	5 2.4%	3 1.4%	16 7.7%	**24** **11.6%**
Total	**85** **41.0%**	**50** **24.2%**	**72** **34.8%**	**207** **100.0%**

Table 5.7: Other categories specified by questionnaire respondents who were not UCT ranked

Other designations	Frequency	Percentage (%)	Cumulative frequency (%)
Clinical Educator	1	4.1	4.1
Academic	1	4.1	8.2
Director	2	8.3	16.5
Honorary Research Associate	3	12.5	29
Research Fellow	4	16.7	45.7
Learning Designer	1	4.1	49.8
PASS Researcher	4	16.7	70.6
Researcher	1	4.1	74.1
Research Assistant	1	4.1	78.8
Senior Researcher	6	25	**103.8**
Total	**24**	**100.00**	

5.3.1.5 Cross-tabulation of questionnaire respondents' career level self-categories and years of being engaged in research

Career level self-categories were also cross-tabulated with questionnaire respondents' number of years of being engaged in research, as shown in Table 5.8. It was interesting to observe that some questionnaire respondents with experience of 11-21 years of engaging in research categorised themselves as early-career or emerging researchers, while three participants who categorised themselves as established researchers, indicated between 0-10 years of being engaged in research. About 30% of the respondents were among the opulently experienced in terms of research engagement (that is, 21 years or more).

Table 5.8: Cross-tabulation of questionnaire respondents' career level self-categories and years of being engaged in research

Career level self-categorisation	Years of being engaged in research					Total
	0-5	6-10	11-20	21-30	Over 30	
Established researcher	1 0.5%	2 1.0%	23 11.1%	42 20.3%	17 8.2%	**85** **41.1%**
Mid-career researcher	0 0.0%	16 7.7%	31 15.0%	3 1.4%	0 0.0%	**50** **24.1%**
Early-career/emerging researcher	29 14.0%	37 17.9%	6 2.9%	0 0.0%	0 0.0%	**72** **34.8%**
Total	**30** **14.5%**	**55** **26.6%**	**60** **29.0%**	**45** **21.7%**	**17** **8.2%**	**207** **100.0%**

5.3.1.6 Summary of the biographic information

Section 5.3.1 presented biographical information from all the study instruments including a questionnaire (for academics and researchers), interviews with representatives of faculty research committees and key informants, focus group and individual discussions with Masters students, PhD students and post-doctoral fellows, and reviewed documents. Biographic features that were of interest in this study included faculty of every study participant, where applicable; department of surveyed researchers and key informants; rank; NRF rating; years of being engaged in research; and, career level self-categorisation of questionnaire respondents. Further hypothesis tests were conducted and presented in some sections below using career level self-categories and UCT ranked categories as these groups are well representative of other biographic groups of this study. Self-categories (Established, Mid-carrier and Early-career researchers) represents UCT ranked, NRF rated and different years of engaging in research and this was category tested against the extent to which academics and research participate in open scholarship practices to also determine if all categories including early career researchers that are in their early years of the research career are on board with open practices. UCT ranked categories were tested in a hypothesis against extend of academics and researchers' contribution to the openness movement a social good (CQ3) with the assumption that UCT highly ranked academics and researchers could participate for social good more as they may be no longer be restrained by the need for promotion. Designations of interviewees, representatives of faculty research committees and key informants, were also presented in different sub-sections presenting data. Document review biographical information including document type, year of publication and publishing department or institution of reviewed documents were also reported. The sections that follow report findings related to the six critical questions (CQs) addressing the study's research objective.

5.3.2 CQ1: Extent to which academics and researchers in the UCT community are engaging in open scholarship practices

This section presents findings, from all the instruments of the study, on the extent to which academics and researchers in the UCT community are engaging in open scholarship practices. Data were collected using five instruments, structured questionnaire with UCT academics and researchers, semi-structured interviews (with representatives of faculty research committees or other faculty representatives and key informants), focus group or individual discussions (with Masters and PhD students and post-doctoral fellows), and document analysis (see Appendices A, B, C, D and E). As the study was a critical inquiry, the researcher made efforts to observe data patterns identifying either dominant or transformational components of critical theory that related to the extent of participation that lent itself to democratised dissemination of knowledge for the benefit of the information marginalised.

Using a Likert scale (with 0 being 'Not at all' and 5 being 'To a very great extent'), questionnaire respondents were asked to rate their extent of participation in open scholarship (OS). An assumption of this critical inquiry was that study participants would be able to understand the need to commit in the engagement of OS practices due to "information access barriers caused by the commodification of knowledge and other factors within the scholarly communication industry (Pyati, 2007). Figure 5.3 reports findings on surveyed academics and researchers' views of their extent of participation in OS. Eighteen percent (18%) is the highest percentage reflecting participation in green (or delayed) open access (OA) 'To a very great extent' while 19% was the highest for those participating 'To a great extent'. A range of responses that stand out most in each category indicates zero (0) representing 'Not at all' participating in the OS categories queried in the questionnaire survey. Looking at the findings in Figure 5.3, there is not much significant variance among the values representing participation 'To a great extent' in immediate OA (that is, gold and diamond OA), sharing in OER categories and open data as they all reflect percentages between 5% and 7%.

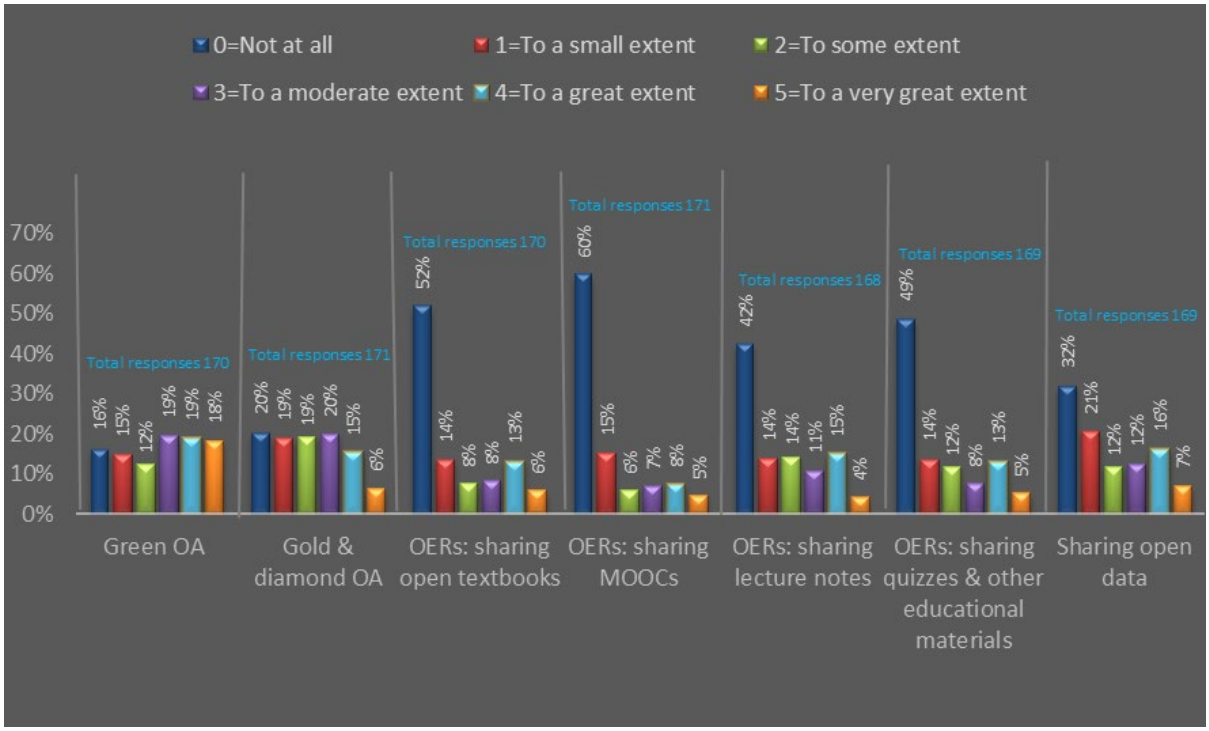

Figure 5.3: The extent of participation of surveyed academics and researchers in different open scholarship categories

The question on the extent of participation in OS by researchers at UCT was probed during interviews with representatives of faculty research committees or volunteers representing faculties and with key informants. Masters students, PhD students and post-doctoral fellows also discussed the extent to which UCT academics and researchers (including themselves) participate in open scholarship. Most interviewees, except for two key informants, expressed difficulties in speaking on behalf of their faculties or departments. Many spoke of the challenge of deliberating on the 'extent of participation' of the whole faculty, department or research centre as they highlighted that the researchers at UCT "operate in silos". Therefore, there was little to share with regards to the extent of participation in OS within faculties or departments. Similarly, focus group and individual participants (Masters students, PhDs and post-doctoral fellows) noted the challenge of speaking on behalf of their faculties or departments as they had not been interacting with many peers, mentors or seasoned researchers for various reasons including social distancing demands of the COVID-19 pandemic However, they shared what they have observed within their disciplines at UCT. Key informants from UCTL, on the other hand, shared extensively on researchers' extent of participation in open scholarship and provided background on both delayed (green) and immediate (gold or diamond) open access (OA) at UCT (all OA models are defined in Section 1.10.1 of Chapter 1).

Both groups of interviewees (faculty research representatives and research students (Masters students, PhDs and post-doctoral fellows) highlighted that there is low uptake of open access in research, OERs and open data sharing at UCT. Participants who were aware of the existence of article processing charges (APCs) support at UCT noted this provision of APCs to be very low which was further critiqued by two UCTL key informants to be the reason why UCT contributes to a very low rate of gold open access output of about 80 publications each year. Researcher #9 who was an academic and seasoned researcher acknowledged lack of awareness of the availability of APCs support at UCT. Most research students including Masters, PhD and post-doctoral fellows admitted not being aware of the concept of open scholarship. A few research students confessed participating in OS without being aware of the concept itself, while most of post-doctoral fellows confirmed that they were still working towards publications and would in the future participate in open scholarship.

Some of the interviewees noted a low percentage of sharing of MOOCs, and Key informant #3 highlighted that only a small number of those who have received an open textbook grant at UCT have shared their outputs publicly. Most faculty representatives, key informants and a few PhD students and post-doctoral fellows expressed that there is no conscious participation in open scholarship among UCT academics and researchers. This was confirmed by Key Informant #5 who noted a lack of deliberate effort among UCT academics and researchers to become open scholars. One interviewee from the Faculty of Commerce noted a lack of understanding among peers in their faculty on why they should share their work openly. The interviewee highlighted that most peers lack awareness of the existence of an OA policy at UCT as they often argued there is no OA policy at UCT and that they use this false information as a "scapegoat" to avoid engaging in OS. The same interviewee also noted that peers in their field constantly give "different excuses", including open access publishing being of low quality or "being fake or predatory publishing", which were viewed as "a great concern" by the participant.

Some observations were also shared by Key Informant #3 on the constraints caused by the limited APCs budget indicating,

> *"UCT publishes over 3,000 articles per year. In terms of APC support, there's only support for between 70 and 80 articles. So, you could see 3,000 versus less than a 100, and then you have researchers who have research funds, and they then pay APCs from*

those research funds… So, looking at a percentage of publishing OA, it's between seven to ten percent that have support either from the university or from research funds."

Similarly, another key informant agreed with the observation of low numbers participating in OS, "*So, those that are deliberately open scholars, they're few and far between. I don't want to put a direct number but it's a small amount …*". There was also reference to the presence of sharing educational materials at UCT and this was linked to the challenge of growing such materials due to restrictions to the use of third party copyrighted materials. Key Informant #3 acknowledged that choices to share knowledge differ from author to author and some do not support OS:

"*… A lot of the authors tend to put the content that would normally go into OERs into published books, and through publishing those books they get royalties, but be that as it may there is also a fair number of authors or academics who publish their content via OERs. There are a small proportion of educators or lecturers that do use open educational resources to share their research information or teaching information … but a lot of academics make their lectures accessible only to UCT with no open licenses, … then that does not conform to the openness principles.*"

Another common theme that emerged from both key informants from UCTL and some research students is the dominance of Health Sciences Faculty in open scholarship, which seems to be, due to the nature of their subjects. Interestingly, an interviewee from the Science Faculty declared that openness is considered crucial in their field:

"*We take open scholarship as a given for the reasons that we do analyses that are used to make decisions affecting people's lives … we strongly feel our science must be open, if the result of the analyses is going to impact people's lives. These analyses must be totally open for scrutiny to make sure other people can reproduce the results or can disagree with the basis of the shared results …*"

Researcher #1 provided a summary of OS practices being engaged in at their faculty including research, OERs and data sharing:

"*… so, we have whole research projects like ROER4D (Research on Open Educational Resources for Development) and DOT4D (Digital Open Textbooks for Development) that actually make their data open and share their data openly. Research will vary but many researchers will try and publish in open access journals, and also publish openly*

pre-prints of their work so that it can be shared openly, and then with the teaching resources, the OERs, I would say that's where we feature strongest, where we've made a lot of our teaching materials that can be used across the university, licensed under creative commons license [open licenses], and those can be found on our website."

Some interviewees also noted minimal sharing of data recently in ZivaHub[33]. Interestingly, one PhD research student from the Humanities Faculty indicated personal utilisation of DataFirst[34] to share data quite often and constant sharing of working papers on OpenUCT prior to publishing in commercial journals. Key Informant #4 noted a strong sense, from some researchers, of the need to share data with the wider community:

"*You do have some who really feel like, my job is to share everything I come up with, with others, with other researchers, with the community, I am there almost like the community's envoy into the science, and I'm discovering things or finding data and my job is to share it, but I think they're still a minority, in a way, is how I would say that.*"

A contrasting observation was shared by Key Informant #3 on data sharing at UCT: "*What authors tend to do is hold on to their data until it is totally exploited for their own publications, and once they've exhausted that then they make it open, but then that data becomes irrelevant or becomes redundant*."

A reflection from the discussions with Masters students, PhD students and post-doctoral fellows implied minimal participation in different categories of OS by their peers at UCT as most of them are still at the stage of research production and have not yet published. These research students shared observations related to their mentors' extent of participation in OS within their departments, which was described as low. Research students also confirmed an observation that a large volume of UCT research publications exist online. Most research students confirmed that some of the UCT publications visible online are closed behind paywalls. One of the Masters students confirmed to having co-published with their supervisor, while two PhD students and one post-doctoral fellow affirmed having published. Two PhD students confirmed benefiting from funding and infrastructure at UCT to publish and share

[33]ZivaHub is UCT's institutional data repository and is powered by Figshare for institutions (Moore, 2017).

[34]Data First is a research data service dedicated to giving open access to data from South Africa and other African countries (DataFirst, 2022).

open access. Another PhD student acknowledged having published two open access papers using APCs funding provided by one of the Health Sciences departments. One PhD student shared how peers are publishing research papers in journals from their Masters theses in their department, while other participants expressed appreciation for publishing from theses/dissertations, as it was their first time to learn about publishing papers from theses. A post-doctoral fellow expressed frustration due the closed culture in their department in the Science Faculty as they are expected to publish in top tier or High Impact factor (HIF) closed journals. The research students appreciated the impact factor associated with the journals; however, they queried why publications had to be closed behind pay walls. Therefore, they committed to sharing their publications, whether copyrighted or not, on academia social media platforms.

The aspect of data sharing was not popularly discussed as most focus group and individual discussants were yet ready to publish; however, some students committed to sharing their data after graduation. Some student participants admitted that it was their first time to hear about data sharing or ZivaHub (UCT's data repository) and OpenUCT (UCT's designated institutional repository). As mentioned earlier, one PhD student was quite advanced in terms of data sharing on DataFirst and with other open activities. During focus group and individual discussions, most research students could not engage on the issue of sharing open educational resources either due to that fact that they had never created such resources or for not being aware that educational resources could be shared openly. About four of the focus group and individual discussants acknowledged to have assisted with teaching. One PhD student who was a specialist in the OER field provided some background on the creation of open textbooks and on UCT's grant supporting open textbook creation. The OER specialist has published some blogs related to open textbooks and has also published some interdisciplinary research with APCs support from their department at UCT. In general, the observation from most research students (Masters, PhD and post-doctoral fellows) who participated in the study is that there is low uptake of open sharing of research related outputs, and they also noted a limited number of scholars who take initiative to share.

Tables 5.9 summarises observations relating to 'the extent of participation in open scholarship' that emanated from interview and focus group (including individual) discussion participants, respectively.

Table 5.9: Interviewees' (academics, researchers & key informants') views on the extent of participation of UCT academics and researchers in open scholarship

Extent of participation in OS	Interview participants	
	Faculty research committee representatives	Key informants
50 to 80 publications funded by APC		✓
7% gold open access is supported by from APC		✓
A lot of academics share lecture notes on Vula	✓	
Academics put less effort into OA since there is no monitoring & evaluation	✓	✓
Few authors consciously participate in OS		✓
Few researchers have started sharing data	✓	✓
A small number in faculties participate in OS	✓	✓
Freedom to publish OA comes when no longer concerned with promotion to higher ranks	✓	
A lot of publishing and a push for OA in different fields		✓
HSci has greater participation in OA		✓
A few OER grantees shared OERs on IR		✓
Low uptake of sharing via green OA	✓	✓
Major initial contribution driven by UCT		✓
Mixed feelings towards participation in OS	✓	✓
More funding needed to support OA in HSci		✓
Most findings in our field are totally open	✓	
Researchers share green OA within the expected copyright guidelines	✓	✓
UCTL published 16 monographs on OMP		✓
UCT has about 20 MOOCs		✓
There is rare conscious participation in OS at UCT		✓
Very small numbers of OERs shared		✓
Very small percentage use OA publishing infrastructure		✓

Table 5.10 similarly, summarises themes that emerged from interviews with faculty representatives and key informants with each cell sharing an independent theme listed in the table alphabetically; there is no relationship between themes in parallel columns.

Table 5.10: Extent of participation in open scholarship according to focus group and individual discussion (Masters and PhD students and post-doctoral fellows) participants

Extent of participation as viewed by focus group and individual participants	
All my work is published OA	No research publications yet
A few numbers in faculties participate in OS	One publication was published from APCs
Freedom to publish OA works better after attaining highest rank	To some extent ECR participate in open scholarship at UCT
HSci has greater participation in OA	There is rare conscious participation in OS
Low uptake of sharing via green OA	They publish whenever possible
Most working papers from Hum are shared OA	

Table 5.11 captures findings from the reviewed documents on the extent of the UCT community's participation in OS. The progress with sharing publications on OpenUCT is visible from different documents presenting numbers of shared outputs at different stages. By August 2021, 29 588 publications were recorded to be openly available on OpenUCT including OERs, ETDs and grey literature in unpublished documents (see Table 5.11).

Table 5.11: The extent of participation of the UCT community in open scholarship evident in reviewed documents

Document type	Publication date	Evidence on extent of participation in OS from reviewed documents
UCT eResearch Report	2014-2015	UCT Libraries, on completion of OpenUCT Initiative project, hosted more about 10 300 scholarly outputs
UCTL Report	2019-2020	UCTL currently hosts about 27 300 scholarly outputs on OpenUCT UCTL currently hosts datasets [on ZivaHub]
OpenUCT statistics unpublished	August 2021	29 588 full text publications shared on OpenUCT
LPC Blog	2021	UCTL manages journals and 18 monographs
DOT4D blog	2021	39 openly licensed textbooks were produced from grants across all faculties at UCT

5.3.2.1 Cross-tabulation of questionnaire respondents' extent of participation in open scholarship within faculties

Table 5.12 shows a cross-tabulation of surveyed academics and researchers' extent of participation in green (delayed) OA within faculties. The most outstanding responses of those participating 'To a very great extent' in green OA reflect seven participants each from Health

Sciences and EBE. An outstanding number of 11 participants from Science Faculty are participating in green open access 'To a greater extent'.

Table 5.12: Questionnaire respondents' extent of participation in green OA within faculties (n=170)

Green Open Access	UCT faculties								Total
	CHED	Commerce	EBE	GSB	Health Sci	Humanities	Law	Science	
Not at all	1	3	3	2	8	4	2	5	**28**
To a small extent	0	0	7	1	6	5	1	5	**25**
To some extent	1	1	3	0	7	6	1	2	**21**
To a moderate extent	3	4	5	1	7	2	1	10	**33**
To a great extent	2	5	4	0	4	5	1	11	**32**
To a very great extent	2	1	7	1	7	4	3	6	**31**
Total	**9**	**14**	**29**	**5**	**39**	**26**	**9**	**39**	**170**

Table 5.13 captures findings from the cross-tabulation of surveyed participants' extent of participation in gold or diamond (immediate) OA within faculties. The most outstanding number of those participating in immediate OA 'To a very greater extent' is seven (7) and are located in Health Sciences Faculty.

Table 5.13: Questionnaire respondents' extent of participation in immediate OA within faculties (n=171)

Gold & diamond open access	UCT faculties								Total
	CHED	Commerce	EBE	Health Sci	Humanities	Law	Science	GSB	
Not at all	1	4	7	8	6	2	4	3	**35**
To a small extent	0	2	8	4	5	3	9	1	**32**
To some extent	2	5	5	9	4	1	6	1	**33**
To a moderate extent	3	2	3	9	4	2	11	0	**34**
To a great extent	1	0	4	8	6	0	7	0	**26**
To a very great extent	2	2	2	1	1	1	2	0	**11**
Total	**9**	**15**	**29**	**39**	**26**	**9**	**39**	**5**	**171**

5.3.2.2 Cross-tabulation of questionnaire respondents' extent of participation in open scholarship and career level self-categories

This section reports findings of cross-tabulated dependent variables related to the extent of participation in open scholarship (OS) and independent variables (career level self-categories)

of surveyed UCT academics and researchers. Hypothesis testing[35] was also conducted with elements in each table using a Pearson's chi^2 to establish if there is an association between the dependent and independent variables. Table 5.14 through to Table 5.18 present both cross-tabulations and hypothesis test results related to established, mid-career and early career researchers' extent of participation in green (delayed) OA, gold or diamond (immediate) OA, sharing open textbooks, sharing MOOCs, other OERs and sharing research data.

The test results, $\chi^2(10) = 7.5293$ and $p = 0.675$ of elements in Table 5.14 show no significant association between the levels of self-categories and the extent of participation in green OA since the p-value (0.675) is greater than the expected statistical threshold of 0.05. Statistically, a p-value showing strong evidence of association should be ≤0.05 (that is, less than or equal to 0.05). Therefore, we fail to reject the null hypothesis (also explained in Section 4.7 in Chapter 4 for details of this method of data analysis). However, looking at the data patterns in Table 5.14, there are a fair number of established researchers who are participating in green OA 'To a great extent'. It was also critical to establish if researchers participate into OS early into their career.

Table 5.14: Cross-tabulation of UCT academics and researchers' career level self-categories and their extent of participation in green open access (n=170)

Career level self-categorisation	**Green open access**						**Total**
	Not at all	To a small extent	To some extent	To a moderate extent	To a great extent	To a very great extent	
Established researchers	10 5.9 %	9 5.3 %	7 4.1 %	14 8.2%	19 11.2 %	12 7.1 %	**71** **41.8%**
Mid-career researchers	5 2.9%	7 4.7%	5 2.9%	8 4.7%	5 2.9%	9 4.3%	**39** **22.9%**
Early-career researchers	13 7.6%	9 5.3%	9 5.3%	11 6.4%	8 4.7%	10 5.9%	**60** **35.3%**
Total	**28** **16.5%**	**25** **14.7%**	**21** **12.4%**	**33** **19.4%**	**32** **18.4%**	**31** **18.2%**	**170** **100%**
Pearson's chi^2/p*	**$\chi2(10) = 7.5293$, and $p = 0.675$**						

Table 5.15 presents a cross-tabulation of variables related to surveyed UCT academics and researchers' extent of participation in gold and diamond (immediate) open access and their career level self-categories (established, mid-career and early-career researchers). Values in

[35]Hypothesis testing is a form of statistical inference that uses data from a sample to draw conclusions about a population parameter or a population probability distribution (Sweeney, Williams & Anderson, 2020).

each cell are a representation of responses and percentages of each category to show researchers of different levels and their extent of participation in immediate OA. A Pearson's chi^2 hypothesis test was conducted with scores in Table 5.15 showing no significant association between categorical variables (extent of participation in immediate OA and career level self-categories). The test presented the following results: $\chi^2(10) = 13.8795$ and $p = 0.179$. Considering the expected threshold in statistics is ≤ 0.05, we fail to reject the null hypothesis, as the p=value (0.179) is greater than the expected threshold. A p-value higher than 0.05 is not statistically significant and indicates strong evidence for the null hypothesis. Interestingly, there is some degree of participation in immediate OA among early-career or emerging researchers, despite them being at the early stage of their research careers.

Table 5.15: Cross-tabulation of UCT academics and researchers' self-categories and their extent of participation in immediate open access (n=171)

Career level self-categorisation	**Gold & diamond open access**						
	Not at all	To a small extent	To some extent	To a moderate extent	To a great extent	To a very great extent	**Total**
Established researchers	9 5.3%	16 9.4%	18 10.5%	11 6.4%	11 6.4%	2 1.2%	**71** **41.5%**
Mid-career researcher	7 4.1%	9 5.3%	4 2.3%	10 5.8%	7 4.1%	2 1.2%	**39** **22.8%**
Early-career researcher	19 11.1%	7 4.1%	11 6.4%	13 7.6%	8 4.7%	3 1.8%	**61** **35.7%**
Total	**36** **21.1%**	**32** **18.7%**	**33** **19.3%**	**34** **19.9%**	**26** **15.6%**	**11** **6.4%**	**171** **100%**
Pearson chi^2/p*	**$\chi^2(10) = 13.8795$, and $p = 0.179$**						

Table 5.16 shows a cross-tabulation of surveyed UCT academics and researchers' extent of participation in open textbook sharing within career level self-categories. The values in the tables were subjected to a Pearson's chi^2 test, and the results, $\chi^2(10) = 2.7540$ and $p = 0.987$, were obtained showing no strong evidence of association between the career level self-categories and the extent of participation in the creation and sharing of open textbooks. Therefore, here too we fail to reject the null hypothesis as the p-value is greater than the expected threshold of 0.05.

Table 5.16: Cross-tabulation of UCT academics and researchers' career level self-categories and their extent of participation in open textbook sharing (n=170)

Career level self-categorisation	**Sharing open licensed textbooks**						**Total**
	Not at all	To a small extent	To some extent	To a moderate extent	To a great extent	To a very great extent	
Established researchers	34	12	5	7	8	4	**70**
	20%	7.1%	2.9%	4.1%	4.7%	2.4%	**41.2%**
Mid-career researcher	20	5	3	3	6	3	**40**
	11.8%	2.9%	1.8%	1.8%	3.5%	1.8%	**23.5%**
Early-career researcher	34	6	5	4	8	3	**60**
	20%	3.5%	2.9%	2.4%	4.7%	1.8%	**35.3%**
Total	**88**	**23**	**13**	**14**	**22**	**10**	**170**
	51.8%	**13.5%**	**7.7%**	**8.2%**	**12.9%**	**5.9%**	**100%**
Pearson's chi^2/p*	**χ2(10) = 2.7540, and p = 0.987**						

Hypothesis testing of scores in Table 5.17 was conducted using Pearson's chi^2 that obtained the results, $\chi^2(10) = 10.8099$ and $p = 0.373$, which show no association between the levels of the two categorical variables, that is, career level self-categories and the extent of participation in OERs called MOOCs. Looking at the p-value (0.373) from the results, we failed to reject the null hypothesis as it is greater than 0.05. It is critical to note that there is minimal sharing of MOOCs across the three categories of established, mid-career and early career researchers.

Table 5.17: Cross-tabulation of UCT academics and researchers' career level self-categories and their extent of participation in sharing of MOOCs (n=171)

Career level self-categorisation	**Sharing MOOCs**						
	Not at all	To a small extent	To some extent	To a moderate extent	To a great extent	To a very great extent	**Total**
Established researchers	37	13	5	7	4	4	**70**
	21.6%	7.6%	2.9%	4.1%	2.3%	2.3%	**40.9%**
Mid-career researcher	29	3	2	3	1	2	**40**
	17%	1.8%	1.4%	1.8%	0.1%	1.2%	**23.4%**
Early-career researcher	36	10	3	2	8	2	**61**
	21.1%	5.8%	1.8%	1.2%	4.7%	1.2%	**35.7%**
Total	**102**	**26**	**10**	**12**	**13**	**8**	**171**
	59.6%	**15.2%**	**5.8%**	**7%**	**7.6%**	**4.7%**	**100%**
Pearson's chi^2/p*	**χ2(10) = 10.8099, and p = 0.373**						

A Pearson's chi^2 test was also conducted to ascertain if there is an association between the levels of two categorical variables relating to career level self-categories and the extent of participation in the sharing of open licensed lecture notes (see Table 5.18). The outcome of the

hypothesis testing, $\chi^2(10) = 7.2611$ and $p = 0.701$, shows no association between the selected variables. Therefore, we fail to reject the null hypothesis with a higher (than 0.05) p-value of 0.701.

Table 5.18: Cross-tabulation of surveyed UCT academics and researchers' extent of participation in sharing of open licensed lecture notes, and their career level self-categories (n=168)

Career level self-categorisation	**Sharing open licensed lecture notes**						**Total**
	Not at all	To a small extent	To some extent	To a moderate extent	To a great extent	To a very great extent	
Established researchers	30 17.9%	9 5.4%	10 6.0%	8 4.8%	10 6.0%	1 0.6%	**68** **40.5%**
Mid-career researcher	13 7.7%	4 2.4%	6 3.6%	5 3.0%	9 5.4%	2 1.2%	**39** **23.2%**
Early-career researcher	28 16.7%	10 6.0%	8 4.8%	5 3.0%	6 3.6%	4 2.4%	**61** **36.3%**
Total	**71** **42.3%**	**23** **13.7%**	**24** **14.3%**	**18** **10.7%**	**25** **14.9%**	**7** **4.2%**	**168** **100%**
Pearson's chi^2/p*	**$\chi2(10) = 7.2611$, and $p = 0.701$**						

Values of categorical variables (career level self-categories and the sharing of other OERs) presented in Table 5.19 were tested using a Pearson's chi^2 test to ascertain if there is a significant association between the cross-tabulated variables. The outcome, $\chi^2(10) = 3.9693$ $p = 0.949$, shows no significant association between the cross-tabulated variables (self-categories and the extent of sharing of other OERs). Therefore, we fail to reject the null hypothesis. The outstanding values in the table are for 'Not at all' participating in the sharing of other OERs. Interestingly, there is not much difference in the values representing participation of ECRs compared to those of mid-career researchers.

Table 5.19: Cross-tabulation of surveyed UCT academics and researchers' self-categories and their extent of participation in sharing of other OERs (n=169)

Career level self-categorisation	Sharing of other OERs						Total
	Not at all	To a small extent	To some extent	To a moderate extent	To a great extent	To a very great extent	
Established researchers	32 18.9%	10 5.9%	9 5.3%	6 3.6%	10 5.9%	2 1.2%	**69** **40.8%**
Mid-career researcher	17 10.1%	6 3.6%	5 3.0%	3 1.8%	6 3.6%	2 1.2%	**39** **23.1%**
Early-career researcher	33 19.5%	7 4.1%	6 3.5%	4 2.4%	6 3.5%	5 3.0%	**61** **36.1%**
Total	**82** **48.5%**	**23** **13.6%**	**20** **11.8%**	**13** **7.7%**	**22** **13.0%**	**9** **5.3%**	**169** **100%**
Pearson's chi^2/p*	**χ2(10) = 3.9693, and p = 0.949**						

A hypothesis test of scores of cross-tabulated variables in Table 5.20 related to career level self-categories and the extent of participation in open data sharing had a p-value of 0.653. The test result shows no significant association between the categorical variables and the extent of the participation in open data sharing. Looking at the expected threshold of 0.05 and the p-value, we fail to reject the null hypothesis. The values of the extent of participation in open data sharing shown in Table 5.20 are more aligned to 'Not at all' participating and participation 'To smaller extent'.

Table 5.20: Cross-tabulation of surveyed UCT academics and researchers' career level self-categories and their extent of participation in sharing open data (n=169)

Career level self-categorisation	Open data sharing						Total
	Not at all	To a small extent	To some extent	To a moderate extent	To a great extent	To a very great extent	
Established researchers	21 12.4%	13 7.8%	9 5.3%	9 5.3%	11 6.5%	6 3.6%	**69** **40.8%**
Mid-career researcher	11 6.5%	6 3.6%	5 3.0%	7 4.1%	9 5.3%	1 0.6%	**39** **23.1%**
Early-career researcher	22 13.0%	16 9.5%	6 3.5%	5 3.0%	7 4.1%	5 3.0%	**61** **36.9%**
Total	**54** **32.0%**	**35** **20.7%**	**20** **11.8%**	**21** **12.4%**	**27** **16.0%**	**12** **7.1%**	**169** **100%**
Pearson's chi^2/p*	**χ^2 (10) = 7.7567, and p= 0.653**						

5.3.2.3 Section summary

This section reported findings related to Critical Question One (CQ1) on the extent of academics and researchers' participation in the different open scholarship categories (delayed (green) OA, immediate (gold and diamond) OA, open sharing of different OERs and open data sharing) at UCT, drawing from all the study's research instruments (questionnaire, interviews, focus group and individual discussions and reviewed documents). Low uptake of green and gold open access, sharing of open data and OERs have been highlighted for most participants. The section also presented some hypothesis testing using Pearson's chi^2 tests to establish any significant associations between the dependent variables related to participation in open scholarship and independent variables (career level self-categories). The p-values of all the hypothesis tests where above 0.05 showing no significant relationships between the career level self-categories and the open scholarship components (green and gold open access, MOOCs, open textbooks, etc.).

5.3.3 CQ2: Open scholarship practices that UCT academics and researchers are engaging in

This section reports findings on what open scholarship practices UCT academics and researchers are engaging in, for example, data sharing; open access publishing; creation and sharing of open educational resources. This question was asked across all five instruments, that is, the structured questionnaire (with UCT academics and researchers), semi-structured interviews (with representatives of faculty research committees and with selected key informants), focus group or individual discussions (Masters students, PhD students and post-doctoral fellows), and through document analysis (see Appendices A, B, C, D and E). What follows are two sub-sections reporting findings from all the study instruments. As the study is grounded within a transformative paradigm, the researcher paid particular attention to the outcome of responses for a reflection of critical theory aspects either supporting open scholarship and thus contributing to the transformation of scholarly communication, lack of participation in OS, or conforming to closed publishing and thus perpetuating inequalities in access to knowledge.

5.3.3.1 Open scholarship practices that UCT academics and researchers are engaging in

Figure 5.4 reflects findings on open scholarship practices from questionnaire respondents. The number of responses for each category of the question varied somewhat and ranged from 120

to 122 for each OS category being responded to (see Appendix A). Hence n-values are provided for each individual category in Figure 5.4. Most of the questionnaire respondents who attempted this question were more aligned to participation in green (delayed) open access (79.5% of 122) and gold or diamond (immediate) open access (78.7% of 122).

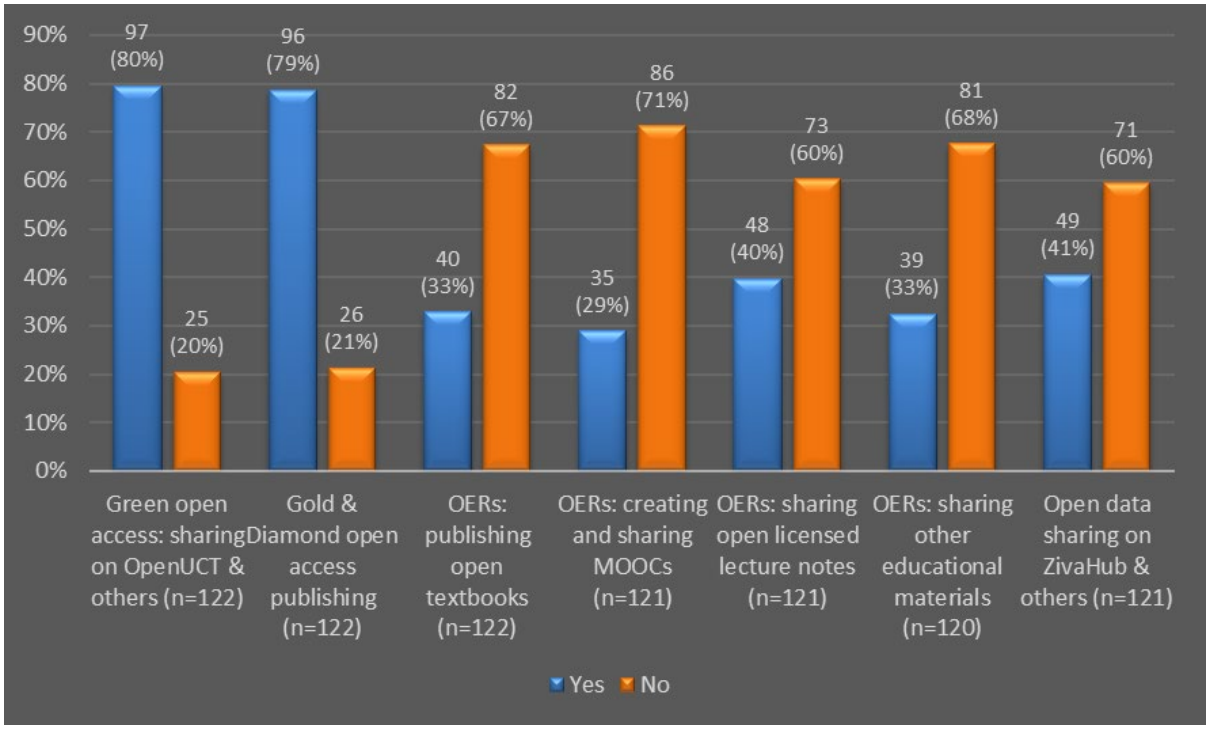

Figure 5.4: Questionnaire responses on open scholarship practices being engaged in by UCT academics and researchers

Some of the responses provided as 'Other' indicated issues relating to time consuming managerial and administrative responsibilities that hinder progress in engaging in OS practices. Some respondents indicated that they are sharing in different ways including on specialised websites in subjects like language and literacy, and African architecture. Open access sharing of films and other teaching materials is also being practised with some surveyed respondents using blogs, and other participants sharing on pre-print repositories, for example, Social Science Research Network (SSRN) and ArXiv repositories and on the online software development host (GitHub). Some OERs highlighted under 'Other' are aimed at benefiting community members and therefore free to download. One respondent queried why some open science components like open-source software, open conferences, and others were excluded in the questionnaire prepared for this study. Some of the responses to 'Other' shared opinions that they support aspects like data and OER sharing although they are not generating data and have no teaching responsibilities.

During interviews (with representatives of faculty research committees and with key informants) and in focus group and individual discussions (with Masters students, PhD students and post-doctoral fellows) the question on open scholarship practices being engaged in by UCT academics and researchers was also probed. Open scholarship practices noted by interviewees (both faculty representatives and key informants) included the creation and sharing of OERs (inclusive of MOOCs), research publications and open data. Students who participated in one focus group discussion also noted depending on MOOCs from other departments at UCT, which they found very useful in some of their courses. CHED was highlighted to be the leader (through one of its departments, CILT) in terms of OER projects at UCT and was noted for collaborating in projects such as ROER4D and DOT4D as well as managing open textbooks grants at UCT. Researcher #1 noted that CILT also supports the creation of OERs and offers training and workshops on copyright and open licensing of OERs and other open scholarships. CHED was also noted by their faculty representative as being responsible for sharing UCT MOOCs and other OERs. Some workshops included the subject of awareness of open scholarship issues and workshops on how to adequately use Creative Commons (CC) licenses or open licenses. Most research students who participated in focus group discussions, except for three post-doctoral fellows and one PhD student, indicated not to have assumed any teaching roles in their departments, which explains why they have not engaged in the open educational field. However, Key Informants #2 and #3 noted participation by UCT students in the creation of open textbooks that have been published by UCTL on the open publishing platform (known as Continental Platform) established over the years using Open Monograph Press (OMP), an open-source software.

Key Informants #1 and #3 noted an increase in gold open access in the Health Sciences Faculty since researchers in the faculty have subsidy to publish with an open access publisher, Biomedical Central. During a discussion in one PhD focus group, participants who had published open access, confirmed APCs support from departments in the Health Sciences Faculty at UCT. Some interviewees noted that APCs funding at UCT works on reimbursement basis, however, Researcher #8 described this as inadequate support of OA as it excludes authors who do not have funding to pay for APCs upfront. Another seasoned researcher and most of research students (Masters, PhD and post-doctoral fellows) indicated lack of awareness of APCs funding at UCT.

Earlier in Section 5.3.2, the extent of participation in OS at UCT was described as being low. Interestingly, discussions with some interviewees, PhD students and post-doctoral fellows revealed that there are individuals who are quite advanced in terms of constantly sharing different kinds of research outputs on diverse media. It was clear from the different conversations that platforms being utilised for sharing are not exclusive to the two official UCT repositories, OpenUCT and ZivaHub, as DataFirst and Zenodo[36] are also popularly used, particularly for data sharing, together with other avenues. Sharing of electronic theses and dissertations (ETDs) online by UCTL on behalf of the university is a big OS practice noted by Key Informant #2 who further explained the process that happens in batches twice or thrice every year to share on OpenUCT. Some Masters and PhD students also acknowledged the availability of their ETDs online, and they positively welcomed this open scholarship practice as they acknowledged the importance of making research freely accessible to peers. The creation and sharing of open textbooks were also noted as an established practice at UCT by one faculty representative and by three key informants who also highlighted the growth of open journals and monographs using open-source software including Open Journals Systems (OJS) and Open Monograph Press (OMP). Three interviewees (Key Informants #2 and #3 and Researcher #4) emphasised collaboration between faculties and UCTL in managing open journal and open monograph (including open textbook) publishing. A further explanation from one of the key informants indicated that the website for journals and monographs that was established by UCTL is offering a diamond (no author fees) publishing service to the UCT community and to other research communities. According to Key Informant #2, the open publishing platform has grown into a neutral Continental Platform that has been extended to other African universities to allow them to establish institutional open publishing services. Some faculty representatives, key informants and a few research students acknowledged the UCT community to have published research articles, monographs and open textbooks on the Continental Platform.

On a different note, Key Informants #2 and #4 acknowledged that UCT policies are playing a role, although at a very minimal level, in motivating sharing of ETDs on OpenUCT and of data

[36]Zenodo is an open access repository developed to serve researchers with no institutional data repository – it falls under the European OpenAIRE programme and is operated by CERN (the European Organization for Nuclear Research) (European University Institute Library, 2022).

on ZivaHub. However, sharing of data has been described as being still at its infancy stage. A representative from the Health Sciences Faculty was also certain that peers from their faculty are sharing different scholarship openly on OpenUCT. Key Informant #4 further noted the development of digital open collections at UCT, curation of research data for open sharing and support of the data management plan (DMP) tool online. Some PhD students also highlighted sharing data and participation in the development of open-source software and openly sharing them and the open licensed codes on GitHub to support further open development of improved versions of open-source software. A unique practice to support open published research findings that was noted by one PhD student was the translation of academic work to support citizens to better understand findings from academic papers. Translation is said to be possible since there is no copyright infringement with open published scholarly output, therefore the participant acknowledged the opportunity afforded by the open licensing of research publications in simplifying academic pieces, particularly for those who do not understand English and those who use English as a second language. There was confirmation from some of the discussions that most journals publish academic papers in English, which could complicate participation in knowledge creation for some researchers who are challenged to write in English.

Both interviewees and research students (focus group and individual participants) shared some sentiments on the COVID-19 pandemic being a factor in increasing the demand for knowledge sharing online due to new developments of online teaching. As a result of the global pandemic, increased online sharing via different platforms and applications has been observed since the beginning of 2020 (when the pandemic began). Besides sharing on platforms to allow knowledge retrieval online, departments at UCT are said to have adopted the use of applications like *Microsoft Teams*[37] and *Zoom*[38] to share knowledge as students and staff had resorted to online knowledge sharing including teaching and learning during academic semesters due to social distancing demands during peak times of COVID-19 infections. However, there was no evidence shared by the study participants to indicate that the knowledge being shared is open licensed to qualify as open scholarship. Key Informant #3 expressed a strong disbelief that

[37]*Microsoft Teams* is a proprietary business communication application developed by Microsoft to facilitate video or audio conferencing using a computer or smartphone (Kapoor, 2020).

[38]*Zoom* is a web-based video conferencing application used to facilitate video, audio and wireless screen-sharing (Kapoor, 2020).

most of the knowledge being shared on Vula (UCT's learning management system), particularly teaching and learning materials, cannot be classified as open scholarship as it may not be open licensed to support redistribution and re-use of the materials as openness requires.

Research data have been noted by Researcher #1 and some PhD participants to be shared on different platforms ZivaHub, Zenodo and GitHub. One PhD student declared to have consistently shared data on DataFirst. Dynamics in each discipline in terms of data use and sharing were also observed during interviews, for example, Researcher #3 highlighted that the aspect of data sharing is not applicable in their field as they use secondary data. This also applied to Researcher #9 who noted engagement in desk research that does not require the use of primary data, which is the kind of data that qualifies for sharing as data ownership and ethics determines sharing. Some focus group participants disclosed that their faculty instructs them to ignore the sections that cover research data management and sharing in the Memorandum of Understating (MoU[39]). The RDM section in the MoU is intended for the students to explain how they will manage their data for open sharing, which is part of their research output that is required to be open by the UCT's RDM policy, unless there is a strong reason that hinders sharing. In addition, some students felt that open sharing is optional at UCT and not a mandate as faculty deans or supervisors can decide what students can share in the faculty.

Table 5.21 summarises themes that emerged from interviews with faculty representatives and key informants with each cell sharing an independent theme listed in the table alphabetically; there is no relationship between themes in parallel columns. Table 5.22 follows the same arrangement summarising themes that emanated from focus group and individual discussions with Masters and PhD students and post-doctoral fellows. Some of the themes indicated willingness and plans by research students to share after graduation.

[39]A memorandum of understanding (MoU) is a signed document that clarifies "up-front" the agreed roles and responsibilities of both research students and research supervisors to ensure a mutually productive supervision experience during the academic year (University of Cape Town, 2022a).

Table 5.21: Themes from interviews with faculty representatives and key informants on open scholarship practices that the UCT community is engaging in

Open scholarship practices identified by interviewees	
Advocating for OA textbook creation	Limited OA in book publishing
Arranging digital open collections	Managing open access journals
Beginning to share on ZivaHub/Minimal data sharing	OpenUCT is being used
Creating and sharing OER on website	Sharing ETDs on OpenUCT
Creating and sharing of MOOCs	Sharing of open content in the fishery field
Creating and sharing of textbooks	Sharing of lecture notes and quizzes
Curating data for open sharing	Sharing of research by students
Data sharing elsewhere, e.g., GitHub	Sharing on Vula with no firewall
Data sharing on DataFirst	Sharing content openly on Imbali, a sharing platform managed by UCTL
Department's support of APCs	Sharing posters at conferences
Doing desk-based research	Sharing working papers
Increased sharing due to COVID-19	Software development to share
Individuals sharing on OpenUCT (delayed OA)	Translating research findings
Informal sharing of data	UCT OA policy support sharing
Informal sharing of knowledge/research paper	Use of secondary data shared by peers

Table 5.22: Themes from focus group and individual discussions with Masters and PhD students and post-doctoral fellows on open scholarship practices that the UCT community is engaging in

Open scholarship practices identified by research students and post-doctoral fellows	
Advocating for creation of open textbooks	Sharing of research papers and reports
Beginning to share in ZivaHub	Sharing on websites
Creating and sharing of research by students	Sharing posters in departments
Data sharing on GitHub and elsewhere	Sharing publications on Academia.edu
Data sharing on DataFirst	Sharing research links via Twitter
Plans to share data after graduation	Sharing research with peers
Informal sharing of knowledge	Sharing working papers
Participating in theses competition as knowledge sharing	Sharing research outputs on ResearchGate
Sharing educational materials on Vula	Software development and sharing
Sharing ETDs on OpenUCT	Some students are sharing open knowledge, working with a non-profit organisation (NPO) in South Africa
Sharing knowledge in webinars – during pandemic lockdown	Supporting online maths programmes
Sharing knowledge on OpenUCT repository	Plans to publish in gold OA
Sharing of assessments in Hake (fish) industry	Using UCT MOOCs for academic purposes

Some of the practices shared by interviewees and research students and post-doctoral fellows were also confirmed by findings from reviewed documents and these include use of infrastructure such as ZivaHub and OpenUCT. Evidence from reviewed documents in Table 5.23 also shows the establishment of policies to support both research and data sharing at UCT. It was also evident as noted from one reviewed document that there is research collaboration between UCT departments with government research teams, for example, SALDRY (Southern

Africa Labour & Development Research Unit) which worked with the South African health national task team in managing COVID-19 related data. Some reports reviewed for data collection also noted funding support from UCT in the form of open textbook grants.

Table 5.23: Open scholarship practices evident in reviewed documents

Document type	Publication date	OS practices that the UCT community is engaging in
UCT Research Report	2016-2017	• Infrastructure provision - ZivaHub launched
UCT eResearch Report	2014-2015	• Establishment of Open Access Policy - June 2014 • Infrastructure provision - OpenUCT launched in August 2014
UCT eResearch Report	2015-2016	• Open UCT shares ETDs • UCT established an open-access policy in June 2014
UCT eResearch Report	2016-2017	• Launch of ZivaHub infrastructure • Sharing of data • Support research through bringing together research support stakeholders at UCT such as UCTL, ICTs, etc. for infrastructure provision, collection development and provision of other researchers' needs
UCT eResearch Report	2017-2018	• UCT implemented its research data management (RDM) policy • ROER4D open collection shared on Zenodo • UCT-authored content shared on OpenUCT repository • ROER4D project data were published on DataFirst • Harvested records and actual data objects from Zenodo into ZivaHub in order for these to become part of the formal UCT data collection • Infrastructure provision of open science framework (OSF), a project management repository, which serves as a collaboration tool • Provision of Data Management Plan (DMP) Online, a tool for creating data management plans • ROER4D, global south project is publishing outputs on OpenUCT • Curating data for open publishing
UCT eResearch Report	2019-2020	• SALDRY participated in the NIDS-CRAM project data collection and monitoring the data quality and the first report of the project is freely available • UCT is sharing dance and performance data • Processing functional magnetic resonance imagery (fMRI) data using High Performance Computing (HPC) facilities • Establishment of linked data application programming interface (API) for networked drones, an open-source toolkit for capturing and publishing drone captured data by UCT Electrical Engineering department • Creation of open licensed documents that guide on the use of different smart devices used to capture and share agricultural data by Electrical Engineering at UCT
DOT4D blog	2021	• Open textbooks innovation and creation • Institutional support, provision of open textbook grants – 9 grantees engaged in open textbook initiatives • Sharing OERs on OpenUCT repository • Hosting or publishing of open digital textbooks on UCT Libraries' Continental Platform, and alternative websites (including Vula, UCT's learning management system)

5.3.3.2 Motivating factors viewed by the study participants to have influenced UCT academics and researchers' participation in open scholarship practices

This section reports findings relating to factors motivating UCT academics and researchers' participation in open scholarship (OS), from questionnaire surveyed participants, interviewees (faculty representatives and key informants), focus group and individual discussions (Masters and PhD students, and post-doctoral fellows) and reviewed documents. Table 5.24 captures findings from questionnaire respondents on what motivates their participation in open scholarship. The most influencing factors highlighted by questionnaire respondents across all the OS categories (see Appendix A) were 'personal desire to share' and 'students'/readers' challenges in accessing research published in journals, books, etc.'.

Table 5.24: Motivating factors for UCT academics and researchers in participating in OS

Motivating factors	Yes	%	No	%	Unsure %		N/A%		Total
Green, gold or diamond open access publishing is motivated by UCT's open access policy	58	47.5%	34	27.9%	23	18.9%	7	5.7%	**122**
Green, gold or diamond open access publishing is motivated by students'/readers' challenges in accessing research published in journals, books, etc.	95	77.9%	12	9.8%	10	8.2%	5	4.1%	**122**
Green, gold or diamond open access publishing is motivated by personal desire to share	104	85.3%	7	5.7%	6	4.9%	5	4.1%	**122**
Green, gold or diamond open access publishing is motivated by encouragement from peers	56	46.7%	41	34.2%	18	15.0%	5	4.2%	**120**
Green open access publishing is motivated by the availability of UCT's institutional repository (OpenUCT) for sharing research output	53	44.2%	49	40.8%	13	10.8%	5	4.2%	**120**
Gold or diamond open access publishing is motivated by the availability of open access publishing platforms at UCT	35	30.2%	56	48.3%	21	18.1%	4	3.5%	**116**
Gold open access publishing is motivated by the availability of UCT funding for APCs	64	53.8%	32	26.9%	19	16.0%	4	3.4%	**119**
Open textbook publishing is motivated by UCT's open access policy	28	23.5%	30	25.2%	20	16.8%	41	34.5%	**119**
Open textbook publishing is motivated by students'/readers' challenges in accessing reading materials or textbooks at no cost	57	47.9%	8	6.7%	11	9.2%	43	36.1%	**119**
Open textbook publishing is motivated by personal desire to share	58	49.2%	12	10.2%	2	1.7%	46	39.0%	**118**
Open textbook publishing is motivated by encouragement from peers	34	28.6%	33	27.7%	7	5.9%	45	37.8%	**119**
Open textbook publishing is motivated by the availability of open access publishing platforms at UCT	30	25.2%	28	23.5%	16	13.5%	45	37.8%	**119**
Open textbook publishing is motivated by the availability of UCT's institutional repository (OpenUCT) for sharing scholarship like open textbooks to support education	33	27.5%	28	23.3%	14	11.7%	45	37.5%	**120**
Open textbook publishing is motivated by the availability of funding (grants) at UCT for services like language editing, graphic designing, etc.	28	24.1%	28	24.1%	14	12.1%	46	39.7%	**116**
Creating and sharing Massive Open Online Courses (MOOCs) is motivated by UCT's open access policy	32	27.1%	25	21.2%	11	9.3%	50	42.4%	**118**
Creating and sharing MOOCs is motivated by students'/readers' challenges in accessing tuition free educational programmes useful for skills or professional development	49	41.2%	13	10.9%	9	7.6%	48	40.3%	**119**
Creating and sharing MOOCs is motivated by personal desire to share	46	38.7%	13	10.9%	9	7.6%	51	42.9%	**119**

Motivating factors	Yes	%	No	%	Unsure	%	N/A	%	Total
Creating and sharing MOOCs is motivated by encouragement from peers	31	26.5%	25	21.4%	13	11.1%	48	41.0%	**117**
Creating and sharing MOOCs is motivated by the availability of UCT's institutional repository (OpenUCT) for sharing scholarly output	25	21.6%	31	26.7%	10	8.6%	50	43.1%	**116**
Creating and sharing MOOCs is motivated by the availability of funding (grants) to support the creation of MOOCs through payment for services like video production, graphic designing, etc.	28	24.1%	26	22.4%	12	10.3%	50	43.1%	**116**
Creation and sharing of other open licensed educational materials (lecture notes, quizzes, etc.) is motivated by UCT's open access policy	28	23.7%	45	38.1%	14	11.9%	31	26.3%	**118**
Creation and sharing of other open licensed educational materials, is motivated by students'/readers' challenges in accessing educational materials, like lecture notes or quizzes, to enhance the understanding of subjects in a curriculum	63	52.9%	14	11.8%	10	8.4%	32	26.9%	**119**
Creation and sharing of other open licensed educational materials (lecture notes, quizzes, etc.) is motivated by personal desire to share	65	54.6%	15	12.6%	6	5.0%	33	27.7%	**119**
Creation and sharing of other open licensed educational materials (lecture notes, quizzes, etc.) is motivated by encouragement from peers	35	29.4%	39	32.8%	12	10.1%	33	27.7%	**119**
Creation and sharing of other open licensed educational materials (lecture notes, quizzes, etc.) is motivated by the availability of UCT 's institutional repository (OpenUCT) for sharing scholarship like OERs	32	26.9%	41	34.5%	12	10.1%	34	28.6%	**119**
Creation and sharing of other open licensed educational materials (lecture notes, quizzes, etc.) is motivated by the availability of funding (grants) to support the creation of OERs through payment for services like video production, creating reader-friendly interactive formats, etc.	30	25.4%	41	34.8%	14	11.9%	33	28.0%	**118**
Sharing of open licensed datasets is motivated by UCT's research data management policy	47	39.5%	36	30.3%	11	9.2%	25	21.0%	**119**
Sharing of open licensed datasets is motivated by students'/readers' challenges in accessing data for re-use for further research creation and re-use in other critical human development projects	49	41.5%	26	22.0%	16	13.6%	27	22.9%	**118**
Sharing of open licensed datasets is motivated by personal desire to share	63	52.9%	16	13.5%	8	6.7%	32	26.9%	**119**
Sharing of open licensed datasets is motivated by encouragement from peers	39	33.3%	36	30.8%	13	11.1%	29	24.8%	**117**
Sharing of open licensed datasets is motivated by the availability of data repository (ZivaHub) at UCT	40	33.6%	34	28.6%	16	13.5%	29	24.4%	**119**
Sharing of open licensed datasets is motivated by the availability of funding (grants) to support collection and management of primary data, including statistician services and purchasing of equipment required for different data processing	34	28.6%	40	33.6%	18	15.1%	27	22.7%	**119**

Questionnaire respondents had an option (see Appendix A) to provide additional motivating factors under an open field 'Other' and different responses from this open field are presented in this section. Funder policies or mandates were identified by one respondent as a motivating factor. Another respondent expressed motivation that is triggered by an emotion of anger, as they felt exploited by the "greedy reputable and popular commercial publishers who close knowledge created by authors behind paywalls". Respondents also shared their reasons for not participating in open scholarship (OS) and one participant raised a concern with regards to accessibility of the two official UCT repositories, OpenUCT and ZivaHub. The participant

indicated that these repositories are not user friendly as the process of depositing or self-archiving is time consuming and technical in some sections. On the other hand, some respondents found the existence of OpenUCT and ZivaHub as a motivating factor for academics and researchers to share their knowledge. On a different note, another respondent expressed frustration due to APCs funding that runs out early in the year, leading to researchers incurring the high cost of open access publishing. Two respondents also agreed on policy not motivating them, and they expressed their scientific ethics as motivating factors. Other respondents highlighted being motivated by a strong conviction that good science must be shared for interrogation and to support development. One respondent expressed concern about sharing data generated in their discipline in a publicly accessible database.

The issue of what motivates UCT academics and researchers' participation in OS was also explored during interviews and focus group and individual discussions (see Appendix B). Most interviewees and research students and post-doctoral fellows who participated in focus group and individual discussions agreed that personal desire to share is the main motivating factor for participation in OS. Some faculty representatives noted that peers in their faculties have a sense of giving back to the community, which motivates them to work towards removing access barriers through sharing on websites, repositories and via emails. An interviewee from the research office (RO) noted researchers' desire to contribute to a just society:

> "*The engaged scholarship programme is actually a very powerful tool to enable our academics to open their view towards open scholarship in a way that is not pushed by funders or by institutions but rather by the desire to contribute towards a fairer society*."

The aspect of social justice as a motivating factor seemed to resonate with many study participants. Key Informant #4 stated, "… *but I think there's more of a drive or motivation to participate in open scholarship as a result of the decolonial movement, #FeesMustFall, within the university*".

On a different note, Key Informant #4 also noted social justice again:

> *"A researcher was sharing data on ZivaHub quite regularly, it was something about projecting the use of hospital beds during the COVID-19 crisis, and they felt they had to share how their model worked … such individuals don't have money or [are not sharing because] their funder has told them they need to make their work open and put*

it in a repository, but they are very few of them … and are motivated by that social justice stance."

Researcher #9 too highlighted social justice as a motivating factor:

"For me it's the justice applications of it, I think it's some of the stuff you will find in UCT's [open access] policy. I would say that it [open sharing] is probably grounded in social justice and those people that appreciate that there are serious constrains when it comes to our students accessing research and other people who believe they should read our research there is need to actually access this research."

A researcher from the Science Faculty shared practical experience in their field:

"*We take open scholarship as a given for the reasons that we do analyses that are used to make decisions affecting people's lives and this also supports the industry as large catchers use our research to boost their profits and employment.*"

There was a positive feeling among interviewees and research students and post-doctoral fellows to support social justice imperatives, but they also highlighted the conflicts that surround UCT policies that leave researchers with some confusion or with no choice but to follow closed publishing as a survival stance during career development. An example of the conflict reflects in promotion policies and the criteria that consider top tier or high impact factor journals. Such criteria go against OS policies supporting openness like the UCT open access, RDM and social responsiveness policies that all in the main point to the need for openness to support social good. A researcher from the GSB stated that,

"*… what we know is that publications matter, and particularly top tier publications matter. I'm not against, in fact I'm supportive of the concept of democratisation of knowledge and so forth, but what I'm still struggling to really understand is whether my target journals are in conflict or aligned with or neutral to, or whatever, with regard to open access".*

Researchers #3 and #9 and Key Informant #3 noted different motivating factors including the need to challenge the commodification of knowledge by big commercial publishers and the call or need to decolonise knowledge to increase the free accessibility of Afro-centric knowledge for African development. There was an acknowledgement by Researchers #2, #8 and #9, and Key Informants #1 and #3 of the need for open knowledge to benefit historically

disadvantaged South Africans and other African communities, as a motivating factor. Relating to this, Key Informant #3 acknowledged that many African academic institutions are struggling to afford subscriptions for wider collections due to limited library budgets and there has been a call for academic libraries to improvise and be innovative to remain relevant. Democratisation of knowledge through open sharing and open publishing of research papers, and open monographs were therefore noted by both Key Informants #2 and #3 as an action to mitigate limited access to knowledge due to pay walls. To add to democratisation aspects, Key Informant #2 noted that, *"They [researchers] do want to support the freeing up of knowledge, so democratising it, and so they do use that social network platform of Research Gate".*

Key Informant #4 emphasised motivation that is triggered by the desire for the democratisation of knowledge through the creation and sharing of relevant affordable knowledge for inclusivity purposes, as this allows access to African marginalised communities. However, most of the interview study participants professed that there will be always a stumbling block when making efforts to open up knowledge, particularly due to the omission of OS practices as part of the promotion criteria for Ad hominem[40] and performance evaluation or appraisal by funders like the National Research Foundation (NRF). Most interviewees highlighted that the Ad hominem promotion criteria at UCT and the South African Research Chairs Initiative (SARChI) by the NRF do not include any aspects of OS and participants felt that the requirements for promotion force academics and researchers to focus on metrics that promote closed publishing. Key Informant #1 noted that some researchers are forced to publish in closed journals because the promotion criteria indirectly advocate for closed publishing as researchers are pushed to target publishing in HIF journals, which also charge exorbitant open access publication fees, thus prohibiting researchers from low-income countries publishing gold open access. Some researchers have indicated that the interest to participate in OS may not be fulfilled due to the culture of prioritising journal metrics in the research landscape.

A few of the faculty representatives, three key informants and four PhD research students noted the availability of funding (APCs and OER grants) at UCT, and that some students had received funding from their departments to publish open access. Some students noted OS as being driven

[40]Ad hominem is a promotion process for individual academics to a higher rank in response to an institutional call for status enhancement and for increased remuneration (Sadiq et al., 2019: 424).

by supervisors who motivate research students to share. However, other students highlighted the challenges of supervisors prescribing to them to target high impact factor journals that are closed. The university (UCT) has been noted for its support of OS, including leadership that support, particularly, open textbooks at UCT. Some participants (faculty representatives, key informants and research students/post-doctoral fellows) highlighted personal development as some researchers participate for recognition, career advancement and increase of citation metrics.

More themes that emerged from interviews and focus group and individual discussions are presented in Table 5.25 and Table 5.26, respectively. Participation in OS is also viewed as being influenced by the appreciation of the social justice imperatives at UCT and the understanding of the need to share. Themes in parallel columns are not related in any way and all items are listed alphabetically.

Table 5.25: Themes from interviews with faculty representatives and key informants relating to factors motivating UCT academics and researchers to participate in open scholarship

Motivating factors identified by interviewees	
Access cost barrier	Need to get good end-of-year rating
Availability of infrastructure	Need to support community engagement
Availability of OER grants & awards	Need to support free access
Career advancement	Not affording textbooks & journal articles
Challenge of access to knowledge	NRF policy supports green (delayed) OA
Decolonisation of knowledge	Organisational support provided by institutions
Demand for specific critical knowledge	Peer motivation
Desire to benefit African students/community	Personal funding
Dislike paying or subscription model	Presence of interest to share
Funder policies mandate sharing	Publishing African knowledge
Funder support	Sharing ETDs motivated by policy
Getting recognition	Need for data to build research on
Sharing is grounded in social justice	To share widely for increased citations
Historical lack of access to knowledge	UCT leadership support for open textbooks
Increased online teaching	UCT offers grants to create OERs
Making research accessible	Understanding knowledge as a human right
Need to contribute to development	Wanting to give back to the community

Table 5.26: Themes from focus group and individual discussions with Masters and PhD students and post-doctoral fellows relating to factors motivating UCT academics and researchers to participate in open scholarship

Motivating factors identified by research students	
Accessibility of your work to others	Getting recognition motivates early career researchers
APC funding at UCT/ Availability of funding	Green (delayed) OA motivated by lack of funding
Availability of infrastructure	Limit knowledge commodification
Career advancement	Need to support free access/ Removal of access barriers
Demand for relevant knowledge	Presence of interest to share
Democratisation of knowledge	Support community engagement
Driven by supervisors to go OA	To benefit African students in need

Reviewed documents also provided some factors motivating UCT community's participation in OS, as reflected in Table 5.27. The UCTL 2019-2020 report noted that UCT Libraries' open publishing service is a response to the social justice call within UCT's social responsiveness agenda. The publishing service also aimed to support learning during the COVID-19 pandemic. Other motivating factors for UCT participation, as evident in reviewed documents, include the need to fulfil funder mandates for grantees to share knowledge.

Table 5.27: Factors motivating participation in OS at UCT as evident in reviewed documents

Document type	Publication date	Factors motivating participation in open scholarship
UCT news article	November 2017	Provision of data repository at UCT motivated by: • the university's 2015–2020 Strategic Plan • alignment with funders' and journals' mandates • support researchers growing their profiles • the need to share data as openly as possible • need to support researchers through data access
UCTL report	2019-2020	UCTL's open access publishing: • is drawing from the university's social responsiveness agenda, UCTL's publishing programme advances social justice • responds positively to student demands for a decolonised and affordable education • is motivated by the need for wider dissemination of African scholarship • is supporting learning during the COVID-19 pandemic The underlying ethos of UCTL's open access publishing system is one of a social justice agenda, that is, breaking down barriers to the dissemination of and access to scholarly literature in order to bridge the information divide

5.3.3.3 Section summary

This section reported findings related to CQ2 that was addressed by probing the open scholarship practices being engaged in by UCT academics and researchers and factors motivating academics and researchers' participation in OS at UCT. Findings were reported from all study instruments (questionnaire, interviews with faculty representatives and key informants, focus group and individual discussions with research students and post-doctoral fellows, and reviewed documents). OS practices identified by the study participants included research sharing, data sharing, sharing of educational resources, software development and many others. There was an acknowledgement from questionnaire respondents, interviewed participants, and focus group and individual discussants that personal desire to share is the main motivating factor for participation in open access to research, OERs and in data sharing at UCT. The aspect of social justice as a motivating factor to participate in OS was also widely discussed by interviewed participants and in some reviewed documents.

5.3.4 CQ3: Extent to which UCT academics and researchers are contributing to the openness movement as a social good

This section reports findings on the extent to which UCT academics and researchers are contributing to the openness movement as a social good. Considering that research is a public good intended to benefit society, UCT academics and researchers are assumed to be taking an initiative to share knowledge to benefit the information marginalised and for the development of society. This section reports findings from all study instruments, that is, the structured questionnaire, interviews, focus group and individual discussions and document reviews (see Appendices A, B, C, D and E). The section is dived into five sub-sections.

5.3.4.1 UCT academics and researchers' position on open scholarship as critical in supporting human development and social justice

This sub-section captures findings relating to whether academics and researchers at UCT regard OS as critical in supporting human development and social justice. In Figure 5.5, a total of 111 surveyed academics and researchers responded to the question and most of the respondents agreed to OS being critical in supporting human development and social justice. It is important to note that not a single respondent disagreed on the issue that open access (OA) is critical in supporting human development and social justice. A few of the participants showed a neutral position on whether OA to research and other OS activities are critical in

human development and social justice. Respondents' views also indicate other OS components (open textbook, other OERs and open data) as critical in supporting human development and social justice; 70% and more agreed to this in each section of the question.

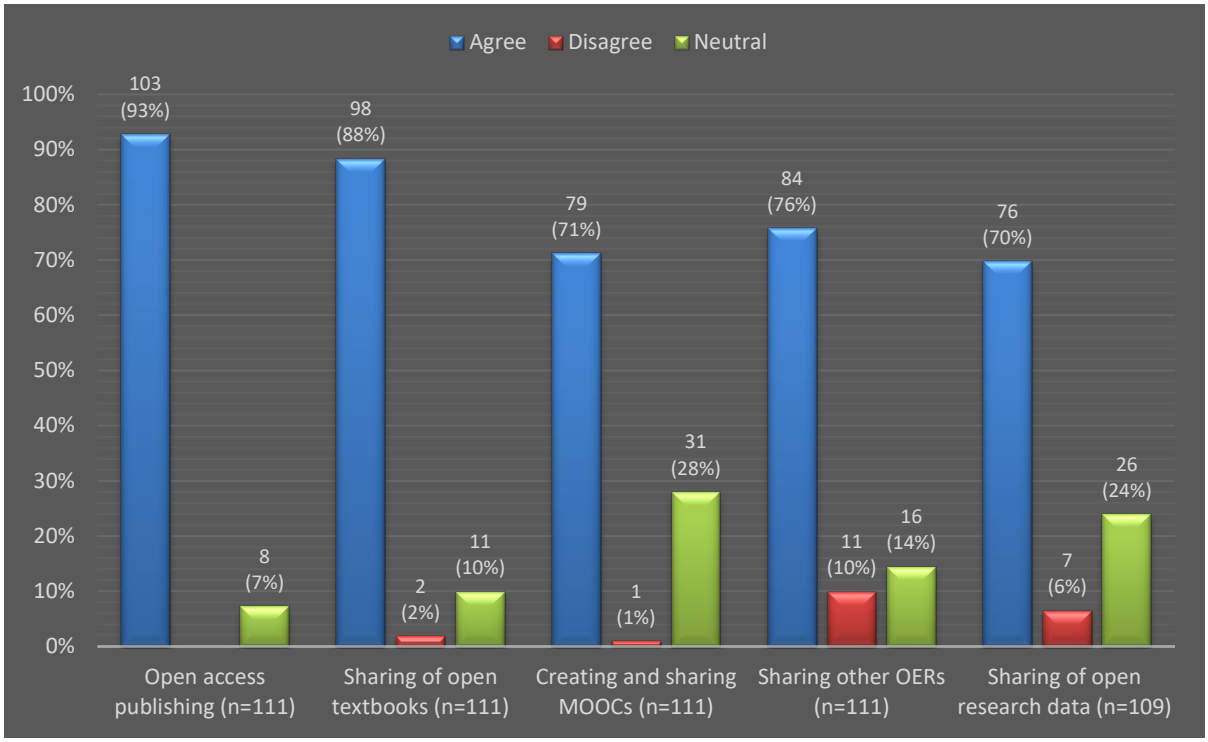

Figure 5.5: Academics and researchers' views on whether open scholarship is critical in supporting human development and social justice

Tables 5.28 through to 5.32 report cross-tabulated variables of surveyed academics and researchers' UCT ranks and their views on whether they regard different components of OS as being critical in supporting human development and social justice. Most of the UCT ranked respondents agreed to open access publishing and other OS components as being critical in supporting human development and social justice. In an effort to find more meaning from the data presented in the tables, the researcher teased out the data through conducting hypothesis testing with the values in each table using a Pearson's chi^2 test to ascertain if there is an association between the variables provided in each table. The outcome of the hypothesis test for Table 5.28 had a value of $\chi^2(5) = 1.8342$ and $p = 0.872$, which shows no significant association between the two variables (UCT ranks, and participants views on 'open access publishing' as being critical in supporting human development and social justice). Therefore, we fail to reject the null hypothesis since the p-value (0.872) indicates no significant association as it is greater than 0.05. As highlighted in Section 4.7 of Chapter 4, a p-value that represents

a significant statistical association or relationship should be ≤ 0.05. It was critical to determine the relationship of publishing OA to support for social justice as academics and researchers could be influenced to publish in established closed avenues for career growth and promotion to higher ranks.

Table 5.28: Cross-tabulation of academics and researchers' ranks and their responses on OA publishing being critical in supporting human development and social justice (n=111)

UCT rank	**Open access publishing**		
	Agree	**Neutral**	**Total**
Professor	28 25.2%	2 1.8%	**30** **27.0%**
Associate Professor	21 18.9%	3 2.7%	**24** **21.6%**
Senior Lecturer	29 26.1%	1 0.9%	**30** **27.0%**
Lecturer	14 12.6%	1 0.9%	**15** **13.5%**
Junior Lecturer	1 0.9%	0 0%	**1** **0.9%**
Other	10 9.0%	1 0.9%	**11** **9.9%**
Total	103 92.8 %	8 7.2%	111 100%
Pearson's chi^2/p*	**Pearson's chi^2(5) = 1.8342, p = 0.872**		

Most of the respondents reflected in Table 5.29 agreed to open textbooks being critical in supporting human development and social justice. However, the test outcome with a value of $\chi^2(10) = 12.3958$, $p = 0.259$ which was produced by a Pearson's chi^2 hypothesis test, shows no significant association between UCT ranks and sharing of open textbooks within the context of supporting human development and social justice. There is not enough evidence to show an association between the two variables as the p-value is > 0.05.

Table 5.29: Cross-tabulation of academics and researchers' ranks and their responses on sharing of open textbooks as being critical in supporting human development and social justice (n=111)

UCT rank	**Sharing of open textbooks**			
	Agree	**Neutral**	**Disagree**	**Total**
Professor	28 25.2%	2 1.8%	0 0%	**30** **27.0%**
Associate Professor	20 18.0%	3 2.7%	1 0.9%	**24** **21.6%**
Senior Lecturer	27 24.3%	2 2.7%	1 0.9%	**30** **27.0%**
Lecturer	13 11.7%	2 2.7%	0 0%	**15** **13.5%**
Junior Lecturer	0 0%	1 0.9%	0 0%	**1** **0.9**
Other	10 9.0%	1 0.9%	0 0%	**11** **9.9%**
Total	**98** **8.3%**	**11** **9.9%**	**2** **1.8%**	**111** **100%**
Pearson's chi^2/p*	**Pearson's $chi^2(10) = 12.3958$, p = 0.259**			

A Pearson's chi^2 hypothesis testing was also used to ascertain any association between the independent variable (UCT rank) and dependent variable (views of UCT ranked academics on creating and sharing of MOOCs as being critical in supporting human development and social justice) - see Table 5.30. With a test outcome of $\chi^2(10) = 12.8170$ and $p = 0.234$, we again retained the null hypothesis. The outcome shows no significant association between the selected variables. Most of the surveyed respondents in Table 5.30 agreed to MOOCs being critical in supporting human development and social justice.

Table 5.30: Cross-tabulation of academics and researcher's ranks and their responses on creating and sharing MOOCs as being critical in supporting human development and social justice (n=111)

UCT rank	**Creating and sharing MOOCs**			
	Agree	**Neutral**	**Disagree**	**Total**
Professor	16 14.4%	13 11.7%	1 0.9%	**30** **27.0%**
Associate Professor	17 15.3%	7 6.3%	0 0%	**24** **21.6%**
Senior Lecturer	25 22.5%	5 4.5%	0 0%	**30** **27.0%**
Lecturer	13 11.7%	2 1.5%	0 0%	**15** **13.5%**
Junior Lecturer	0 0%	1 0.9%	0 0%	**1** **0.1%**
Other	8 7.2%	3 2.7%	0 0%	**11** **9.9%**
Total	**79** **71.2%**	**31** **27.9%**	**1** **0.9%**	**111** **100%**
Pearson's chi^2/p*	**Pearson's chi^2(10) = 12.8170, and p = 0.234**			

The outcome of the Pearson's chi^2 hypothesis test with independent and dependent variables in Table 5.31 has a value of χ^2 (10) = 14.0061 and p = 0.173, which indicates insufficient evidence of an association between the variables, that is, between UCT ranks and views of academics and researchers on the 'sharing of other OERs' being critical in supporting human development and social justice. Therefore, we fail to reject the null hypothesis with a p-value greater that the expected threshold (0.05). Nevertheless, the values in the table show that most respondents agree to the 'sharing of other OERs' being critical in supporting human development and social justice. Only 11 (9.9%) of the 111 respondents disagreed and 16 (14.4%) were neutral.

Table 5.31: Cross-tabulation of academics and researchers' ranks and their responses on sharing of other OERs as being critical in supporting human development and social justice (n=111)

UCT rank	**Sharing other OERs**			
	Agree	**Neutral**	**Disagree**	**Total**
Professor	23 20.7%	6 5.4%	1 0.9%	**30** **27.0%**
Associate Professor	17 15.3%	4 3.6%	3 2.7%	**24** **21.6%**
Senior Lecturer	22 19.8%	4 3.6%	4 3.6%	**30** **27.0%**
Lecturer	12 10.8%	0 0%	3 **2.7%**	**15** **13.5%**
Junior Lecturer	0 0%	1 0.9%	0 0%	**1** **0.9%**
Other	10 9.0%	1 0.9%	0 0%	**11** **9.9%**
Total	**84** **75.7%**	**16** **14.4%**	**11** **9.9%**	**111** **100%**
Pearson's chi^2/p*	**Pearson's chi^2(10) = 14.0061, and p = 0.173**			

A Person's chi^2 hypothesis test with scores related to variables in Table 5.32 had an outcome ($\chi^2(10) = 6.9836$ and $p = 0.727$) which shows no significant association between the presented variables (UCT ranks and views on sharing of open research data as being critical in supporting human development and social justice). The p-value of 0.727 is greater than the expected threshold (0.05). Therefore, the researcher failed to reject the null hypothesis as there is no substantial evidence from the outcome showing a relationship. Similar to every other OS category presented earlier, in Table 5.32 too, more participants agreed to sharing of open research data as being critical in supporting human development and social justice.

Table 5.32: Cross-tabulation of academics and researchers' ranks and their responses on sharing of open research data as being critical in supporting human development and social justice (n=109)

UCT rank	**Sharing open research data**			
	Agree	**Neutral**	**Disagree**	**Total**
Professor	20 18.3%	8 7.3%	2 1.8%	**30** **27.5%**
Associate Professor	14 12.8%	5 4.6%	3 2.8%	**22** **20.2%**
Senior Lecturer	23 21.1%	6 4.4%	1 0.9%	**30** **27.5**
Lecturer	11 10.1%	3 2.8%	1 0.9%	**15** **13.8%**
Junior Lecturer	0 0.0%	1 0.9%	0 0.0%	**1** **0.9%**
Other	8 7.3%	3 2.8%	0 0.0%	**11** **10.1%**
Total	**76** **69.7%**	**26** **23.9%**	7 **6.4%**	**109** **100%**
Pearson's chi²/p*	**Pearson's chi²(10) = 6.9836, and p = 0.727**			

The study also explored the issue of whether OS is critical in supporting human development and social justice with interviewees (faculty representatives and key informants), focus group and individual participants (research students and post-doctoral fellows) and in the review of documents. Some interviewees noted how lives are being transformed through sharing information and through education as communities are learning from diversely shared research findings. Key Informant #4 noted an example stating,

> "*There is relationship between open scholarship and social justice … COVID-19 situation and the availability of data that's just been freely available, … researchers in different parts of the world are being able to manipulate data to improve health through solutions [manufacturing vaccines]".*

One interviewee from the UCT's Graduate School of Business (GSB) shared an opinion about OS being critical in supporting social justice,

> *"A country like South Africa, where we are all exposed to such incredible levels of inequality, poverty and all the other social ills we see around us, the sharing of knowledge isn't really a nice to have, it's a basic requirement to support social justice, it is a basic human right*".

With a different positionality, Key Informant#6 argued that access to academic research might not be of interest to a lay person stating that,

> "*Yes, access to knowledge is critical, but it is not exclusively through open scholarship. People access information in many ways, and it might be through social media. … wider readership would not have interest in scholarly works on the whole, depending on the topic. If something is scholarly it is very research based, [and] general members of the public are less interested in that kind of topic"*.

Researcher #1 queried the use of term 'critical' when linking OS to social justice and human development for the reason that opening knowledge online is not enough as issues related to knowledge access online have other equity related barriers like lack of access to the internet or electronic devices. Researcher #4 also noted a greater need for other resources more valuable to communities than OS and suggested what UCT could do to fulfil access: "*The focus really needs to make sure that people have access to the internet, and maybe for UCT to set up satellite libraries in rural communities for people to get access to the internet more than what you put out on OpenUCT*."

Key Informant #5 shared an opinion on the lack of a direct link between open scholarship (OS) and 'social justice' as the concept social justice is complex, stating, "*I think when it comes to [open scholarship] … see, you're putting human development and social justice, I'm not quite sure where they are … or quite enveloped by the other*". Two post-doctoral fellows and Key Informant #6 also expressed doubt on the link between open scholarship and social justice. However, there was unanimous agreement from other focus group and individual participants and the majority of interviewees (faculty representatives and key informants) that open scholarship is critical in supporting human development and social justice. Some of the focus group and individual discussants acknowledged diverse contributions that openly shared knowledge has made to transform human lives, hence supporting social justice, equity and inclusivity in this regard. There was an acknowledgement by some interviewees that UCT is among vulnerable universities as it has limited funding to support OA publishing with funding that runs out quickly and to support the creation of open textbooks and MOOCs as OER grants subsidise a small number of OER projects within UCT faculties. The funding for OER grants has been noted to be limited by Key Informant #1, Researcher #1 and #7, whereas OERs benefit students, for example, some PhD students shared during focus groups discussions that they have benefitted from MOOCs and other shared knowledge, particularly since the beginning of

lockdown of libraries during the COVID-19 pandemic that impacted on face-to-face activities including education since March 2020.

One of the reviewed documents, DOT4D, a 2021 blog, noted that the adoption of open educational resources (OERs) at UCT is believed to have the potential to address the demands for high-quality and affordable education in the global south. The UCTL 2019-2021 report indicated that UCT Libraries has shaped its library publishing programme on social justice imperatives, which relate to the main focus of inclusivity through diamond open access to avoid excluding authors who do not have funding to publish open access. Another blog published by the Library Publishing Coalition (LPC) in 2021 noted UCTL's publishing service that is envisaged to be a social justice service at UCT. In this blog, the service has been noted for providing an opportunity for equitable participation by global south researchers in knowledge production and dissemination. UCTL's publishing service was also noted by Researchers #4 and #9, and by Key Informant #3 for its support of equitable dissemination of marginalised African research through diamond open access publishing of both journals and monographs.

This sub-section reports cross-tabulations of variables related to UCT academics and researchers' ranks and their views on different OS components being critical in supporting human development and social justice. The scores related to the cross-tabulated variables were also subjected to hypothesis testing using Pearson's chi^2 and results for each test are also shared. Views of questionnaire respondents, interviewees as well of research students and post-doctoral fellows on whether open scholarship is critical in supporting human development and social justice are also reported. This sub-section also captures views from reviewed documents on the issue of social justice relating to open scholarship. The sub-section that follows focusses on the extent to which UCT academics and researchers are participating in openness movement as a social good.

5.3.4.2 The extent to which UCT academics and researchers are participating in the openness movement as a social good

A Likert scale (with 0 being 'Not at all' and 5 being 'To a very great extent') was used for questionnaire respondents (see Appendix A) to establish the extent to which they are participating in the openness movement as a social good. Figure 5.6 provides a visualisation of surveyed academics and researchers' extent of participation in the openness movement as a social good. Interestingly, there is little distinction among the scale levels selected for green

(delayed) and immediate (gold or diamond) open access (AO). The dominating scores across OERs (sharing open textbooks, MOOCs, lecture notes and others) and research data sharing show '0' or 'Not at all' participating in these OS practices. There were very small percentages of those participating in the OS categories 'To a very great extent', and 24% of the surveyed respondents indicated participating in gold and diamond OA 'To a great extent'.

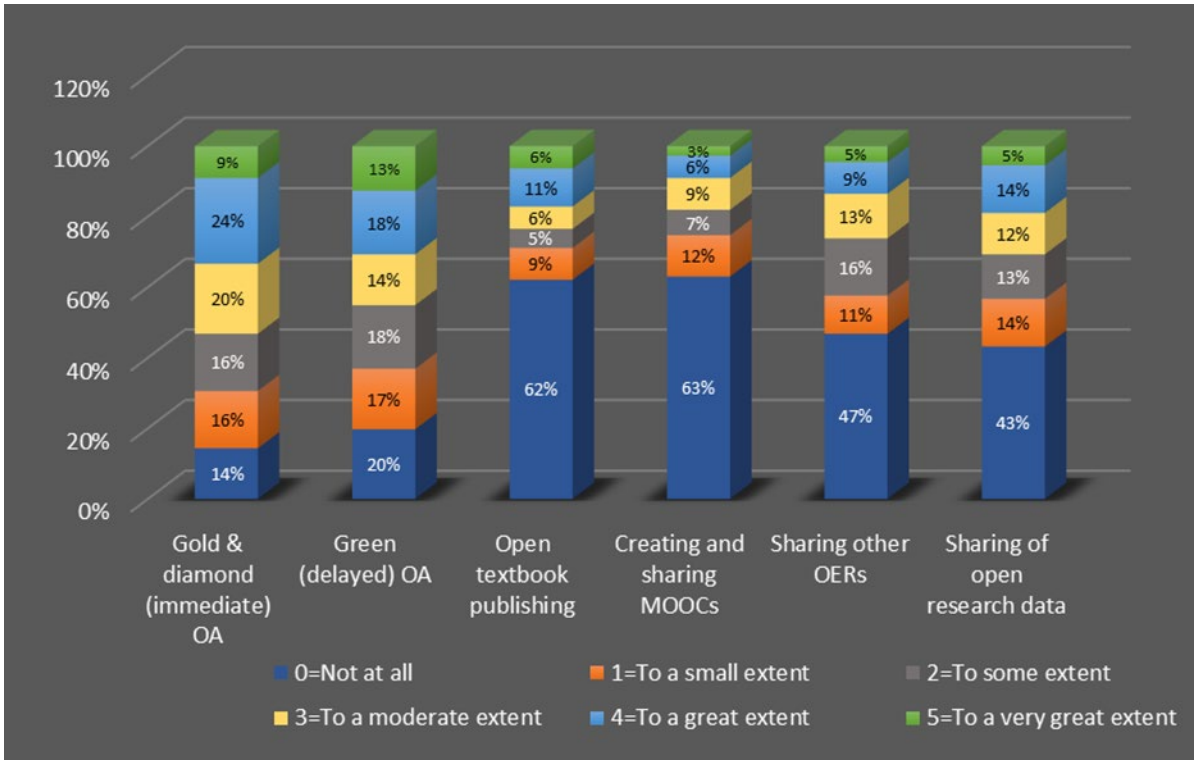

Figure 5.6: Extent to which surveyed UCT academics and researchers participate in open scholarship as a social good (n=111)

The matter of the extent to which UCT academics and researchers participate in OS as a social good was also investigated during interviews, focus group and individual discussions and review of documents. Most interviewees (faculty representatives and key informants), focus group and individual participants agreed that some UCT academics and researchers participate in OS as a social good. However, others noted the existence of many challenges and limitations (like lack of funding and lack of recognition of OA during promotion) that hinder progress in supporting openness as a social good. Interestingly, there were efforts acknowledged by some key informants from UCTL of publishing OA textbooks on an open access publishing platform they (UCTL) manage, in vernacular language and in simplified English language to support students who use English as second or third language. The textbooks, according to key

informants from UCTL, have been authored by the UCT community, including academics, researchers and students.

Key Informant #3 also made reference to publishing of OA textbooks in niche areas to support specialised professions like otolaryngology[41] on the African continent, and these educational materials, it was reported, have been of great assistance at global level considering the number of downloads of some of the published open textbooks for use. Key Informants #2 and #3 mentioned the Health Sciences Faculty as a leader in OA and this was corroborated by one of the PhD focus group participants and the assumption shared by Key Informant 3# is that the faculty has taken a lead due to the nature of its discipline which supports good health. Some of the post-doctoral fellows and faculty representatives observed peers sharing knowledge as a way of giving back to the community and to support engaged scholarship at UCT. The efforts and desire to support engaged scholarship by ECRs was also confirmed by the key informant from the research office as their office runs an engaged scholarship programme. A few of the faculty representatives also acknowledged peers who have been sharing knowledge to benefit historically disadvantaged South African communities and to increase visibility and accessibility of African knowledge that has a limited online presence. Researcher #5 doubted if faculties engaged with newly employed staff about OS being critical as a social good:

> *"The faculty, UCT leadership and the deputy vice chancellor engage with a researcher or academic during recruitment, in interviews, when inquiries are made on how the candidates will contribute towards engaged scholarship. Academics or researchers present their knowledge on social responsiveness during the interview, but they do not provide a comprehensive knowledge during the interview. After the interview there is no follow-up from the university side and there is no link of engaged scholarship to open access at faculty level."*

Some of the research students who participated in focus group and individual discussions acknowledged academics and researchers' desire to participate in OS as a social good as there is an understanding that access to knowledge benefits the public. However, interviewees and focus group and individual discussants constantly highlighted the existence of diverse

[41]Otolaryngology or otolaryngology-head and neck surgery refers to a medical speciality that focusses on the ears, nose, and throat (ENT) (Columbia University, 2020).

challenges encountered during participation in OS. The prioritisation of journal metrics by the university for career development and job promotion was constantly echoed. The UCT community was noted by both interviewees and focus group participants for being highly influenced by career advancement demands. It was also pointed out during focus group sessions that ECRs like Masters students and PhD students' main focus was completion of degrees, whereas post-doctoral fellows focused more on producing more publications as promotion depends on high numbers of publications. However, a few faculty representatives and post-doctoral fellows noted efforts of sharing on ResearchGate or Academia.edu[42] by UCT academics; and a few of these participants were aware they may be infringing copyright through sharing copyrighted personal publications. One post-doctoral fellow expressed so much anger directed at commercial publishers:

> *I share my stuff on Academia.edu and ResearchGate. As this is anonymous, I can say regardless of copyright I don't really give a damn. Journal companies, as I said, I'm not very fond of, they are capitalist parasites, we produce knowledge, we edit that knowledge, we format it, they simply disseminate it, it is refereed by other academics for free and they turn a profit and bar access. So I have no love for any academic publishing company that charged for research access to make profit, so I'm quite happy breaking the law."*

During the review of selected documents, the researcher noted from a blog published by the LPC in 2021 that UCTL is said to have taken a stance that the university (UCT) as a historically advantaged institution should have a moral obligation to share resources for the advancement of research in the country and for the greater good of the public. This then, according to the LPC blog, influenced the establishment of the university library's publishing service that was set up with the intention to support diamond open access, thus removing the cost marginalisation of the financially challenged.

[42]Academia.edu and ResearchGate are academic social network sites or digital platforms for information sharing on scholarly outputs among researchers of multiple disciplines (Manca, 2017: 20).

5.3.4.3 The publishing behaviour or culture of UCT academics and researchers

The study also inquired about the publishing behaviour or culture of UCT academics and researchers, through the structured questionnaire, semi-structured interviews, focus group or individual discussions, and via document analysis (see Appendices A, B, C, D and E). This sub-section reports findings related to study participants' views on the publishing behaviour of UCT academics and researchers. Total responses for the questionnaire ranged from 109 to 111 as respondents could choose which items to respond to (see Appendix A). Figure 5.7 shows some level of balance when it comes to publishing patterns among the 111 surveyed academics and researchers that responded to the question on the publishing behaviour of the UCT academic community. Respondents appear to be sometimes publishing open access and sometimes they publish in closed journals. Some of the respondents specified in the 'Other' field that publishing open access depended on the availability of funding. In Figure 5.7 a few participants (9.2% of the 109) who indicated signing away copyright to the publisher and not having interest in open access.

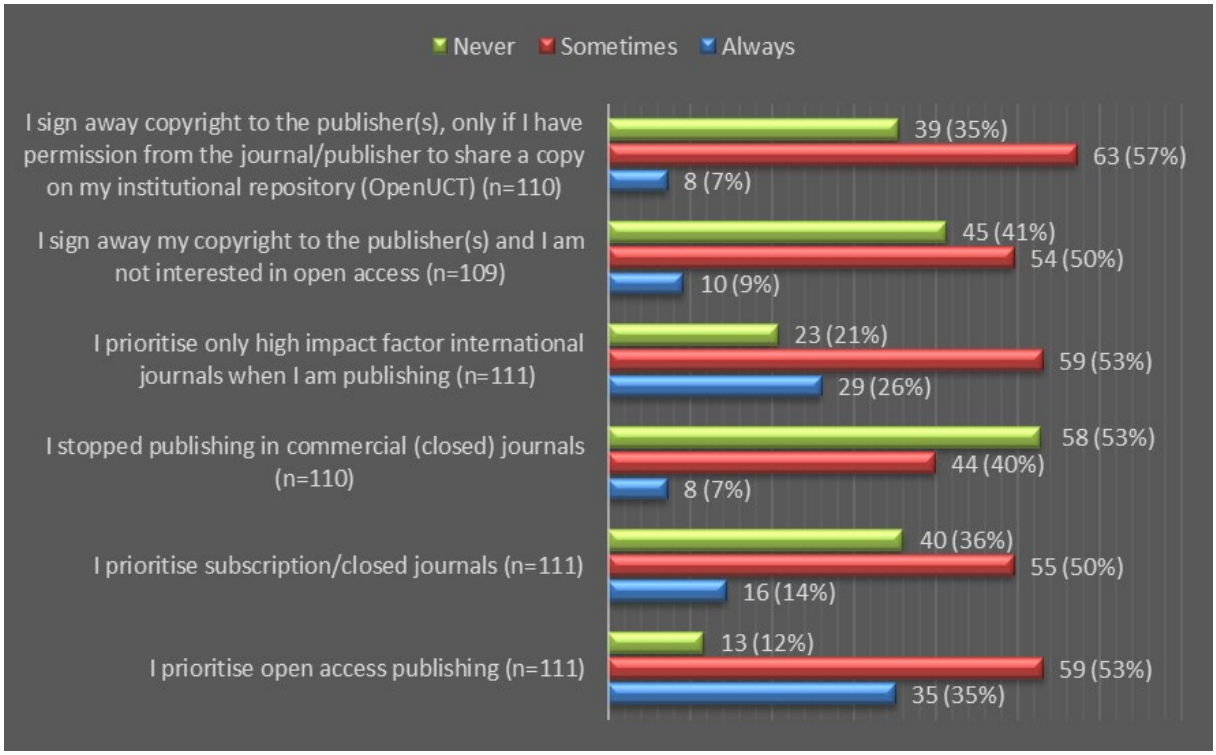

Figure 5.7: Surveyed academics and researchers' publishing behaviour or culture

Surveyed academics and researchers provided additional comments on their publishing behaviour under the option 'Other'. Two respondents explained they are being compelled to publish in so-called high impact factor journals by UCT's promotion sysem. One of the

respondents further commented that UCT's policies contradict the practice at the university as they obeserved that:

> *"Education is a commodity that UCT markets for profit, just like information is being commodified by publishers. UCT does not promote OA during the promotion of academic staff at the time of Ad hominem and it charges exorbitant fees for tuition, which contradict with the notion of knowledge as a public good. UCT's open access policy is a lip service or cosmetic stratagem for public relations purposes because open access is not highly promoted at UCT, while education is not accessible due to high tuition fees".*

There was support for this negative sentiment from another questionnaire respondent who claimed that in their department at UCT they are told to publish in HIF journals (which are mostly closed or with an unaffordable OA option). Other respondents highlighted, in the 'Other' field, factors like funding challenges prohibiting researchers from participating in OA. Respondants also noted the prioritisation of HIF journals by the NRF during funding application and applications for SARChI chair positons.

The matter of UCT academics and researchers' publishing behaviour was also probed quring interview with faculty representatives and key infomants, and during focus group and individual discussions with Masters students, PhD students and post-doctoral fellows. One post-doctoral fellow shared that,

> *"publishing in an open access journal becomes an option if the open access journal is a very good journal, there's one open access journal that I am encouraged to publish in one called PLOS ONE, and that has a high impact factor. The major barrier is unaffordble cost when you target high impact journals".*

Another questionnaire respondent from Health Sciences shared about the funding support that they receive from the USA based National Institutes of Health (NIH), which mandates the open sharing of research they fund and this has motivated the participant to prioritise OA journals. Further, the participant noted that OA would not have been possible while depending on local funding.

On a different note, one response from a questionnaire respondent raised a concern that expecting an author to negotiate for a waiver to publish OA is not practical. Constant sharing in pre-print repositories including PubMed, Arxiv.org, SSRN, medRxiv and academic social

media platforms like ResearchGate, was acknowledged by some quesionnaire respondents, while the challenge of high cost to publish OA was describes as a major concern by various interview and focus group or individal discussants. Key Infomant #6 also shared a concern of book publishing cost, which influences UCT authors to select publishers on the basis of the book publishing price being affordable to South African users. While one questionnaire respondent acknowledged sharing culture on ResearchGate with no concern about copyright implications, another respondent was pleased to publish in journals indexed in Web of Science, a closed commercial indexing database. Key Informant #3 felt that closed publishing behaviour can be turned around due to the diamond open publishing platform. On the other hand, Key Informant #6 expressed strongly that long form[43] essays need one to pay for the cost as there are many costly demands during book production and that the selling of books is justified as the production cost is high. Issues of copyright were described by Key Infomant #6 as complicated and posing challenges during participation in OS as third party materials that are used to create knowledge are not open licensed.

Most focus group participants observed in their disciplines a generally closed publishing behaviour. Some PhD students agreed with the observation that the Health Sciences Faculty is very open to open access publishing. There was also an agreement among some post-doctoral fellows and some key informants that the Science Faculty is quite closed in terms of publishing. However, it was interesting to note that some departments from the Science Faculty consider openness of knowledge as default as mentioned by their faculty representative earlier (see Section 5.3.2). According to Key Informant #3 and Researcher #9, the culture in the "research landscape" is highly influenced by publishing in "high impact factor (HIF) commercial journals" that are regarded as prestigious and of high quality.

As most interviewees noted a high percentage of closed publishing in their fields and a very small percentage in open publishing, they also shared challenges that contributed to such behaviour, for example, lack of inclusion of OS in promotion criteria, lack of funding and lack of awareness on the significance of OS. Key Informant #2 mentioned open access journals as being of low quality, which they think contributes to avoiding publishing OA. Publishing in

[43]A long form is a lengthy piece of straight prose writing which is longer that an article and can make good use of charts and infographics (Bentley, 2016: 163).

closed journals was viewed by some interviewees, post-doctoral fellows and PhD students as being influenced by ego as most closed international HIF journals give researchers more recognition among peers at international level and during career promotions. Other interviewees supported this argument as they observed competition to publish in top tier, HIF international journals. Researchers #3 and #8 pointed out the culture among academics and researchers of "looking down upon" those publishing in low impact factor journals. Two questionnaire respondents also saw closed publishing as being critical in the research landscape because of the state subsidy that is received by UCT for publishing in Department of Higher Education and Training (DHET)-listed journals which does not prioritise open access. Researcher #9 explained how career levels influence decisions on whether to publish closed or open access:

> *"There are certain places where you need be published and be known for your rank [for promotion to a higher rank]. Now that's no longer an issue anymore because I am now a full professor, but when I was working through the ranks, I was very careful with where I published because I knew that I had to publish in certain places to get certain recognition and certain credit, and some of those certain places are not open at all."*

The observation from some research students who participated in focus group and individual discussions was that there is a general closed publishing behaviour and minimal open sharing at UCT. One post-doctoral fellow stated that, *"Sharing depends on the PI's drive to share, if you are not a principal investigator in my field it is difficult to influence OA publishing of research papers or sharing data openly"*. Some PhD students and post-doctoral fellows confirmed a point raised by some interviewees that supervisors prescribe to their research students to publish in prestigious journals, and some of the students expressed appreciation of closed prestigious journals as a norm as universities value prestigious HIF journals during hiring of academic staff. However, most of the research students (Masters, PhDs and post-doctoral fellows) also strongly agreed that OS is a critical component in improving human lives but the demands in the research field compel early-career researchers to publish in closed journals or media.

In the discussion of one PhD group, participants agreed that most PhD and Masters students are less concerned about OS issues or publishing in general as they are more interested in completing their degree programmes; and to confirm this, only a few of them had published research papers in journals. Many focus group participants acknowledged that most of the

publications produced by their mentors in their fields are copyright restricted and are behind paywalls. Although the publishing behaviour at UCT has been described as generally closed, some PhD research students are openly sharing both research and research data (as noted in Section 5.3.3.1). Discussions also indicated contribution to the openness movement by a PhD student, an OER advocate, who shared an experience of working with UCT teaching staff supporting the creation and sharing of open textbooks. A Masters student was participating in the openness movement through a part-time job at a company that shares legal knowledge free to support law students in South Africa. Interestingly, most Masters and PhD students and post-doctoral fellows had also expressed great interest to move away from the closed publishing culture as they begin their research careers because they appreciate the positive aspects of OS which benefit both society and researchers.

Among UCT faculties, Science, Humanities and Law are noted by Researchers #3, #9 and Key Informant #3 to be very closed in terms of research publishing; some of the focus group participants also verified this. Key Informant #6 also confirmed that the Humanities Faculty is closed in nature when it comes to book publishing as they publish long form type of publications. The key informant clarified that 'long form' book publishing is closed because the production cost of such publications is expensive. Some of the focus group participants also confirmed the observation by some key informants in Section 5.3.3.1 that Health Sciences is more open to publishing open access due to the obligation to save human lives. Table 5.33 presents a summary of themes that emanated from interviews (with faculty representatives and key informants) and discussions (with Masters students, PhD students and post-doctoral fellows) about the publishing behaviour of the UCT academic community. There was no significant data related to UCT academics and researchers' publishing behaviour retrieved from reviewed documents.

Table 5.33: Themes related to publishing behaviour that emanated from the interviews (with faculty representatives and key informants) and discussions with research students and post-doctoral fellows

Publishing behaviour at UCT	Faculty representatives	Key informants	Research students & post-doctoral fellows
Closed publishing culture entrenched in the field	✓	✓	
Closed considered high quality and prestigious	✓	✓	✓
Competition for recognition leads to closed behaviour	✓		
Compliance for funding demands HIF-indirectly prescribing closed journals	✓		✓
Research rating systems prescribe closed journals; rigid promotion system	✓	✓	✓
Seasoned researchers prescribe to ECRs to target closed top tier and HIF international journals	✓	✓	✓
Publish closed due to lack of funding	✓	✓	✓
Target closed and HIF journals to increase collaboration	✓	✓	
Signing away copyright is a norm	✓	✓	✓
Publishing closed for income generation (royalties)	✓	✓	
Research is driven by metrics in commercial indexing databases	✓		
Some scientists advocating for OA and individuals have started prioritising OA	✓	✓	
Some fields do not follow HIF	✓		
Acceptance of OS philosophy increasing	✓	✓	✓
Sciences are traditionally closed in publishing		✓	
Most papers are behind paywalls	✓	✓	✓
Less concerned about OA	✓	✓	✓

5.3.4.4 Activities that UCT academics and researchers are engaging in using emerging ICT infrastructure to support social good through the democratisation of knowledge creation and dissemination

The study inquired about activities that UCT academics and researchers are engaging in to support social good through the democratisation of knowledge creation and open dissemination (sharing) of knowledge using emerging information and communication technology (ICT) infrastructure. This question was asked across all research instruments including the structured

questionnaire, semi-structured interviews and focus group or individual discussions, and through document analysis (see Appendices A, B, C, D and E). This sub-section reports findings from all five instruments of this study starting with findings from questionnaire respondents. Figure 5.8 presents findings on activities that surveyed academics and researchers are engaging in using emerging ICTs to support social good through open publishing and open knowledge dissemination. Peer-reviewing of research papers in open access journals and mentoring early career researchers and peers in research writing were the outstanding activities highlighted by the surveyed academics and research.

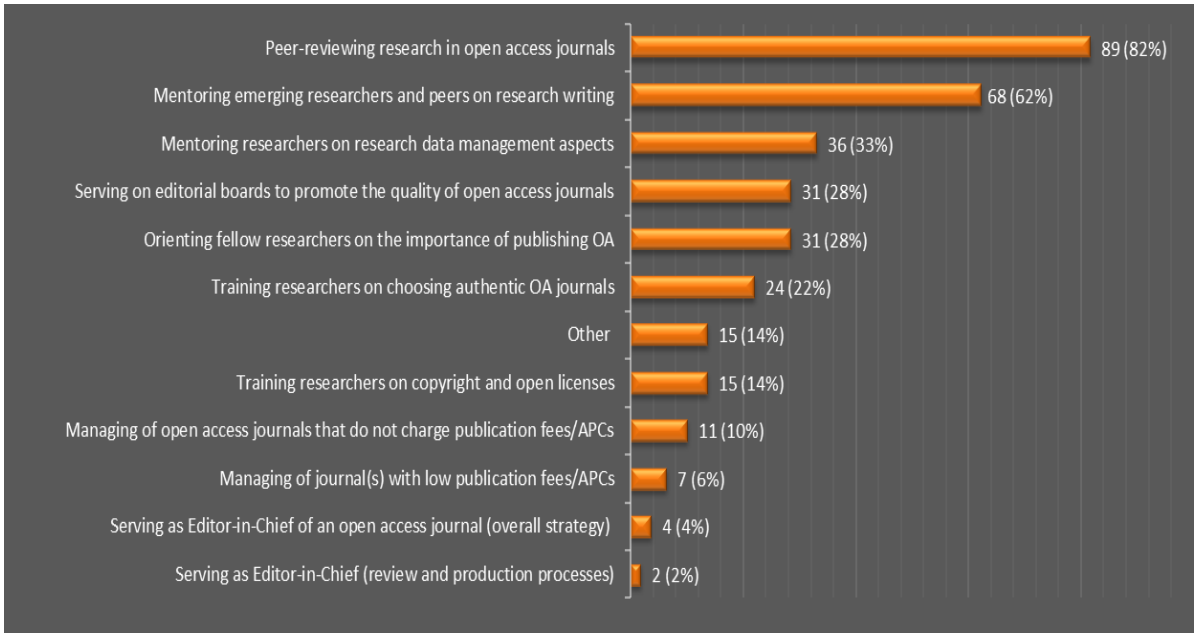

Figure 5.8: Activities that surveyed academics and researchers are engaging in using emerging ICTs to support open publishing and open knowledge dissemination (n=109)

Some activities specified by questionnaire respondents (13.8%) who selected 'Other' include working with open access (OA) journals to negotiate waivers for authors from developing countries that have no funding to publish OA and serving as journal editors in different OA journals and some even indicated to have been scheduled for future responsibilities in OA journals. Other activities include serving as editors of an open textbook series with materials authored for students by students and managing open access websites used to disseminate research. Some responses highlighted serving as board members of a press that is in the process to convert into offering an open access publishing service and some are reviewing papers for local conferences (not specified if they are open access or not). One questionnaire respondent wrote extensively on their campaign against monetising research outputs and pay-to-publish

services, while they promote sharing of pre-prints (pre-refereed research papers), data, software code to ensure reproducibility. The respondent further indicated that they encouraged publishing of peer-reviewed conference proceedings, advocate for the use of outlets like PLOS ONE (an international, peer-reviewed, open-access, online journal) and sharing of other types of scientific reports. Training of both undergraduate and post-graduate students in the use, mechanics and value of open-source software, hardware, data and publications were also noted by some surveyed academics and researchers as some of the activities being engaged in using emerging ICTs in support of OA as a social good.

Table 5.34 presents a cross-tabulation of questionnaire respondents' activities which they are engaging in using emerging ICTs to support openness as a social good, and their career level self-categories (as established, mid-career and early career researchers). The two cross-tabulated variables were also tested using a Pearson's chi^2 and the results showed a significant contribution by established, mid- and early-career researchers in both peer reviewing in OA journals and in serving on editorial board members to promote quality of open access journals. The p-values of the test linked to career level self-categories and peer reviewing and serving on editorial boards for OA journals were 0.004 and 0.002 respectively, and these show a significant relationship as they are less than 0.05 threshold. Statistically, a significant relationship incurs a p value ≤ 0.05 (as explained in Section 4.7 of Chapter 4).

Table 5.34: A cross-tabulation including hypothesis test results of career level self-categories and activities that surveyed academics and researchers are engaging in to support social good through open publishing and knowledge sharing using emerging ICTs (n=109)

Dependent variable: activities engaged in to support open publishing and knowledge sharing	**Independent variable: career level self-categories**				**Hypothesis Pearson's chi² & p value**
	Established Researchers	Mid-career researchers	Early-career researchers	Total	
Managing of open access journals that do not charge publication fees/APCs	8 3.9%	2 1.0%	1 0.5%	**11** **5.3%**	Pearson's chi², 5.213 P=0.074
Managing of journal(s) with low publication fees/APCs	4 1.9%	1 0.5%	2 1.0%	**7** **3.4%**	Pearson's chi², 0.829 p=0.661
Serving as Editor-in-chief of an open access journal (directing the overall strategy of the journal)	3 1.4%	0 0%	1 0.1%	**4** **1.9%**	Pearson's chi², 2.241 p=0.326
Serving as an Editor-in-chief managing and monitoring the review and production	2 1.0%	0 0%	0 0%	**2** **1.0%**	Pearson's chi², 2.899 p=0.235
Peer-reviewing research in open access journals	46 22.2%	23 11.1%	20 9.7%	**89** **41.0%**	Pearson's chi², 11.277 p=0.004
Training researchers on how to choose authentic open access journals	15 7.2%	4 1.9%	5 2.4%	**24** **11.6**	Pearson's chi², 5.187 p=0.075
Orienting fellow researcherson the importance of publishing open access	15 7.2%	7 3.4%	9 4.3%	**31** **15.0%**	Pearson's chi², 0.860 p=0.650
Serving on editorial boards to promote quality of open access journals	21 10.1%	7 3.4%	3 1.4%	**31** **15.0%**	Pearson's chi², 12.964 p=0.002
Training researchers on copyright and open licenses	7 3.4%	4 1.9%	4 1.9 %	**15** **7.2%**	Pearson's chi², 0.472 p=0.790
Mentoring emerging researchers and peers on research writing	30 15.4%	20 9.7%	18 8.7%	**68** **32.9%**	Pearson's chi², 3.400 p=0.183
Mentoring researchers on research data management aspects	17 8.2%	7 3.4%	12 5.8%	**36** **17.4%**	Pearson's chi², 0.829 p=0.661
Total	**168** **81.2%**	**75** **36.2%**	**72** **34.8%**	**207** **100%**	

During interviews and focus group and individual discussions, the researcher also explored the question of activities being engaged in to support social good through open publishing and open dissemination of knowledge using emerging ICTs within research disciplines and faculties at UCT. Diverse activities were noted by some of the interview and focus group/individual participants. Some participants also identified technologies adopted and these included storage space, research collaborative spaces (e.g., open science framework (OSF)), internal sharing spaces, programming and statistical packages that the UCT community has

access to. Some research representatives and key informants (Researcher #4, Key Informants #2 and #3) were engaging in management of open access journals and some are Editors-in-chief (Researchers #3, #7, #8 and #9) while others were reviewing research papers for OA journals. Researchers #2 and #9, Key Informants #1, #2, #3 and #6 mentioned collaboration on the Continental Platform that has been established by UCTL. The service offered on the Continental Platform was mentioned in different interview discussions and by two PhD students during a focus group discussion, for its diamond open access service that allows free publishing of journal articles and monographs. UCTL's diamond OA service was commended by some participants for being extended to benefit some universities on the African continent including the Durban University of Technology (in South Africa), University of Namibia and Bindura University (in Zimbabwe). Researcher #4 also mentioned how they have benefitted from the UCTL diamond open access publishing as researchers can collaborate to open publish using the platform. The participant acknowledged that their publications disseminated via the Continental Platform have been used by other communities at global level. Key Informants #4 and #5 both acknowledged the sharing of digital collections and other resources using different platforms like Imbali and Omeca managed by UCTL, and different resources shared from these platforms have benefitted different communities.

Some individuals among the interview and focus group participants declared managing their own departmental websites for open access content. Among the students who participated through focus group and individual discussions, some shared diverse information about activities that they are collaboratively engaged in using emerging ICTs to support OS. The activities mentioned include use of different computer applications and facilities (e.g., *Zoom*, *Microsoft Teams* and *Outlook* emails) for resource sharing, webinars and conferences to share knowledge and this was also acknowledged by Researchers #7, #8 and all key informants to have become common practice due to the rise of the COVID-19 pandemic and the social distancing that it required. Researcher #8 noted the free knowledge that they shared via Ted talks[44] and some interviewees, focus group and individual participants acknowledge the use of OpenUCT and ZivaHub to share both research and data to support education and further

[44]TED Talks are influential videos designed by expert speakers on education, business, science, technology and other subjects for free distribution online to empower others with knowledge (TED Foundation, 2022).

creation of research. Some participants in a PhD focus group discussion highlighted the use of programming languages like Python to engage in programming during research production, while others were adopting specific open-source software for data analysis, which they felt has enhanced their research production immensely. Some research students noted the use of platforms like Future Learn by UCT creators of knowledge in order to share MOOCs, and Triple IF for resource sharing; the students utilised the MOOCs for their learning.

Some faculty representatives and PhD students also acknowledged that with emerging online trends and the increased need for remote access due to COVID-19 social distancing requirements, social media like Twitter, Facebook, YouTube and academic social media networks, for example, LinkedIn, ResearchGate and Academia.edu have become preferred information dissemination platforms and are being used to share different kinds of useful knowledge and sharing is no longer limited to officially published research papers. One PhD student engaging in interdisciplinary research also noted use of electronic equipment that was also useful for knowledge transfer through visualising, for example, the nature of the TB bacteria in their laboratories for biotechnology high school students who visited UCT occasionally for education development.

Findings from a reviewed document (2019-2020 eResearch report) on activities that UCT academics and researchers are engaging in using emerging ICTs noted use of different UCT facilities like HPC (High Performance Computing) to process functional magnetic resonance imagery (fMRI) data. The same report also pointed out the establishment of linked data application programming interface (API) for networked drones, an open-source toolkit for capturing and publishing drone captured data by the UCT Electrical Engineering Department. A UCT news article published in November 2017, noted data curation activities that have been made possible by the launch of ZivaHub (data repository) at UCT. In the same article, one UCT data advocate, shared ZivaHub functionalities that allow the allocation of digital object identifiers (DOIs) that increase discoverability of datasets published online.

5.3.4.5 Challenges encountered by UCT academics and researchers during participation in open scholarship

The study also investigated through its instruments (structured questionnaire, semi-structured interviews, focus group or individual discussions and document analysis (see Appendices A, B, C, D and E)) the challenges that UCT academics and researchers encounter during

participation in open scholarship (OS). Figure 5.9 visualises the questionnaire respondents' views on such challenges. Total responses varied per challenge itemised with responses ranging from 107 to 110.

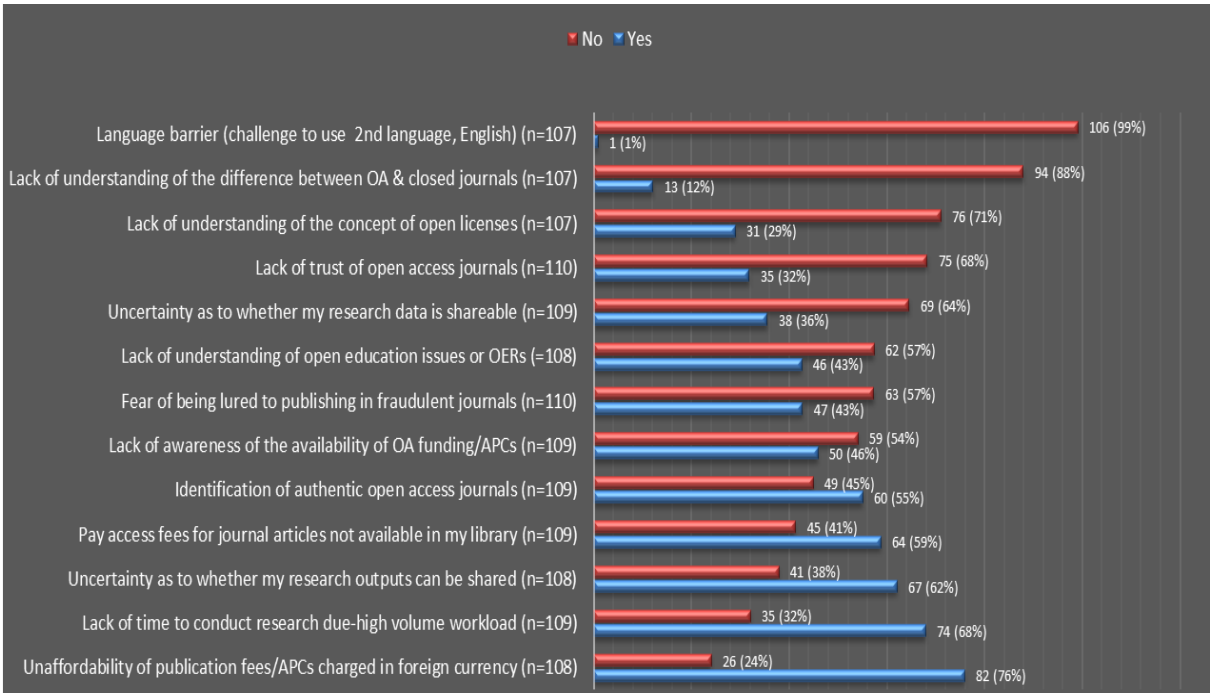

Figure 5.9: Academics and researchers' responses on challenges they encounter as they participate in open scholarship

Questionnaire respondents provided (in the 'Other' field) additional information related to challenges being encountered during participation in open scholarship (OS). One respondent indicated that OpenUCT is not user friendly. Another respondent expressed that they have never considered open scholarship while engaging in research related activities. Some surveyed respondents acknowledged that they have never received support related to open scholarship activities from UCT. Lack of provision of infrastructure at UCT to support data sharing with the wider research community was indicated as a challenge by one of the respondents. A note was also shared that open access journals are well known for being of low quality and are often seen as predatory (also known as fake) publishing. A different note stated that open journals do not seem to be credible, and another respondent queried why responses provided in the questionnaire did not include non-business models like sharing on Mendeley (reference manager), and on repositories like ArXiv, GitHub and Social Science Research Network (SSRN). One respondent clarified that the challenge is not open access, but the fact that researchers do not get recognition for participating in OA, neither does the institution consider researchers' efforts in OA as a factor during promotion or during career advancement.

A questionnaire respondent shared that work overload had hindered them an opportunity to familiarise with OERs; and a different comment related to data noted a cost barrier related to anonymising of datasets as a prohibiting factor since there is no funding support related to research data management (RDM). Lack of diamond open access journals in some research fields was noted by two respondents, which makes cost related to gold OA a barrier in the field. One of the questionnaire respondents clarified that, although their field is dominated by business model journals (commercial journals) that require them to pay-to-publish OA, they would not publish in a closed journal with more than one year embargo period (a period when an author is restricted from sharing versions of the published research paper). A final comment highlighted that research publishing is a highly complicated process, which requires specialist knowledge to understand and navigate through, and the nature of UCT academics' job is overwhelming due to other demands (e.g., administration work, student supervision, teaching, field work, article reviews, thesis examinations, etc.) which hinders teaching staff at UCT from publishing more.

During interviews and focus group or individual discussions, the question relating to challenges encountered while participating in open scholarship (OS) was also explored. The need to include OS components in Ad hominem promotion criteria, during NRF rating and DHET subsidy applications was also emphasised by faculty representatives and some key informants. Researchers #4, #9, Key Informant #, some PhD students and post-doctoral fellows highlighted how exclusion of OS in promotion criteria has contributed to a negative attitude towards the creation of open textbooks and the open sharing of other critical scholarship as UCT academics and researchers focus more on publishing in highly recognised commercial journals. Two PhD students and a few post-doctoral fellows also confirmed how ECRs focus more on increasing the quantity of publications in prestigious closed journals for greater career opportunities in their research disciplines. Most interview participants confirmed that the culture in the research landscape looks at journal metrics, and for that reason producers of research have "normalised the commodification of knowledge for recognition" during promotion. Researcher #6 explained the Ad hominem situation at UCT:

> *"Researchers go for top tier commercial journal since Ad hominem comes into this, and the expenses of publication fees is too high and stops researchers from publishing open access. Many of the academics are made aware even early in their careers that if they want to progress in their academic careers they have to publish in top tier and*

most of these are closed journals. It's nice to be able to publish in open access journals but when it is time for consideration for promotion its once again those top closed journals."

Both seasoned researchers and ECRs who participated in the study strongly believe that publication quantities are valued more than the means of disseminating the produced knowledge. Key Informant #4 stated:

> "*I've always found that there's a disconnect between the content creator and how that content will be disseminated. The commodification of knowledge has been so traditional and entrenched in the research landscape or the research cycle, that a researcher thinks it is normal for their scholarly content to be paid for by others.*"

Several other challenges were shared including personal feelings, that is, a negative attitude to sharing research openly, including sharing of OERs or research data; research governance issues (rewards for performance in the research field) are the major challenges. Lack of organisational support, lack of awareness on issues related to OS, peer pressure in the field to focus on prestigious commercial journals and scarcity of funding to publish open access were also noted as major challenges by both faculty representatives and key informants. Researcher #3 noted some confusion among UCT community members on why there is need to engage in sharing knowledge, particularly immediate OA in journals or on the institutional repository (IR), when they have access to so many research papers online. Key Informants #1, #2 and #3 confirmed that most UCT affiliates do not realise that they have access because the UCTL has subscription to most of the journal titles and books they have access to. Therefore, there is an assumption that everyone has free access to knowledge online, when actually it is the library that is making this access possible.

Intellectual property (IP) issues were emphasised by Researcher #1and Key Informants #3 and #6 as other major challenges, particularly during creation and sharing of OERs. Key Informant #4 works with researchers who have acknowledged data sharing as a challenge as it requires extra cleaning work prior to open sharing. Publishing for prestige in global north or international commercial journals was also noted as a hinderance to knowledge sharing. There is fear of criticism by peers for deviating from the norm if a researcher publishes in an unpopular OA journal. One researcher raised the issue of peer pressure to publish in high ranked journals in a statement: "*In terms of open access publishing in journals, my colleagues*

think you have to kind of publish in ranked journals. I think this has been challenged now." Researcher #4 noted lack of follow-up on engaged scholarship that mandates the sharing of publications and other policies that support activities related to engaged scholarship, like UCT OA and RDM policies, while Researcher #9 noted that using OpenUCT is very technical especially the choosing of a Creative Commons (CC) license or open license.

Some interview and focus group or individual participants also noted that there is lack of awareness on OS practices including the availability of support like infrastructure and funding. One seasoned researcher who is a prominent OA advocate at UCT indicated lack of awareness of the availability of funding to support APCs at UCT.

Another challenge that emerged from some PhD students and three post-doctoral fellows as hinderance to sharing scholarship is the hesitation and resistance to share data. A GSB Masters student shared a view with regards to data sharing, "… *it's very sensitive data, and I can tell that I would never do research again in that landscape if I was to share my data, and, just personally, it would make me extremely uncomfortable".* A post-doctoral fellow shared that, *"This [data sharing] is actually something I've never considered. I'm a little hesitant to share interviews because of the sensitivity of responses …".* Some of the issues that were apparent during focus group discussions included lack of orientation related to open scholarship and lack of undergraduate courses to prepare students for a research career. Most Masters students confessed to not being aware of various concepts relating to OS prior to participation in this study and some PhD students also admitted to being hesitant to participate in the study as they were not sure of the OS subject. Some post-doctoral fellows also acknowledged that OS was not part of their induction although they have joined departments to focus mainly on research production and publishing. PhD students noted lack of confidence to engage in research publishing as there is not much encouragement from supervisors or mentors in their departments.

One PhD student noted the existence of the Emerging Researcher Programme (ERP) at UCT that is intended to develop young researchers in research production, and this programme is noted for excluding research students who are not enrolled as teaching staff at UCT. Therefore, some PhD students believe they are being deprived in terms of research writing and career development programmes as this programme discriminates some of them. A PhD student pointed out that there are no rewards for participating in OS which discourages ECRs. There was also an assumption among some focus group participants that OpenUCT was only set for

ETDs, and therefore they never considered using the IR. Table 5.35 captures a summary of themes related to challenges encountered at UCT during participation in open scholarship as discussed by interview and focus group or individual participants. However, no significant challenges were found in the reviewed documents.

Table 5.35: Themes related to challenges encountered at UCT during participation in open scholarship as discussed by interview and focus group or individual participants

Themes related to challenges encountered	Faculty representatives	Key informants	Focus groups or individuals (research students & post-doctoral fellows)
Confusion with the need for OA	✓	✓	
ERP workshops exclude post-graduate students who are not teaching staff			✓
Lack of awareness of UCT open scholarship related policies	✓	✓	✓
No social justice consciousness when publishing		✓	
Lack of orientation leads to competitive publishing			✓
Doubt about quality of OA journals	✓	✓	✓
Fear of OA journals being fake	✓	✓	
Some have never thought of open access			✓
Orientation does not focus on OS; its concepts not clear			✓
PASS colleagues are undermined and not consulted for support		✓	
Concern about sharing data	✓		✓
Less attention on societal impact of OS		✓	
Educational materials too specialised to share	✓		
No data sharing discussion at departmental level			✓
Uploading on OpenUCT is too technical	✓		
Concern about delayed (green) OA	✓		
Copyright restrictions hinder green OA	✓	✓	
High cost of APC hinders OA	✓	✓	✓
HIF journals attract funding	✓		
No funding for data management needs	✓		
OA funding excludes open textbooks	✓		
Small APC budget, depletes fast	✓	✓	
OA not well promoted at UCT	✓		✓
Unable to keep OERs updated	✓		
Not aware OA infrastructure exists, no awareness	✓		✓
Institutional culture of resisting policy	✓	✓	
Policies do not motivate sharing	✓	✓	
Heavy teaching loads	✓	✓	
Bandwidth needed to access information			✓
Brain-washed by traditional publishers	✓	✓	
Criticism for deviating from publishing norm	✓		
Supervisors prescribing closed journals	✓	✓	✓
Lack of appreciation of OA	✓		✓
Social justice through OS not prioritised for career development	✓		✓
Peer pressure to prioritise top tier journals	✓		✓
Promotion looks at pub count and there are no incentives for OS	✓	✓	✓

5.3.4.6 Section summary

This section reported findings from the study's instruments (structured questionnaire, semi-structured interviews, focus group or individual discussions and reviewed documents) addressing the CQ 'To what extent are UCT academics and researchers contributing to the openness movement as a social good?'. Findings showed a general agreement among study

participants that OS is critical in supporting human development and social justice. Activities being engaged in using emerging technologies to support social good, included serving on editorial boards of open access journals, reviewing scientific papers in such journals and many other activities. Some of the challenges being encountered during participation in OS at UCT included exclusion of OS activities in promotion criteria at UCT and this was also highlighted as a contributing factor to low participation in OA. Most study participants described UCT's publishing culture as being mainly closed.

5.3.5 CQ4: Strategies being adopted in support of UCT's open scholarship agenda

This section reports findings on current strategies being adopted in support of UCT's open scholarship agenda from all five research instruments (see Appendices A, B, C, D and E). Supporting the open scholarship agenda requires a commitment to sharing all forms of scholarship by UCT community members with communities in South Africa and the African continent. Hence the assumption of this study is that producers of knowledge at UCT would create strategies or means to facilitate participation in open scholarship to improve access to information for marginalised external constituencies (communities not affiliated to UCT). This critical question was guided by the capability approach (CA) framework (Bezuidenhout et al., 2017b: 465) (detailed in Section 2.5 of Chapter 2) that proposes strategy elements or factors that make it possible for one to participate equitably in any planned activities or projects. The CA framework facilitates a rich assessment of individuals' capabilities to undertake valued and valuable activities, with the classification scheme of the framework categorised into "personal, funding, organisational [institutional or environmental] and infrastructural factors" (Bezuidenhout et al., 2017b: 465). These factors (personal, funding, organisational (institutional or environmental) and infrastructural) were viewed to be critical in assessing the capability to equitably participate in open scholarship.

Table 5.36 presents findings on strategy elements identified by questionnaire surveyed academics and researchers. Each section of the question attained different responses (the n-value). Seventy-two (68%) of 106 indicated orienting themselves on copyright and open license issues, while 77 (73%) of 105 made personal efforts to develop technical skills to be able to handle and manage research data. In terms of funding, 30% (of 106) used personal funding to publish open access, while 53% (of 105) benefited from the open access funding provided at UCT to support open publishing, and 56 (54% of 104) had access to other research funding to publish open access. Seventy-two (69% of 105) confirmed having access to all the research

they needed to create more knowledge, while 69% (of 101) acknowledged being oriented about the RDM policy. Fifty four percent (54% of 104) of surveyed respondents confirmed being oriented about the institution's open access policy. Questionnaire respondents also acknowledged (see Table 5.36) adopting infrastructural elements including having access to cloud storage that support collaboration, support with internet connectivity at UCT and access to OpenUCT and ZivaHub.

Table 5.36: Elements identified by surveyed academics and researchers as strategies adopted to support or advance open scholarship at UCT

Personal strategy elements	**Yes**	**%**	**No**	**%**	**Total**
I developed self-archiving skills to deposit my scholarly outputs on OpenUCT and on other open platforms	49	46%	57	54%	**106**
I oriented myself on copyright and open license issues	72	68%	34	32%	**106**
I used personal funding to publish open access	32	30%	74	70%	**106**
I developed technical skills to handle and manage research data	77	73%	28	27%	**105**
I took initiative to attend training on metadata, archiving standards and sharing principles important in research and data sharing (e.g., FAIR data principles)	27	25%	79	75%	**106**
Funding related strategy elements	**Yes**	**%**	**No**	**%**	**Total**
I used open access funding provided by UCT to support open access publishing	56	53	49	47%	**105**
I used UCT subsidy funding with BioMed Central to publish open access	13	13	91	88%	**104**
I had collaboration with international researchers who have funding for APCs to publish open access	47	45%	58	55%	**105**
I had access to other research funding to publish open access	56	54%	48	46%	**104**
I used UCT OER grant to create OERs that I shared with others	12	11%	93	89%	**105**
I had access to research funds to purchase storage space for my raw data	25	24%	80	76%	**105**
Institutional/environmental strategy elements	**Yes**	**%**	**No**	**No**	**Total**
Librarians offered workshops on self-archiving and copyright education to support 'green open access' (self-archiving on OpenUCT)	29	28%	75	72%	**104**
Librarians & data curators offered workshops to develop data literacy skills including open licensing data, depositing data on ZivaHub, data citation, FAIR data principles and other technical issues	36	35%	66	65%	**102**
I had access to library databases to use information off campus	93	89%	12	11%	**105**
I had access to all the research I need to create more knowledge	72	69%	33	31%	**105**
I received orientation on where to get support on open access publishing	31	30%	73	70%	**104**
UCT offered training on copyright & open licenses	44	43%	59	57%	**103**
I had access to UCT's open publishing platforms	69	68%	33	32%	**102**
UCT created awareness on the institution's open access policy	56	54%	48	46%	**104**
UCT created awareness on the institution's research data management policy	70	69%	31	31%	**101**
I received orientation on UCT's social responsive agenda that supports engaged scholarship & human development of the local communities	50	48%	54	52%	**104**
Infrastructural strategy elements	**Yes**	**%**	**No**	**%**	**Total**
I had free access to UCT's cloud space for research creation and collaboration	62	59%	43	41%	105
UCT provided infrastructure, that is, established an institutional repository (OpenUCT), where I can share my research	79	75%	27	25%	106
UCT provided infrastructure, that is, established an open data repository (ZivaHub), where I can share my research datasets	60	58%	43	42%	103
UCT provides connectivity to support online research collaboration	85	81%	20	19%	105
I had access to UCT storage space on campus for my raw data	59	57%	44	43%	103
I had access to UCT's data visualisation equipment	11	11%	92	89%	103

In exploring what elements interviewees (faculty representatives and key informants) think UCT academics and researchers adopted to participate in open scholarship (OS) within their faculties, different key points were noted. Focus group or individual participants (Masters and PhD students and post-doctoral fellows) also discussed different points relating to elements they adopted as part of their strategy to participate in open scholarship at UCT.

Key Informant #1 acknowledged the use of APC funding by researchers from different faculties, however, they could not provide a number for those who have benefitted from the funding. Both key informants and faculty representatives observed the availability of infrastructure (OpenUCT, ZivaHub and open science framework (OSF)) at UCT to support both research production and dissemination of final research products. One questionnaire respondent indicated the need to comply with funder mandates like that of the NRF, through sharing research publications on OpenUCT, and also highlighted that most research activities are fulfilled to either meet promotion requirements or funder mandates. Key Informants #1, #2 and #3 noted the support UCTL is offering to researchers such as training to use OpenUCT and to use Open Journal Systems (OJS). Five of the interviewees among the faculty representatives confirmed having utilised the services being offered by UCTL including OpenUCT, ZivaHub, OJS and Open Monograph Press (OMP). Researcher #4 and one PhD student shared open textbooks, chapters and research publications on their personal websites, while Researcher #10 shares most of their publications on their departmental website and on OpenUCT; and the provision of infrastructure was appreciated by some participants. One of the faculty representatives has used OMP, managed by UCTL, to publish an open monograph.

One Masters student confirmed having received training on how to upload publications to OpenUCT in preparation for sharing publications produced by UCT staff in their department. Interestingly, two of the interviewed faculty representatives expressed strongly that sharing on OpenUCT and on OMP was not such an advantage to them as their publications were getting good visibility on their departmental website. On a different note, some faculty representatives and focus group and individual participants emphasised the need for the scholarly communication and publishing unit at UCTL to be more visible as it was the first time for some participants to hear about the unit. Table 5.37 captures a summary of themes emanating from interviews and focus group and individual discussions on strategy elements adopted to participate in open scholarship.

In terms of findings from document analysis, evidence from the DOT4D 2021 blog shows some strategy elements adopted by some members of the UCT community to participate in open scholarship, including institutional support for open textbook authors to enhance open textbook creation, publishing and curation. The same document also noted the provision or launch of infrastructure like ZivaHub, OpenUCT and the Continental Platform by UCT for sharing knowledge at UCT and beyond. Key Informant 3# highlighted that the Continental Platform was established by UCTL to support African universities in offering diamond publishing services to the African researchers. A note from the blog also highlighted the benefit for some UCT knowledge creators from funding (grants) for open digital textbooks provided by the university.

Table 5.37: Themes emanating from interviews and focus group and individual discussions on strategy elements adopted to participate in open scholarship

Strategy elements adopted to participate in OS	Faculty representatives	Key informants	Focus groups and individual participants (research students and post-doctoral fellows)
Availability of OA publication and page cost funding	✓		
Awareness or orientation on OS issues		✓	
Benefited from UCT APC funding		✓	✓
BioMed Central subsidy for APCs		✓	
Copyright and Creative Commons license workshops	✓	✓	
Digital open textbook grants	✓	✓	✓
Funder OA mandates pushed sharing	✓		
Funding for OA publishing from departments			✓
ICT services to support publishing platforms		✓	
Internet connection	✓		✓
Open publishing training			✓
Personal motivation – peer education	✓		✓
Policy promoting data sharing		✓	
Scholarly communication – training		✓	
Self-directed learning on OS issues	✓		✓
Support from leadership – grants for digital textbooks	✓	✓	
Support on OERs from CILT	✓		✓
The library to upload ETDs on behalf of students		✓	✓
Vula (UCT's learning management system) used to share open knowledge	✓	✓	
Workshops and training from research office		✓	✓
Open journals managed by UCTL	✓	✓	
Open Monograph Press managed by UCTL	✓	✓	
OpenUCT used to upload publications	✓	✓	✓
ZivaHub being used to share data	✓	✓	
Zenodo and DataFirst being used	✓		✓

5.3.6 CQ5: The extent of effectiveness of strategies adopted in supporting the social responsiveness agenda of the university in the scholarly communication of its output

This section presents findings that explored the extent of effectiveness of the strategy elements adopted at UCT to participate in sharing scholarship. Findings are presented from five research instruments of the study, that is, the structured questionnaire, semi-structured interviews, focus group and individual discussions and reviewed documents (see Appendices A, B, C, D and E). The study being grounded in a critical paradigm, it is assumed that UCT creators of knowledge who are part of the University's bigger plan of 'social responsiveness', would be supporting social justice by empowering external marginalised constituencies through knowledge sharing and would ascertain if the means they have created and adopted to support OS are being effective. Participation in OS is also assumed to be a conscious or deliberate decision to support the social responsiveness agenda of the university (bearing in mind the information marginalised within and outside UCT).

Hence on a scale of 0-5 (with 5 being 'Extremely effective' and 0 being 'Not effective', and N/A for cases where responses were not applicable) questionnaire surveyed academics and researchers were asked to rate the extent of effectiveness of the strategy elements they adopted at UCT to participate in open scholarship (see Appendix A). The discrepancy in the Likert scale in Table 5.38 (with a scale of 0-5) and that of the same question (Question 16) in the *Word* questionnaire version (with a scale of 0-6) in Appendix A was a result of human error during conversion of the *Word version* questionnaire into *Survey Monkey*. Data were collected from questionnaire respondents in *Survey Monkey* using a scale of 0-5 scale, and hence data are reported in this section using the scale of 0-5. Table 5.38 presents findings from the surveyed academics and researchers. Each section of the question attained different responses (the n-value). Because of the smallness of the responding numbers, Table 5.38 does not reflect percentages. 'Access to library databases to use information off campus' was rated as 'Extremely effective' by 29 out of 101 respondents while 'Provision of internet connectivity to support online research collaboration' was rated as 'Very effective' by 26 out of 100 respondents. There were different elements that showed effectiveness that ranged from 'Fairly effective' to 'Extremely effective'. Many of the elements did not apply to respondents (hence a high selection of 'not applicable') and access to UCT's data visualisation equipment seemed applicable to a small number of the surveyed respondents.

Table 5.38: The effectiveness of strategy elements adopted by academics and researchers to participate in open scholarship at UCT by surveyed respondents

Personal strategy elements	**N/A**	**Not effective (0)**	**Least effective (1)**	**Fairly effective (2)**	**Effective (3)**	**Very effective (4)**	**Extremely effective (5)**	**Total**
I developed self-archiving skills to deposit my scholarly outputs on OpenUCT and on other open platforms	28	12	9	14	23	12	4	102
I oriented myself on copyright and open license issues	15	13	10	24	23	10	6	101
I used personal funding to publish open access	54	10	10	9	12	2	3	100
I developed data management and processing skills	23	4	9	27	27	8	3	101
I developed technical skills to handle and manage research data	19	3	8	26	30	10	3	99
I took initiative to attend training on metadata, archiving standards and sharing principles important in research and data sharing (e.g., FAIR data principles)	51	15	8	9	11	7	0	101
Funding elements	**N/A**	**Not effective (0)**	**Least effective (1)**	**Fairly effective (2)**	**Effective (3)**	**Very effective (4)**	**Extremely effective (5)**	**Total**
I had access to open access funding provided by UCT to support open access publishing	35	11	4	12	17	13	8	**100**
I had access to UCT subsidy funding with BioMed Central to publish open access	75	10	1	4	6	2	3	**101**
I collaborated with international researchers who have funding for APCs to publish immediate open access	43	13	1	8	17	12	6	**100**
I had access to other research funding to publish open access	32	7	3	11	28	14	6	**101**
I had access to UCT OER grant to create OERs that I shared with others	74	13	0	1	5	3	2	**98**
I had access to research funds to purchase storage space for my raw data	56	12	2	7	11	9	3	**100**
Institutional/environmental elements	**N/A**	**Not effective (0)**	**Least effective (1)**	**Fairly effective (2)**	**Effective (3)**	**Very effective (4)**	**Extremely effective (5)**	**Total**
Librarians offered workshops on self-archiving and copyright education to support 'green open access' (self-archiving on OpenUCT)	49	13	4	12	11	9	2	**100**
Librarians & data curators offered workshops to develop data literacy skills including open licensing data, depositing data on ZivaHub, data citation, FAIR data principles and other technical issues	48	12	4	12	14	10	0	**100**
I had access to library databases to use information off campus	13	6	4	7	14	29	28	**101**
I had access to all the research I need to create more knowledge	11	5	2	20	22	29	12	**101**

Institutional/environmental elements cont.	N/A	Not effective (0)	Least effective (1)	Fairly effective (2)	Effective (3)	Very effective (4)	Extremely effective (65	Total
I received orientation on where to get support on open access publishing	37	20	11	9	14	7	2	**100**
UCT offered workshops on copyright & open licenses	42	17	3	11	19	7	1	**100**
I had access to UCT's open publishing platforms	29	12	12	17	15	12	4	**101**
UCT created awareness campaigns on the institution's open access policy	19	24	15	19	16	7	0	**100**
UCT created awareness on the institution's research data management policy	17	13	10	32	18	8	0	**98**
I received orientation on UCT's social responsiveness agenda that supports engaged scholarship & human development of the local communities	29	16	11	17	19	7	1	**100**
Infrastructural elements	**N/A**	**Not effective (0)**	**Least effective (1)**	**Fairly effective (2)**	**Effective (3)**	**Very effective (4)**	**Extremely effective (5)**	**Total**
I had free access to UCT's cloud space for research creation and collaboration	38	7	6	14	23	10	3	**101**
UCT provided infrastructure, that is, established an institutional repository (OpenUCT), where I can share my research	28	11	8	28	15	9	3	**102**
UCT provided infrastructure, that is, established an open data repository (ZivaHub), where I can share my research datasets	46	11	6	15	14	8	1	**101**
UCT provided internet connectivity to support online research collaboration	12	6	4	13	20	26	19	**100**
I had access to UCT storage space on campus for my raw data	43	9	3	10	19	10	7	**101**
I had access to UCT's data visualisation equipment	79	13	3	3	3	0	0	**101**

During interview and focus group or individual discussions, participants were requested to discuss the effectiveness of the strategy elements adopted at UCT to participate in open scholarship. Discussions presented contrasting views on the effectiveness of adopted strategy elements, for instance, APCs funding worked well for some departments and the funding was regarded by other participants as disadvantaging due to the reimbursement condition. Looking at OpenUCT and ZivaHub repositories, these were very useful for some individuals and others found them to be very technical and cumbersome. One Masters student found training to use OpenUCT useful while others had never been trained. Key Informant #3 rated UCT's participation in the open scholarship agenda at 30%, as there is very minimal contribution via both green, and gold and diamond open access at UCT. However, reviewed documents showed that there is gradual increase of scholarly outputs being shared by academics and researchers

on OpenUCT with10 300 publications shared in 2015, 27 300 shared in 2020 and 29 588 shared in 2021. The reviewed documents also confirmed an increasing number of datasets being shared on ZivaHub.

OpenUCT was also useful in sharing OERs and OMP was effective in sharing textbooks in different formats. PhD students confirmed funding from their departments did not exclude them as students; the funding supported their publishing in open access journals. An interesting remark from Researcher #7 emphasised that there is no need for funding as academics and researchers receive a salary to share knowledge. Some of the PhD students were excited that their theses and dissertations were accessible online, and they felt that OpenUCT is being effective in sharing ETDs for use by others.

Key Informant #2 commended information and communication technology services (ICTS) at UCT for the constant support with the upgrades of open platform software and troubleshooting for seamless functionality of the OJS and OMP platforms. Researcher #7 commented that Vula was working well for sharing textbooks as one can update the textbook version with new knowledge, unfortunately, the download statistics functionality had stopped working on Vula and ICTs has taken long to find a solution to this problem. More responses from faculty representatives, key informants and focus group or individual participants on the effectiveness of strategy elements adopted at UCT are presented in Table 5.39. It is critical to note that what was shared were individual observations and therefore may not apply to the entire UCT community. Most interviewees representing faculties had declared the challenge of providing an overview representing the entire faculty.

Table 5.39: Views from interview and focus group or individual participants on the effectiveness of the strategy elements adopted to participate in open scholarship at UCT

Effectiveness of strategy elements adopted to participate in open scholarship	Faculty representatives	Key informants	Focus groups & individual participants (research students and post-doctoral fellows)
A lot of feedback from academic social media	✓		
APC funding also supported students to publish OA			✓
Time taken to publish scholarship deposited on the repository is sometimes long			✓
Citations of shared work increased	✓	✓	
Commitment to the OA agenda is rated at 30%		✓	
Funding from some departments funded APCs for two PhD students			✓
Little is being done and hence more contribution could be made with journals managed by UCTL		✓	
Increased download and readership		✓	
Increased downloads on personal website	✓		
Infrastructure is fully supported by ICTs		✓	
Less digital textbooks from grant holders are publicly shared		✓	
OA publication funding or APC funding not sustainable: it depletes quickly	✓	✓	
OJS works well		✓	
OMP worked well		✓	
One publication was APC funded by UCT	✓		
OpenUCT works well		✓	
Policy is effective as it gets UCT community to think about sharing data		✓	
Publishing of books on OMP is very low		✓	
Support while uploading on OpenUCT was useful and questions were responded to instantly			✓
Support with infrastructure was very effective	✓	✓	✓
Training was effective as those trained were able to share on open platforms		✓	✓
Training to upload on OpenUCT was helpful			✓
Very little success with green OA	✓	✓	
Workshops and training to use infrastructure are increasing use of open sharing platforms		✓	
OpenUCT and ZivaHub are too technical to use	✓		
Using OpenUCT is both time consuming and technical on the stage of selecting a license	✓		

5.3.7 CQ6: Essential components of a strategy for the advancement of open scholarship, within a critical epistemology, in the interest of information access to marginalised communities

This section reports findings on the components that are regarded essential to develop a strategy to advance open scholarship, within a critical epistemology, in the interest of information access to marginalised communities. Findings are reported from all the instruments of the study (see Appendices A, B, C D and E). Considering the University of Cape Town is located within a county with diverse inequalities including income imbalances as highlighted by Sguazzin (2021), and that UCT has committed to share its resources to support development issues in

African, the assumption during data collection was that study participants would understand what is needed to develop a strategy to sustain open scholarship practices. From their research experiences at UCT, participants were considered to be in a better position to guide on what they envisage as essential components of a strategy for the advancement of open scholarship.

This critical question was guided by the capability approach (CA) framework (Bezuidenhout et al., 2017b: 465) (see Section 2.5 of Chapter 2) to ascertain what study participants viewed as essential or critical components to develop a strategy for the advancement of open scholarship (OS) at UCT. CA framework categorises factors influencing participation in a project successfully into "personal, funding, organisational [institutional or environmental] and infrastructural factors" (Bezuidenhout et al., 2017b: 465). Table 5.40 presents findings from surveyed academics and researchers on what they consider, within a critical epistemology, as essential components of a strategy to support and sustain academics and researchers to engage in open scholarship practices at UCT (see Appendix A). Again, each section of the question attained different responses (the n-value). A few examples of elements identified with high responses from questionnaire respondents included personal elements (like self-archiving skills at 94%), infrastructural elements (provision of internet connectivity by UCT to support research activities and networking at 97%) and funding elements (provision of funding by UCT for APCs to support open access publishing at 92%).

Table 5.40: Academics and researchers' responses on what they would you consider, within a critical epistemology, as essential components of a strategy to support and sustain academics and/or researchers' open scholarship practices at UCT

Capability approach categories (essential strategy elements)	**Responses**				
Personal elements	**Yes**	**%**	**No**	**%**	**Total**
Self-archiving skills	94	94%	6	6%	**100**
Personal skills on copyright and open license issues	85	86%	14	14%	**99**
Positive attitude on open sharing philosophy	95	98%	2	2%	**97**
Personal skills on research data management processes	85	86%	14	14%	**99**
Skills to work with available open access software	81	83%	17	17%	**98**
Technical skills and knowledge on metadata, archiving standards and sharing principles (e.g., FAIR data principles) to manage, process and share research data	70	71%	28	29%	**98**
Funding elements	**Yes**	**%**	**No**	**%**	**Total**
Provision of funding by UCT for APCs to support open access publishing	92	92%	8	8%	**100**
Provision of OER grants to support the creation of OERs through payment for critical services such as video production, etc.	81	84%	15	16%	**96**
Provision of research funding to purchase software required for diverse research activities	86	88%	12	12%	**98**
Provision of training to handle software that supports research production and free dissemination	85	87%	13	13%	**98**
Provision of funding for storage space for raw data	82	85%	15	15%	**97**
Institutional/environmental elements	**Yes**	**%**	**No**	**%**	**Total**
Training from the library to support self-archiving and develop metadata skills	87	90%	10	10%	**97**
Organisation of seminars and workshops with librarians and data curators for the development of data literacy skills to support research data management and sharing	83	86%	14	14%	**97**
Organisation of seminars on open access publishing	80	81%	19	19%	**99**
Support for research collaboration and sharing	89	93%	7	7%	**96**
Support with access to information databases off campus	86	89%	11	11%	**97**
Orientation on all policies that are bases for open scholarship	80	81%	19	19%	**99**
Training on copyright and open licenses	86	87%	13	13%	**99**
Infrastructural elements	**Yes**	**%**	**No**	**%**	**Total**
Provision of free cloud space by UCT to store and share research resources	85	88%	12	12%	**97**
Provision of collaborative research infrastructure by UCT	90	92%	8	8%	**98**
Provision of platforms/open-source software repositories by UCT for data and research sharing	84	87%	13	13%	**97**
Provision of internet connectivity by UCT to support research activities and networking	96	97%	3	3%	**99**
Provision of hardware, computer software, programmes and applications that support the creation and sharing of scholarly products	88	90%	10	10%	**98**
Provision of data visualisation equipment	64	69%	29	31%	**93**
Other					**6**

There were additional comments provided (under 'Other') by questionnaire respondents relating to essential components for developing a strategy to advance OS, and one respondent noted that UCT-HR needs to prioritise OS activities during promotion or career development and to make open scholarship mandatory for Ad hominem and other job-related promotions as well as consider OS achievements awards. Funding for computational resources in general was acknowledged as a key constraint by one respondent. Respondents also noted a disconnect

between the ideology of open access and the realities of science as in some fields pre-prints are openly accessible whereas peer-reviewed papers are behind pay walls and in other fields, no versions of publication can be openly shared. Other respondents noted that they were participating in OS already in their fields without making use of the official avenues at UCT.

The study also explored what faculty representatives and key informants regarded as essential components of a strategy that can support and sustain open scholarship practices of academics and researchers within UCT faculties. The same question was probed with focus group and individual discussions (with Masters students, PhD students and post-doctoral fellows). One similar observation across study participants is the fact that all CA framework elements need to be prioritised in developing a strategy to advance OS. Key Informants #2, #3 and Researchers #4 and #9 acknowledged OS infrastructure to be adequate at UCT. However, there were suggestions from a Masters student, Key Informant #5 and Researcher #9 for more seamless and user-friendly platforms for research and data sharing. Funding was also identified by both interview participants and focus group/individual participants study participants as a critical component in developing a strategy to support OS as open access publishing and data management require funding.

PhD students and post-doctoral fellows observed the need for university-wide communication about OS activities and awareness about the availability of OS related infrastructure at UCT. This was corroborated by Researchers #2 and #5 who felt excluded as they were not aware of the implications of sharing knowledge; one of the researchers did not know there was an OA policy at UCT. Post-doctoral fellows also highlighted the need to include an OS section during their induction in their departments. Masters students and PhD students indicated the need for an undergraduate course that prepares students on research engagement including OS aspects and benefits. They also felt that it was critical for research supervisors to engage with students about OS issues at the earliest stage of their research careers and to encourage them to create knowledge to publishing research in OA avenues and create OERs to support the decolonisation of the curriculum. Most Masters and PhD students and post-doctoral fellows also felt that orientation should include issues of research data management at faculty and departmental level. Some research students noted the need for UCTL staff to include OS components during orientation to create awareness on UCT's OA and RDM policies.

Some faculty representatives shared a view that infrastructure is not well marketed at UCT. In support to this, Key Informant #6 highlighted the need to market infrastructure as they observed

that researchers and academics were not aware of the UCTL publishing service. Table 5.41 presents a summary of themes discussed during interviews and group/individual discussions on components essential to develop a strategy to advance open scholarship at UCT.

Commenting on repositories, Researchers #4 and #9 emphasised the need for a seamless integrated infrastructure, a one-stop-shop (single platform), like eRA[45], to deposit research publications, data and also to engage in other research activities like accessing APCs to avoid academics and researchers visiting different websites for research related activities. There was no relevant information about components essential to develop a strategy to support and sustain open scholarship found in the reviewed documents.

[45]eRA is the electronic Research Administration (eRA) system, an online research support tool that automates and streamlines the research project lifecycle (University of Cape Town Research Office, 2022).

Table 5.41: Themes emanating from interviews and focus group/individual discussions on components essential to develop a strategy to support and sustain researchers' open scholarship practices at UCT

Components essential to develop a strategy to advance open scholarship	Faculty representatives	Key informants	Focus groups & individual participants (research students and post-doctoral fellows)
Academic writing workshops			✓
Ad hominem promotion criteria should prioritise OS	✓	✓	✓
Awareness of OS at faculty level	✓		✓
Awareness, marketing & advocacy	✓		✓
Capacity building in OS		✓	
Celebrate OS achievements yearly to motivate peers	✓		✓
Consider sustainability of APCs	✓	✓	✓
Develop capacity in grant application	✓		✓
DHET publications subsidy should include OA	✓		
Engage with researcher on OS early		✓	✓
Incentives-OS in Ad hominem	✓	✓	
Include OS in information literacy			✓
Induction of ECR to include OS			✓
Integration of sharing platforms	✓		
Knowledge sharing to be mandatory	✓	✓	
Library orientation to include OS			✓
Marketing strategy for OS	✓		✓
Marketing of the Continental Platform	✓	✓	
Mentorship required for ECRs on OS			✓
Monitoring & evaluation of OS needed	✓		
Monograph subsidy must support OA		✓	
Need for statistics tool in Vula to count downloads	✓		
Need to market policies for OS awareness	✓		✓
NRF rating system should consider OA	✓		
NRF research funding must consider OS	✓		
OS services should be well communicated university wide	✓		✓
Organisational support, marketing policies for OS	✓		✓
Organisational culture – leaders should speak more on OS	✓		✓
Peer education in OS required	✓		✓
Personal motivation is required (drive to share)	✓	✓	✓
Promote use of ZivaHub and OpenUCT	✓	✓	✓
Provision of both hardware & software to support the creation and sharing of scholarly products	✓		✓
Recognition of outstanding participation in OS at university level			✓
Research awards should include OA	✓		
Reward/incentives for OA – inclusion during promotion	✓		✓
SDG publications must be open		✓	
Turning subscription into OA	✓		
University-wide communication on the importance of OS	✓		✓

5.3.8 General comments relating to UCT academics and researchers' participation in open scholarship

Each cohort that participated in the study was afforded an opportunity to make any general comments relating to UCT academics and researchers' participation in open scholarship and this was across all instruments (except for the document analysis guide). This section reports findings from all general comments shared by study participants in relation to open scholarship at UCT. Some surveyed respondents shared comprehensive comments; however, only points not reported earlier were captured in this section. Some questionnaire respondents explained that they lacked awareness of what support UCT offers to those participating in OS and confirmed having learned a lot from the study survey about services at UCT which they did not know about. Most of those who commented expected some changes and means to incorporate open sharing of scholarship in research governance in the South African research field; expecting DHET to endorse open scholarship in academic institutions. A few respondents still prefer closed over open journals with one respondent affirming that "*we trust the culture of the subscription journals in chemistry*".

A questionnaire respondent described open scholarship as a "competing business model to allow more mediocre research to be published by many mediocre researchers as the quality of open access is low". On a different note, a respondent stated that they did not feel that there is a culture of open access at. There were also comments highlighting that copyright hinders sharing of lecture notes as content used to create is mostly published in copyrighted textbooks and sharing leads to copyright infringement. One comment noted the challenges relating to making data freely available, which results in having competitors publishing the results before the owner of the data. This was described as detrimental for one's career development. Another respondent felt that sharing data involving human subjects may be unethical and thinks that for the NRF to mandate sharing of data is a challenge due to ethical reasons.

Two questionnaire respondents shared challenges of finding policies related to research data management (RDM) or workshops related to RDM on UCT websites. A different respondent stated that UCTL does not offer any training related to open sharing. It was also commented that emerging researchers are most concerned about their reputation which forces them to avoid open access journals due to the concerns of low quality. Furthermore, the questionnaire respondent noted that if line managers or heads of departments emphasise OS practices, open practices could improve. A further suggestion was to have a tradition where role models with

a track record of high achievement in open scholarship are given an opportunity to share their experiences with emerging researchers. Final comments from questionnaire respondents complained about UCT offering up to ZAR20 000 for APCs whereas open access publishing costs way more than that. The APC funding was noted to be a challenge as one claims after publishing and South African authors do not qualify for APC waivers as the country is classified as a middle-income country.

The researcher also requested interviewees and focus group and individual participants to make general comments, if necessary. In terms of sharing, some interviewees (emphasis from Researcher #2) and focus group and individual participants commented on unwillingness to share knowledge due to fears of plagiarism. One PhD student noted that ETDs are being shared without student consent, while other participants appear to be eager to share illegally. On a different note, Researcher #5 commented that,

> *"There is also a platform like ResearchGate where a lot of people post their articles anyway, although the publishers discourage this and if you Google a certain article, chances are, you hit that on ResearchGate, before even on the publisher site. I am not really concerned about the openness that we have already in the world because of the internet. The focus really needs to make sure that people have access to internet and maybe for UCT to set up satellite libraries in rural communities for people to get access to the internet, which is more critical than what you put out on OpenUCT."*

Key Informant #3 made a remark that *"Researchers might believe they are absolutely supporting human development and social justice [by just creating knowledge], they just maybe haven't made the connection that the copyright contract is a major barrier, if they sign away copyright"*. Researcher #3 observed that educational materials they have created are being shared online by other parties (assumed to be UCT students) without their consent and the researcher is not really concerned about the sharing. Another comment on OERs from Researcher #5 indicated the need for a university logo to show approval by the university as it was felt that placing educational materials on the university's institutional repository needs some sort of quality approval through peer review or another established way for quality verification. Key Informant #2 shared:

> "*I guess I never always see MOOCs as open educational resources even though it is considered as one, just because so much money is spent by a university and definitely*

at UCT so much money was spent on creating the MOOCs, whereas there is need for the university to subscribe to the platform to share the MOOCs with the users."

Challenges related to journal subscriptions and cost to publish were commented on by Key Informants #2 and #3 and Researcher #9 and they felt that the barrier of APCs is exacerbated by charges in foreign currency to publish when publishing in international journals. Researcher #5 had a different view on fees stating: *"I am not against the idea of pay-to-publish for quality control that is being maintained within that context and I appreciate that these resources need to come from somewhere…"* A researcher from the Health Sciences encouraged use of open textbooks at UCT: *"I think that we should be encouraging academics to prescribe open access textbooks for our students and in our department, we are prescribing open textbooks".* Key Informant #3's observation is that Commerce and Engineering Faculties are generally closed and sharing of research publications and educational resources may be scarce in their fields. In discussions with Key Informant #4, one interesting comment was, "*I advocate very much on pushing towards open scholarship for social inclusion and that more people should participate in that."* However, some key informants and PhD students commented on the low attendance rate in OS related workshops and training sessions that are offered by some UCT departments, the research office or UCTL.

A remark from one representative from the Faculty of Commerce indicated that,

"Various presentations in conferences have indicated that quality in open access is achievable and that it requires academic contribution on how we can get to that point and that requires academic brains, academic thinking and academic research and participation to get to that point."

Another key informant was of the opinion that,

"There are academics that publish quite a lot, publishing in open access journals but then it doesn't feed into development or impact on society. In fact, little academic work is involved in policy development to bring change and I say there is need for more to be done in knowledge translation".

Other views that were raised during interviews acknowledged that researchers have the desire to share knowledge with an audience as they understand the purpose of engaging in research is to share with the public. Some participants suggested that peer champions should be part of the marketing strategy to increase OS appreciation as peer motivation works better for academics

and researchers. Another suggestion from Researcher #4 expressed the need for UCTL to team up with faculties' leadership to market OS activities. Key informant #4 also expressed the need for UCTL to identify and define its role in data management and to work with departments already participating in data sharing.

Section summary

This section reported general comments from different study participants and the researcher also managed to capture personal feelings including concerns about sharing data. Suggestions to include OS in academic promotion criteria were viewed as being critical to increase participation in OS by different academics and researchers. Some interviewees agreed that peer education could work better to motivate UCT academics and researchers to engage more in open scholarship.

5.4 Chapter summary

This chapter presented findings of the study from data collected thorough a structured online questionnaire, semi-structured interviews, focus group and individual discussions and document review. Presentation of findings was guided by the six critical questions (CQs) that aimed to address the objective of the study which was to critically analyse the UCT community's participation in open scholarship and, based on this, to develop a strategy to advance open scholarship. The first section of the chapter summarised the response rate (18 %) of the structured questionnaire followed by biographical information of the study participants from both quantitative and qualitative data collected simultaneously as the study adopted a convergent, transformative mixed methods approach. The better part of the chapter reported findings addressing the six critical questions of the study and ended with general comments from different study participants. The first CQ explored the extent to which UCT academics and researchers are participating in OS through findings from all five study instruments (see Appendices A, B, C, D and E). Findings across instruments highlighted low uptake in open scholarship (including open sharing of research publications, research data and educational resources). The second CQ inquired about the practices that academics and researchers are engaging in, and factors motivating participation in OS. Sharing of open research, open data and open educational materials was acknowledged by different study participants. The main motivating factors identified from different discussions included personal desire to share research and influence by social justice imperatives.

The third critical question explored whether academics and researchers regard OS as critical in human development and social justice; the extent to which they are participating in OS as a social good; the publishing behaviour of UCT academics and researchers; activities that academics and researchers are engaging in using emerging ICTs to support social good through knowledge creation and dissemination; and, finally exploring challenges that academics and researchers encounter as they participate in OS. Most participants regarded OS as being critical in human development and social justice and a few participants doubted the connection between OS and social justice. Participation in OS as a social good is acknowledged to be hindered by research governance that excludes OS activities in the criteria related to Ad hominem promotion, NRF rating and funding applications. Some focus group participants (PhD students) noted their engagement in open-source software development, while most faculty representatives and some questionnaire respondents noted peer-reviewing for open journals, and data curation, to mention just a few OS practices. Some of the challenges identified include lack of adequate APCs funding and pressure within the research landscape to publish in closed journals. The fourth CQ investigated elements that were adopted as a strategy to participate in OS at UCT. Findings, across all study instruments, noted utilisation of different publishing platforms including OpenUCT, ZivaHub, Zenodo and DataFirst. Some PhD students benefitted from APCs funding provided by their departments in the Health Sciences Faculty. An exploration of the effectiveness of the adopted elements was the focus of Critical Question Five and findings also showed that utilisation of most publishing platforms or infrastructure like OJS and OMP, is minimal. Some key informants and faculty representatives felt that more could be done to improve awareness of the availability of OS infrastructure and in terms of APCs, funding runs out very early in the year. Critical Question Six looked into components regarded essential to develop a strategy to enhance OS. Diverse elements related to personal, funding, institutional or organisational and infrastructural factors were acknowledged as critical for the development of a strategy to advance OS. Finally, diverse general comments that emerged from study participants were presented and there was a consensus that there is a desire to participate in OS, which in most cases does not translate into action due to challenges including funding and exclusion of OS during promotion, DHET subsidy processing and the NRF rating process. The next chapter discusses the main findings of the study within the context of the theories guiding the study and reviewed literature.

CHAPTER 6
DISCUSSION OF MAIN FINDINGS

6.1 Introduction

This chapter discusses the main findings of the study within the context of the study objective and critical questions while connecting salient information from the study background to the findings of the study as guided by Conn (2017: 607). Findings of this study emerged from analysis of data collected via five research instruments (see Appendices A-E) including an online questionnaire (for UCT academics and researchers), interviews (with key informants and faculty research committee representatives), focus group and individual discussions (with Masters students, PhDs students and post-doctoral fellows) and reviewed documents. In a mixed methods inquiry, researchers interpret research findings in the discussion chapter (Creswell & Creswell, 2018: 225) and in this chapter, the researcher intends to maintain the intended use of the two adopted theories as advised by Conn (2017: 607). Both the main theory (critical theory) adopted to position the study and the secondary theory (capability approach framework) that guided parts of three critical questions are considered valuable in guiding this discussion. This chapter also responds to the second part of the main objective by proposing a strategy to promote open scholarship at UCT while guided by the literature and study findings. The sub-sections of the chapter are structured according to the critical questions of the study.

6.2 CQ1: Extent to which academics and researchers in the UCT community are engaging in open scholarship practices

The literature (Baro & Otiode, 2014: 117; Bezuidenhout et al., 2017b: 468) acknowledges the reaction to the serials crisis by research institutions on the African continent through investment in open access infrastructure. The adoption of infrastructure has increased open access (OA) publishing via open journals that are indexed in DOAJ and via repositories (that is, green OA) on the continent (Nwagwu, 2013: 8). To the contrary, the study revealed very low percentages for the extent of participating in green and immediate (gold and diamond) OA (see Figure 5.3 in Section 5.3.2 of Chapter 5) which suggests alienation (a critical theory aspect) of UCT knowledge behind paywalls. Some interviewees and focus group or individual participants also confirmed that the extent of participation in research sharing via green OA is very low and that gold open access is hindered by APC cost as researchers target high impact factor (HIF) journals that charge unaffordable APCs, which also suggests a capitalist aspect of knowledge

commodification in international HIF journals as these journals are prioritised. Previous studies also confirmed low uptake in green OA as a trend among global research communities (Van Wyk & Mostert, 2014; Nunda & Elia, 2019) and at UCT (Jackson 2017; Raju, Claassen & Moll, 2017).

Participation in open scholarship (open research, OERs and open data sharing) is imperative for UCT as knowledge sharing by such a leading research university on the African continent is viewed as a social justice standpoint (Raju, Classen & Moll, 2017: 37). UCT has also openly declared a commitment to the egalitarian principle to share its resources including scholarship to support African development (University of Cape Town, 2020c). Hence, sharing of scholarship to a lesser extent does not fulfil the democratic principle of transcending the closed traditional systems of knowledge commodification highlighted by Pyati (2007). Some of the key informants highlighted lack of open access policy compliance by UCT academics and researchers as they tend to target HIF journals for career advancement and most of such journals are either closed or have unaffordable APCs.

Low uptake of OA could be an explanation for the observation shared by some of the focus group participants that the bulk of research published by their mentors within UCT departments is closed behind paywalls. The paywalls barrier reflects a contribution towards the serials crisis and supports Björk's (2021: 177) assertion that the serials crisis (that is also financial exclusion) still persists decades after embracing the OA movement. Publishing with commercial publishers also reflects the UCT community's input into the capitalist dominant information industry emphasised by Pyati (2007) as their knowledge is behind paywalls. From a critical theory perspective, the commodification of UCT knowledge revealed in this study (that is closing research behind paywalls) alienates knowledge that is critical for human development from UCT's post-graduate students and other economically marginalised communities intended to be serviced though engaged scholarship shared in the social responsiveness policy (University of Cape Town, 2012: 6). Considering a unanimous agreement from the study participants on the low uptake in OA, evidence from reviewed documents shown in Table 5.11 (see Section 5.3.2 of Chapter 5) of gradual increase of publications on OpenUCT could be a reflection of a service of ETD uploads by UCT Libraries on behalf of the UCT post-graduates noted in Table 5.37 (Section 5.3.5 of Chapter 5) because self-archiving practice is extremely low. The findings on the extent of participation reflect minimised action towards what Veletsianos and Kimmons (2012: 168) described as

democratisation of knowledge which is fulfilled through voluntary open dissemination of knowledge. If such findings are a reality across faculties at UCT, the fulfilment of UCT's commitment to share its scholarship for African development (University of Cape Town, 2020c) as a top-rated research institution on the continent, is not being accomplished.

Pearson's chi^2 tests conducted in the study revealed no significant association between levels of self-categories (early career, mid-career and established researcher) among UCT academics and researchers and their extent of participation in different open scholarship (OS) categories (open access, OERs and open data). Another Pearson's chi^2 test on the extent of participation in OS showed no significant association of participation between OS categories and different faculties. The study could not conclude if the extent of participation is greater in some faculties than in others or if the extent of participation is greater among early-career researchers than among more senior researchers. Lack of significant relationship between the extent of participation in green, gold or diamond, OERs and open data and faculties and self-categories could be suggesting that UCT outputs are being copyrighted elsewhere, and hence the alienation (paywalls) experienced by post-graduate students as revealed in the study.

The findings also revealed that most of the surveyed academics and researchers are not at all participating in OER creation or in open data sharing. However, evidence recorded from the reviewed records in Table 5.11 in Section 5.3.2 of Chapter 5, shows low publication counts of open monographs including textbooks, MOOCs and other OERs (lecture notes or quizzes). The failure to participate in OERs that reflected in the study findings adds to the challenge highlighted in the literature (Oates et al., 2017; Pete, 2019; Luo et al., 2020) of unaffordability of educational materials in higher and basic education in different regions which exacerbates critical theory experiences of social exclusion and injustice for regions like Africa acknowledged by Sguazzin and Wilson (2021) to have many people still living in poverty. The decolonisation of education demanded during the #FMF (#FeesMustFall) and #RMF (#RhodesMustFall) protests in South Africa (Murris, 2016; Shay, 2016) is questionable as the extent of creation of relevant OERs reflected in the study is limited and is indicative of participation by a small percentage of UCT content creators. Open textbooks are agued to promote equity for marginalised students as they remove the cost barrier (Masuku, 2019; Jhangiani, 2019), whereas UCT had only recorded 39 open textbooks, 18 open monographs and 30 MOOCs as evident in the reviewed documents as of 31 May of 2021 when data was collected. As a top-rated African university that is a signatory since 2011 of the Berlin

Declaration to open access, with an established open infrastructure ready to serve other universities on the Continental Platform (University of Cape Town News, 2021) and with established policies (an open access policy since 2014 and RDM policy since2017) as well as grounded in social justice principles reflected in the responsiveness policy of 2012, UCT scholars should be leading in reducing information marginalisation on the continent and supporting equitable access through opening up of current and legacy scholarship for the benefit of South Africa and the continent.

Some key informants revealed that data sharing is at its infancy stage at UCT, which corresponds with literature attributing research data sharing on the continent and in South Africa as being infant (Patterton, Bothma & Van Deventer, 2018; Bezuidenhout et al., 2017b). Alienation (Sayers, 2011: 288) is reflected in the study findings as most of the participants are not at all participating in open data sharing, contributing to what was unveiled by Brandusescu and Nwakanma (2018: 23) as the existence of the most closed datasets in Sub-Saharan Africa. The study also confirmed a trend among researchers of holding on to their data until they feel they have exhausted publishing from them. The study also revealed lack of adoption of the RDM policy as some post-graduate students highlighted that they are instructed by their faculty to exclude the research data management component from the MoU during degree/programme registration. This RDM component requires students to explain, in a data management plan, how they will manage and share primary data, and the exclusion of relevant aspects could be confirmation of lack of a data sharing culture in Sub-Saharan Africa as highlighted by Brandusescu and Nwakanma (2018) and data re-use restrictions noted by Bezuidenhout et al. (2017b: 465).

Summarising the discussion of CQ1 (Critical Question one), the study confirmed a low uptake of both immediate (gold and diamond) and delayed (green) open access. Evidence from the study findings also showed lower numbers of open published OERs (digital textbooks, open monographs and MOOCs) and there was confirmation that data sharing is still at its infancy stage at UCT. Efforts to participate in OS have been noted in this section, however, there were indications of some UCT academics and researchers not at all engaging in the different open scholarship. The section that follows discuses open scholarship practices that UCT academics and researchers are engaging in.

6.3 CQ2: Open scholarship practices that UCT academics and researchers are engaging in

Abdeljaoued (2018: 353) argues that being productive and having a conducive research environment creates the foundation of engagement in various aspects of open scholarship (OS). This section discusses study findings relating to open scholarship practices that UCT academics and researchers are engaging in and factors motivating academics and researchers' participation in OS. Sub-sections that follow are guided by aspects that speak to the critical question on OS practices that UCT academics and researchers are engaging in.

i. Open scholarship practices that UCT academics and researchers are engaging in

The study revealed that surveyed UCT academics and researchers are participating in open scholarship practices such as data sharing; open access publishing; creation and sharing of open educational resources as presented in Figure 5.4 (see Section 5.3.3.1 of Chapter 5). A reflection on the findings reveals that the OS practices are more aligned to delayed/green OA (80%) and immediate (gold and diamond) OA (79%) practices. Nwagwu (2013: 6) noted a significant increase in both green and immediate open access in Africa in a 2013 study. The findings in Figure 5.4 referred to above show no significant difference between participation in delayed (green) and participation in immediate (gold and diamond) OA practices, whereas the green OA is considered more prominent in sharing knowledge in Africa as repositories are widely integrated as part of the information services in many universities (Van Wyk & Mostert, 2014: 99) and gold open access publishing is a challenge due to hyperinflated APCs (Khoo, 2019: 3). The slight difference in percentages of participating in green and gold or diamond OA practices could suggest the possibility of surveyed academics and researchers having at least participated either in gold or diamond OA in some way if not extensively.

'Other' open practices revealed by the study include sharing of information by academics and researcher via blogs, pre-prints (pre-refereed papers) in pre-print repositories (like SSRN and ArXiv), and open access sharing of films as well as specialised websites sharing subject specific content. The study also revealed engagements with the software development host (GitHub) to share different scholarship. Academic social media networks such as Twitter, Facebook, YouTube, LinkedIn, ResearchGate and Academia.edu have become preferred and convenient information dissemination platforms to share knowledge since the beginning of the COVID-19 pandemic when there were social distancing requirements. Manca (2017: 26) also confirmed a norm among researchers of sharing knowledge on academic social network sites

(ASNS) like ResearchGate, Acadedmia.edu to support access to full text copies and other formats. The challenge noted with use of ASNS is the fear of infringing copyright as most copyrighted materials are restricted from sharing full text on such sites (Manca, 2017: 26). Raza (2020: 165) agrees on the influence that the COVID-19 pandemic has had in sharing pre-prints on diverse pre-print servers to circulate relevant health information in a more efficient and transparent way. The expectation for transparency, efficient and remote access to COVID-19 related information, reflects how crucial open access is, in the transformation of human lives, particularly health issues, and hence the need for a strategy to disseminate knowledge timeously.

The study findings revealed individual efforts and commitment by some UCT academics who are creating open textbooks in niche and other areas, including health sciences textbooks (Otolaryngology, HIV, etc.). A number of these open monographs are recorded as UCT open scholarly outputs in the reviewed documents (see Table 5.11 in Chapter 5). Some OER initiatives, for example, "AVU Teacher Education OER, TESSA OER" (Zhang et al., 2019: 2) and "ROAR4D" initiatives (Hodgkinson-Williams, 2018) have been noted for promoting the development and use of OERs including open textbooks in Africa. The study also confirmed that a department from the CHED Faculty at UCT, named CILT, is the lead at UCT and outside the university in supporting open textbook and other OER projects, and is part of the ROAR4D and DOT4D initiatives that are noted by Tlili et al. (2022: 15) to have promoted the creation and use of OERs, educator training on OER production and adoption across the African continent. The study also revealed the availability of OER grants to support and awards to honour the effort of, particularly, open textbook creators at UCT. An international study (Zhang et al., 2019: 19) that drew data from both global north and global south countries showed little evidence of participation in OER practices to support equity, diversity and support accessibility of OERs by learners with disabilities. This shows lack of inclusivity of students living with disabilities, which calls for the consideration of diverse needs of the learning community and for an increase in OER creation at UCT too as limited OERs were recorded in his study.

A study conducted in Germany showed lack of commitment to share OERs and noted the willingness among academics to transform from closed to open practices in education (Otto, 2021: 354). The current study revealed lower percentages of participation in different OER creation and sharing from surveyed UCT academics and researchers (see Figure 5.4 in Chapter 5), which might be an indication of lack of prioritising OER creation. The creation and use of

open courses or MOOCs through video lectures and reading materials are increasing (Tuomi, 2013: 58; White et al., 2021: 235) and the education department in USA was noted for engaging in an open textbook pilot programme for higher education schools with high enrolment, to create and provide new open textbooks (U.S. Department of Education, 2020). The current study revealed the involvement of UCT students in the creation of open textbooks that have been officially published by UCT Libraries using open monograph press (OMP) on the Continental Platform (University of Cape Town News, 2021). The adoption of open-source software like OJS, has also led to provision of infrastructure for other African academic institutions, thus fulfilling critical theory aspects of human empowerment (provision of readily available infrastructure for those in need) and social justice (supporting equitable access), which support open access publishing to benefit the information marginalised. Pete (2019: 116) conducted a cross-country study in Kenya, South Africa and Ghana which also revealed the creation of OERs and MOOCs in different formats by lecturers and students across the three countries mostly in the urban areas. However, some of the post-graduate students from this current study admitted having never assumed teaching roles, which is the reason why they have never engaged in OER practices. There is need to acknowledge that the study has revealed efforts in OER participation, however the number of outputs recorded (open monographs, open textbooks and MOOCs) in Table 5.11 in Section 5.3.2 is very small, considering the democratic role that UCT has committed to on the continent as a research-intensive university.

Some studies have acknowledged participation in research data sharing in different countries, for instance, participation in Spain across research fields (Aleixandre-Benavent et al., 2020: 10) and in Turkey, health and agricultural science researchers are participating in a publicly funded project sharing research data in a common repository established by the Scientific and Technological Research Council of Turkey (Dogan, Taskin & Aydinoglu, 2021: 58). The current study revealed that 41% of the surveyed academics and researchers are engaging in data sharing at UCT and study participants were from all UCT faculties. However, the quantitative sample of this study cannot be described as representative. Other study participants confirmed that some of the UCT community members are engaging in research data sharing on UCT's data repository, ZivaHub, and some academics and researchers have been previously sharing data on Zenodo and DataFirst repositories. This suggests the existence of a commitment and desire to share data among some UCT researchers. However, as mentioned earlier, most study participants acknowledged that research data sharing at UCT is still at its infancy and some studies in other countries highlighted the same view being caused by lack of

funding (Patterton, Bothma & Van Deventer, 2018; Bezuidenhout et al., 2017b) and lack of a data sharing culture. This study revealed lack of student encouragement to share data and fears of dealing with ethical issues related to research data. Patterton, Bothma and Van Deventer (2018: 18) note a lack of awareness on institutional RDM policy, research data ethics requirements, and lack of good practice to create data management plans among some early-career researchers at a research institute in South Africa. Abebe et al. (2021: 334) highlight fears among researchers to share data for different reasons, including lack of trust. Lack of policies to support data culture (Abdeljaoued, 2018: 356) and fears of losing control over data ownership once data is open licensed, are some of the causes hindering data sharing (Clobridge & Hinsdale, 2018: 66). The alienation or inaccessibility of research data leads to the lack of support of data re-use as a philanthropic good (Rappert & Bezuidenhout, 2016: 209) thus compromising data's potential to address humanitarian crises (Verhulst & Young, 2017) for the achievement of critical theory goals of social justice.

ii. Motivating factors viewed by the study participants to have influenced UCT academics and researchers' participation in open scholarship practices

Various studies have positioned open scholarship as having a social justice underpinning, a radical move to transform scientific publishing processes (Pimm, 2014: 1), as an egalitarian lens to bring change (Rappert & Bezuidenhout, 2016: 209), and as a philanthropic good (Rappert & Bezuidenhout, 2016: 207) intended to bring equity. From a critical theory perspective, most of the motivating factors identified in this study are rooted in social justice imperatives to share knowledge as a means to support development on the African continent. The study also revealed personal desire as a motivating factor to support affordable, equitable access to knowledge for marginalised South Africans and other African communities. Pimm (2014: 1) views open access as being intended to transform the commercial publishing landscape to make funded research freely accessible. The study also revealed that participation in OS is driven by the understanding of knowledge as a basic human right and a basic requirement to support social justice.

Masuku (2019) and Raju (2019) note exclusion of marginalised South African students due to the high cost of education and prescribed textbooks. This study also revealed that one of the main factors influencing surveyed academics and researchers' participation in OS is the need to eradicate the marginalisation of students facing a challenge in accessing educational materials and research published in journals, books and in other closed media that impose

copyright restrictions and access fees. Within OS, the open education movement emerged due to the challenges in accessing mostly textbooks (Raju, 2019). Similarly, some study participants are motivated by the scarcity of resources and lack of freely accessible open textbooks to support education and career development on the African continent. In this study, the effort to respond to the call to bridge the knowledge divide for those who cannot afford educational materials is evident, however, the current challenge is that there is very low participation in OER creation and sharing, particularly on OpenUCT (UCT's designated institutional repository). This does not provide enough OERs to support the decolonisation of the curriculum or support scarce skills as digital open textbooks produced may not cover all subjects being taught in every field.

Participation in OS was also noted to be motivated by the need for data sharing to build research on. Tenopir et al. (2011: 1) highlight that science has become data intensive which has increased the call for research data management (RDM) and sharing to create more research, verify research findings and inform policy.

The study also confirmed the desire to share among creators of knowledge, as a motivating factor, which is supported in some cases by the availability of APC funding and OER grants, although the funding at UCT is not sustainable. Iyandemye and Thomas (2019: 7) highlight how funder policies may increase participation in open access publishing due to mandates imposed on grantees, while some participants noted funder mandates as pushing them to go the open access route. The National Research Foundation (NRF) (South Africa) and National Institutes of Health (NIH) (USA) have been noted for open access mandates that are pushing the open access agenda for some participants of this study. Research students noted efforts by University of Cape Town Libraries (UCTL) to share ETDs on OpenUCT on their behalf as those funded by NRF are required to have their thesis outputs accessible on the institutional repository.

The study revealed the dynamics of academic supervisors as some research supervisors prescribe to their supervisees to publish in HIF journals, while some motivate supervisees and peers to publish open access. However, a study conducted in Tunisia highlighted a general norm of prioritising HIF, prestigious and closed journals in the research landscape (Abdeljaoued, 2018: 353). Some research students noted personal benefits related to career growth as factors influencing sharing, for example, the desire to increase citations and having publications visible and accessible (McKiernan, 2017: 25) in the field. The study also revealed

that PhD and Masters students expressed the need to open up research to increase the potential for their publications to interact with information users and increase chances of being read and cited. The arrival of the global pandemic (COVID-19) has also been noted for influencing increased knowledge sharing to support online education as supported by Raza (2020: 165). However, the desire to attain social justice goals seem to be overshadowed with challenges encountered while participating in OS (see Section 5.3.4.5 of Chapter 5), particularly unaffordability of APCs.

In summary for the discussion of CQ2, high percentages of participating in both delayed and immediate open access have been noted on different platforms including the University's diamond Continental Platform established also for African universities. The section also discussed the leadership role by UCT departments in taking on digital open textbook projects benefiting the global south, which requires UCT academics to also lead in sharing of open textbooks. The section also discussed the existence of motivation to participate in open scholarship that is mainly grounded in social justice imperatives. A component of critical theory, the desire to eradicate marginalisation of students in accessing prescribed textbooks to support development of niche areas, was also covered. The section also noted influence that comes from research supervisors and mentors in academic departments and how this influences students' prioritisation of closed international HIF journals. Open sharing or knowledge has also been acknowledged to have increased due to the need to continue education during the COVID-19 lockdown. The section that follows discusses the main findings relating to CQ3.

6.4 CQ3: Extent to which UCT academics and researchers are contributing to the openness movement as a social good

Some studies acknowledge a deliberate effort by universities to invest in infrastructure to support the democratisation of knowledge (Veletsianos & Kimmons, 2012: 168). Increased commercialisation of knowledge is acknowledged in the scholarly communication industry (Pyati, 2007; Khoo, 2019) while research is viewed as a "public good" (Raju, Claassen & Moll, 2017: 34). Therefore, publishing in subscription journals can be equated to supporting capitalism as published scholarship becomes a "commodity to generate income" (Pyati, 2007: n.p.) for the elite commercial publishers. This section is divided into four sub-sections focusing on different aspects of the critical question relating to contributing to the openness movement as social good.

i. UCT academics and researchers' position on open scholarship as critical in supporting human development and social justice

Scientific research is considered to have egalitarian, philanthropic (Rappert & Bezuidenhout, 2016: 209; Raju & Pietersen, 2017) and transformative (Chiarelli et al., 2019: 5) roles, and is known for its contribution to economic competitiveness and social development (Sutz, 2005: 54) while facilitating innovations to support economic growth (Ruano-Borbalan, 2017: 3) and human development (Cloete & Maassen, 2015: 108). This study revealed a unanimous agreement among most of the surveyed academics and researchers as well as from interview and focus group or individual participants that open access to research is critical in supporting human development and social justice. Some participants pointed to the evidence that knowledge sharing supported the establishment of vaccines that lessened the burden of the recent COVID-19 pandemic that began in South Africa in 2020. The study also revealed participants' perceptions of access to knowledge as a basic need and a human right.

Within the South African context, social justice includes the freedom to participate in all political, socio-economic and cultural spheres of society (Raju, Claassen & Moll, 2017: 38) and OERs provide learning opportunities for the less privileged as they eliminate cost and legal barriers to education (Opensource.com, 2019). The study also acknowledged that sharing of different OERs (including open textbooks, MOOCs, lecture notes, etc.) is critical in supporting human development and social justice as some PhD students in the study acknowledged having benefitted immensely from MOOCs developed by certain UCT departments during lockdown when students had no access to the physical library. Reviewed documents acknowledged the potential of OERs through the DOT4D project set, to address the demands for high-quality and affordable education in the global south. UCT Libraries' publishing programme is said to be grounded in social justice imperatives, focusing mainly on inclusivity, and hence the opening up of their diamond publishing platform (Continental Platform) to other African universities to achieve equitable access to an open publishing infrastructure. However, it is critical to note that some study participants remained neutral on open scholarship being critical in supporting human development and social justice. Some study participants queried the connection between access to knowledge and social justice, and this could suggest reasons why some academics and researchers are not committed to participating in OS as some content creators do not have a clear picture of the impact that openly accessible knowledge has on different projects that can support human development and social justice. The study also revealed that at faculty level, there is no discussion to link openness of scholarship to social responsiveness,

which defeats the commitment to share scholarship as UCT researchers will not see the need to refrain from publishing in proprietary journals that restrict research sharing.

Accessibility of data has been acknowledged for its potential to support egalitarian principles (Bezuidenhout et al., 2017a: 39). The study revealed that the majority of participants agreed that data are critical in supporting human development and social justice. Some open data-driven projects have provided evidence of open data supporting human development and social justice, for example, Colombia's open climate data supporting rice production, which eradicates hunger and improves food security, while data-driven projects in Uganda have been acknowledged for improving health care (Verhulst & Young, 2017: 45, 50, 52). While the findings of the study show unanimous agreement among the majority of the surveyed academics and researchers, interviewees and focus group or individual participants that open data are critical in supporting human development and social justice, there is a need to acknowledge that some, albeit smaller percentages of study participants, maintained a neutral position and 7% of the UCT surveyed academics and researchers disagreed with the notion that open data sharing supports human development and social justice (see Figure 5.5 in Chapter 5). This could suggest resistance to data sharing due to lack of understanding of its impact on the society. The study also confirmed that some faculties instruct PhD and Masters students to ignore aspects of data management and sharing which could also demonstrate lack of consideration of data as being critical in supporting human development and social justice. This might be a reflection of a closed data culture in some faculties which exacerbates the already existing closure of datasets noted by Brandusescu and Nwakanma (2018) in Sub-Saharan Africa.

ii. The extent to which UCT academics and researchers are participating in the openness movement as a social good

The study revealed small percentages, among participants, of the extent to which UCT surveyed academics and researchers are participating in the openness movement as a social good, as shown in Figure 5.6 (see Section 5.3.4.2 of Chapter 5). Larger percentages under OERs and open data reflect totals of those not at all participating in OS as a social good; and lack of deliberate effort to become open scholars at UCT was also highlighted by some participants in this study. The study revealed through interviews that some academics and researchers in the Faculty of Commerce do not understand why they should share scholarship openly and that they are not aware of the existence of the University's OA policy. Open access

publishing of research is also viewed as low-quality while OA journals are regarded fake by some study participants. The study also made evident the desire to participate in OS as a social good, which is not fulfilled due to lack of adequate APC funding as UCT is estimated to be currently funding APCs of between 70 and 80 articles per year.

The study also revealed that some academics and researchers write books for commercial publishers to get royalties, which supports the commodification of knowledge expressed by Pyati (2007) and leads to the critical theory experience of exclusion of low-income communities due to both cost and copyright barriers once an author publishes through a commercial medium. This creates a challenge for academics and researchers to share or re-use their published content in supporting OER production as re-use rights for derivatives become reserved, thus alienating knowledge in terms of re-use. Das (2015: 11) emphasises the need for usage rights of content/work to permit re-use, revision, remix and redistribution to support creation of new research products. The study also revealed deliberate efforts from some academics and researchers from Faculty of Science in making open as default, for most of the content they have rights to share, in order to improve human lives. There was evidence in this study that some of the early-career researchers from the Faculty of Science prioritise closed high impact factor (HIF) journals as they are expected to publish in top tier journals. This suggests different preferences or views of senior researchers and mentors on OA as a social good as some support openness and others discourage open publishing. The study revealed lack of access to research to support development or feeding into policy development due to paywalls. Findings from a study conducted in Malawi by Mapulanga (2018) has also confirmed lack of interaction between health research and policy makers in Malawi; therefore, lack of access to knowledge revealed in this current study exacerbates lack of knowledge transfer during policy development. A deliberate effort is made to share publications from closed journals by some post-doctoral fellows who do not appreciate their work being behind paywalls, which might be a reflection of lack of understanding of copyright implications among UCT emerging researchers. A deliberate effort to share publications to support social good was also acknowledged by participants from a department in the Law Faculty and the study also revealed an open culture from a Humanities PhD student who constantly shared working papers on OpenUCT prior to publishing in closed journals and also utilised DataFirst to share data. The study revealed efforts at publishing OA textbooks authored and published by academics, researchers and students from UCT on the Continental Platform managed by UCTL.

A deliberate effort from some OER specialists at UCT to share data and pre-prints to support the creation of open licensed materials has been acknowledged in this study, and the open licensed OERs are shared on OpenUCT, Vula (UCT's learning management platform at the time of conducting the study) and other websites. CILT has been acknowledged for its strength in supporting OER creations and advocacy work that is intended towards social justice at UCT. As mentioned earlier, the textbooks creation in niche areas in the Health Sciences is motivated by the need to support development of specialised professions on the African continent. The study also revealed the desire from some researchers to have UCT teaching staff prescribe only open access textbooks, which can also accelerate the democratisation of the curriculum for human emancipation in the post-apartheid (South Africa) and post-colonial (Africa) era. Some monographs published on the UCTL open platform are noted to be in vernacular languages and simplified English language which support students excluded by challenges related to use of English as a medium of communication.

Data have been identified as a public good as well as a philanthropic good (Rappert & Bezuidenhout, 2016: 209), and therefore, there is an expectation to properly manage and make data freely accessible to a wide audience to support innovation to enhance human lives. The study showed deliberate efforts to share data as a social good are being made by very few individuals at UCT, but also evident is that some study participants have hesitation to share data collected from some specific research. Some research students acknowledged the value of sharing research data and have committed to share their datasets after graduation, while others are not being encouraged to follow the university's RDM policy. Post-doctoral fellows and post-graduate students who participated in the study have not done much sharing as they are still at the beginning stages of research production.

iii. The publishing behaviour or culture of UCT academics and researchers

The study showed some pattern dynamics reflecting both open access and closed publishing patterns in response to questions about the publishing behavior (culture) of the surveyed academics and researchers, as reflecting in Figure 5.8 (see Section 5.3.4.4 of Chapter 5). There was a relatively large percentage of academics and researchers (35%) publishing in open access journals compared to (15 %) of those prioritising publishing in closed subscription journals. The open publishing behaviour highlighted in the study has been attributed to funder mandates like that of NIH and NRF, since funded grantees are required to publish gold and green open access. The study also revealed the existence of diamond open access publishing provided by

UCTL and other publishers as an alternative solution to closed commerical publishing. An intense campaign against monetising of research outputs and pay-to-publish services has been noted among some research fields at UCT, which indicates awareness of the effects of closing knowledge in subscription journals.

Most interviewees noted that a closed culture is entrenched in different UCT research fields as many researchers prefer publishing in closed, high impact factor (HIF) journals. The study also revealed that a closed publishing culture is due to the lack of inclusion of OS activities in the university's promotion criteria, lack of funding and lack awareness of the significance of OS. One academic participant views UCT's open access policy as a lip service or cosmetic stratagem for public relations purposes for the reason that open access is not higly promoted at UCT and that education is not accessible due to high tuition fees. The study also acknowledged competition to publish in top tier, HIF journals being driven by ego and the desire for recognition. Including OS in promotion and researcher ratings was viewed as an incentive to motivate researchers and redirect the focus of those that prioritise metrics like HIF of, particularly, commercial international journals to consider the democratisation of knowledge through publishing in open journals. Most focus group participants observed that their disciplines are generally closed based on searches conducted online to access publications, which confirms that most of the required resources were behind paywalls. Content behind paywalls suggests some negative critical theory related experiences that include alienation or exclusion, labour exploitation and increased support of the capitalist element of commodification of intellectual property that generates income for commercial publishers while further marginalising vulnerable communities living in poverty. Some studies also affirmed that research performance and research impact assessment coerce researchers to publish in HIF international subsciption based prestigious journals (Ingwersen 2014; Abdeljaoued, 2018). Other participants in this study were compelled to publish in these so-called high ipmact factor (HIF) journals by the university's promotion sysem as impact factor of journals is considered a valuable metric, while most of HIF journals may be either closed or exclude authors through charging unafordable APCs. A study conducted in 2017 also highlighted that researchers conform to the culture of prioritising HIF journals (Matushek, 2017: 258) and do not hesitate to conform to the signing away of copyright and thus granting exclusive distribution rights of their scholarship to commercial publishers. The behaviour of conforming to signing away copyright is similar to alienation in critical theory explained by Crossley (2005: 3) as separation of a product from the society as knowledge gets restricted

behind paywalls. The study revealed that before aquiring full professoriate, UCT academics are compelled to publish in closed HIF recognised prestigious internationals journals to score more points for promotion.

Closed journals are still preferred by researchers as they are regarded high quality journals (Bosch, Albee & Romaine, 2019). Most PhD students who participated in the study expressed great interest to shun the closed publishing culture as they start their research careers. The study also showed that at UCT some individuals have started sharing publications on OpenUCT, data on DataFirst and others are supporting open information dissemination in not-for-profit organisations. This was supported by Nwagwu (2013: 8) who also noted that repositories have been widely adopted to support green open access on the African continent. The study revealed a contribution from PhD students who are advocating for OER creation and collaborating in creating digital open textbooks at UCT. In a study conducted in Kenya, South Africa and Ghana in 2019, Pete (2019: 115, 116) also highlights the creation of OERs by lecturers and students across the three countries.

There appears, in this study, to be both satisfaction to share scholalrship on academic social media with no hesitation to infringe copyright and to publish in closed journals indexed in commercial databases. Some studies showed that global north researchers in otoralyngology, for example, are publishing in both open access and subscription journals (Crossley et al., 2022 : 1). Some study participants acknowledged that the Health Sciences Faculty at UCT is more aligned to open access publishing while science, commerce and engineering disciplines are viewed as more on the closed side. It also emerged that chemistry scientists tend to trust traditional top tier subscription journals more that open journals. However, the dynamics of publishing patterns revealed in the study could not provide a conlusive indication as to whether the UCT community is more inclined to closed or open publishing.

iv. Activities UCT academics and researchers are engaging in using emerging ICT infrastructure to support open publishing and open knowledge sharing

This sub-section discusses main findings relating to activities that UCT academics and researchers within faculties are engaging in, using emerging information and communication technologies (ICTs) to improve dissemination of scientific research, creation and dissemination of OERs and managing and sharing of research data. The study reavealed that reviewing of research papers in OA journals and mentoring of peers and early-career researchers on research writing are the main activities (see Figure 5.8 in Section 5.3.4.4 of Chapter 5) that UCT

academics and researchers are engaging in using emerging ICTs. The literature (Steinmacher et al., 2021: 1; eLife, 2021; Oronje et al., 2022: 2) highlights the need to mentor early-career researchers for the sustainability of open research projects. The study also highlighted that some participants were collaborating in the sharing of content through the diamond open access service being offered by UCTL. Wolhuter (2019: 144) also highlighted collaboration as a factor in increasing research productivity. Some academics and researchers are managing journals as Editors-in-chief for different open access journals. Management of open access journals at institutional level has also been noted as a new way of participating in open access (Nwagwu, 2013: 8).

The study higlighted mentoring of fellow researchers (peer-to-peer mentorship) on research data management services at UCT. A study conducted in South Africa has noted RDM services that have been integrated into institutional research services and that librarians support such services (Chiware & Mathe, 2015: 2). Some studies (Buabeng-Andoh, 2012; Bezuidenhout et al., 2017b; Chou et al., 2019) have highlighted that creation and sharing of OERs depend on the availability of ICTs. This study revealed the avaibility of different applications and software that are being used for sharing OERs (including MOOCs) and monographs by the UCT community. The study also confirmed that sharing online has increased due the COVID-19 pandemic. The diverse activities revealed in the study are an indication of UCT's investment in ICT infrastructure and in other relevant resources. However, the study also revealed lack of awareness of the availability of some resources by some academics and researchers, thus reflecting lack of equitable access to resources, which is one of the social justice objectives that relates to critical theory.

v. Challenges encountered by UCT academics and researchers during participation in open scholarship

This study does not seem to acknowledge use of English in communicating science as a barrier, whereas a study conducted in Tunisia highlighted use of English language in communicating science as a barrier, as English is not a first language for most authors in Tunisia and in Africa generally (Abdeljaoued, 2018: 349). The study revealed that high volume in workload is hindering research production. Similarly, the literature does acknowledge that academics (lecturers or teaching staff) are known for carrying heavy teaching loads that impact on research production (Bezuidenhout et al., 2017a; Abdeljaoued, 2018; Wolhuter, 2019).

Absence of diamond open access journals in some research fields was revealed in the findings of this study as a hinderance to participation in immediate OA as gold and hybrid OA models have cost barriers that exclude authors. The literature noted library publishing services to have recently emerged on the African continent (Raju & Pietersen, 2017), which could explain the absence of diamond OA journals in some fields. Funding is noted as a major challenge for most academic institutions in low-income communities due to budget cuts in a context of libraries already cancelling journals (EBSCO, 2021: 1, 4) and cannot afford exorbitant APC fees which results in authors being excluded (Khoo, 2019; Jahn, Matthias & Laakso, 2022) in OA publishing. The study confirmed the availability of open access funding at UCT, with one set of funding supporting 50% fees to subsidise APC cost when UCT authors are publishing with BioMed Central publisher, and another set of funding that reimburses authors (up to ZAR 20 000) after publishing open access. Both funding pools reflect some injustice as authors who do not have research funding to complete the remaining percentage of the fees or to pay upfront, are excluded and cannot support the democratisation of knowledge through gold OA publishing. This supports Beasley's (2016: 163) observation that intended social justice goals are not being addressed by open access due to unaffordable APCs demanded in the business models of gold open access. The study reflects experiences of author exclusion at UCT as the APC funding runs out quickly and does not sustain all applicants. Lack of funding in Africa to engage in research and to meet APC demands were also noted in some studies (Abdeljaoued, 2018; Khoo, 2019). Some participants highlighted the challenge of South African authors not qualifying to get APC waivers during publishing as the country is not classified among low-income countries. Some authors are struggling to accept open access publishing due to circulating myths that OA journals are all lower quality, thus strengthening closed publishing and commercialisation of content.

Ad hominem promotion criteria at UCT and the South African Research Chairs Initiative (SARChI) appointments by the NRF do not include participation in OS as an incentive to motivate participation, which indirectly promotes closed publishing as HIF journals are prioritised (McKiernan, et al., 2019: 5). An issue noted earlier is that the HIF journals that are regarded as prestigious are mostly global north international journals (Abdeljaoued, 2018: 347) that have unaffordable APCs charged in fluctuating foreign currency. Research students in this study noted the challenge of supervisors prescribing to them that they should publish in HIF closed journals. The challenge with prioritising HIF or prestigious journals is that it contributes

to the closing away of research as the journals are mostly owned by commercial publishers and are designed for income generation and profit making (Bosch, Albee & Romaine, 2019).

Universities in the low-income communities are noted for poor provision of ICTs including financial resources to provide for other needs that support open scholarship (Bezuidenhout et al., 2017b; Abdeljaoued, 2018; Chou et al., 2019; Kaewkungwal et al., 2020). In this study, some participants acknowledged the availability of funding and infrastructure (OpenUCT, ZivaHub, the Continental Platform and other platforms). However, the study also discloses lack of awareness of these resources by some of UCT academics and researchers. Clobridge and Hinsdale (2018: 66) noted a challenge of lack of knowledge on technical requirements, standards related to data quality, formats and interoperability. The study showed the availability of workshops offered by UCTL to support use of OpenUCT and ZivaHub as well as the online data management plan (DMP) tool. The study also highlighted support from CILT through copyright and open licensing workshops and advocacy work. From a critical theory perspective, it is important to note that UCT's democratic role (aligned to empowerment objectives of critical theory) of committing to sharing knowledge on the African continent will not be realised if the challenges identified persist. Therefore, there is need to minimise or eradicate the challenges.

In summary, the discussion of findings relating to the third critical question highlighted a unanimous agreement from the study findings across all adopted instruments that open scholarship is critical in supporting human development and social justice with an example noted of establishment of the university's Continental Platform grounded in social justice imperatives. Evidence cited from the findings also pointed to the rapid establishment of COVID-19 vaccines to save lives due to knowledge sharing, however, some participants were neutral, and a few disagreed with the view that OS is critical in supporting social justice. The study revealed that there is minimal participation in OS as a social good as UCT promotion and NRF researcher rating criteria exclude OS practices. The section also highlighted lack of opportunities within faculties to discuss and link OS to the social responsiveness policy that is supported by knowledge sharing. Nevertheless, the findings revealed efforts being made by UCT researchers through the adoption of emerging ICTs to support open scholarship. The section also discussed challenges related to inadequate funding to support APCs, prioritisation of international HIF journals and challenges related to the fulfilment of UCT's RDM policy in some faculties. Other issues discussed include lack of access to UCT scholarship due to

paywalls and prescriptions to supervisees and mentees to publish in closed top tier HIF journals. The section that follows discusses main findings related to CQ4.

6.5 CQ4: Strategies being adopted in support of UCT's open scholarship agenda

This section discusses main findings relating to strategies adopted to participate in open scholarship at UCT. The discussion is guided by both critical theory and the capability approach (CA) framework (detailed in Section 2.5 of Chapter 2) that proposes factors that makes it possible to participate equitably in any planned activities or projects. The proposed factors drawn from the CA framework to guide this section include "personal, funding, organisational (also institutional or environmental) and infrastructural factors" (Bezuidenhout et al., 2017b: 465) and are also reflected in Table 5.36 (see Section 5.3.5 of Chapter 5). Studies have noted the need to develop skills to support open scholarship (Abdeljaoued, 2018: 353; Bezuidenhout, 2017a: 45). This study revealed that most of the participants made personal efforts to develop technical skills and had self-oriented themselves to copyright and open license issues. Clobridge and Hinsdale (2018: 66) point to the need to have technical skills required for research and data management and dissemination processes.

Funding is acknowledged to be the major factor in research production and sharing as it can facilitate acquiring of infrastructure (Chou et al., 2019: 68) and other required resources that can support the creation of knowledge and its equitable dissemination. Kaewkungwal et al. (2020: 534) acknowledge that funding is a scarce resource in Africa. This study revealed the availability of resources like infrastructure (repositories, open journal and open monograph platforms) and funding, but the funding was inadequate to cover APCs, and academics and researchers used the available funding within the expected terms of reimbursement of a total amount of ZAR 20 000. The study also revealed the availability of information resources (library collections) and internet provision at UCT to support research production. The study also showed that UCT academics and researchers were oriented on RDM and open access policies during workshops for self-archiving skills development to capacitate participation in open access through depositing of publications on OpenUCT and datasets on ZivaHub. Policy is viewed as a crucial element in supporting open scholarship and there is need to provide an institutional policy to provide guidance (Arning, 2022). Resources revealed in the study showcase that at UCT some of the strategy elements that can support open scholarship are available; however, the effectiveness of these elements determine the success of the democratisation of knowledge through open dissemination.

This section discussed main findings related to strategies adopted by UCT academics and researchers, which reflected that at UCT some of the strategies needed to support open scholarship are available. The strategies were adopted by academics and researchers who were aware of their availability and by those who had committed to participate in OS. This section also discussed use of APCs funding and use of library collections off campus to support research creation. The next section discusses the extent of effectiveness of the strategy elements identified in this section.

6.6 CQ5: The extent of effectiveness of strategies adopted in supporting the social responsiveness agenda of UCT in sharing its outputs

The purpose of adopting different strategies including personal, organisational, funding and infrastructural (as proposed by the CA framework) is to facilitate the democratisation of the scholarly communication process by removing cost and copyright barriers and, as highlighted by Suber (2019), to be able to freely distribute or disseminate knowledge to share beyond UCT. The norm with subscription collections is that they are restricted to the community affiliated to the university, as highlighted by Schonfeld (2015), and hence the need for UCT authors to find means to engage in open scholarship to allow UCT knowledge to be shared with non-academic constituencies identified in ICT's social responsiveness policy.

This study revealed that access to library databases to use information off campus was rated 'Extremely effective' and 'Very effective' by most of those who responded to the questionnaire. Among the hurdles relating to OS, low internet penetration and low percentages of internet users in LMICs were noted (Bezuidenhout et al., 2017b: 465). On the contrary, the study showed that 'provision of internet connectivity to support online research collaboration' was rated as 'Very effective' by most of the surveyed academics and researchers. There were different elements that showed effectiveness that ranged from 'Fairly effective' to 'Extremely effective'.

Many of the elements that were being rated did not apply to some of the questionnaire respondents, and hence a high selection of 'Not applicable' which could be due to lack of knowledge on technical requirements to participate in OS as highlighted by Clobridge and Hinsdale (2018: 68). Some of the elements in Table 5.38 in Section 5.3.6 of Chapter 5 were also rated 'Not effective and 'Least effective' and hence these may not be contributing much to the democratisation of scholarship. Access to UCT's data visualisation equipment seemed

applicable to a small number of the surveyed respondents which could be reflecting lack of skills to use OS infrastructure noted in literature (Corti et al., 2014; Hodson, et al., 2018). Workshops that librarians and data curators offered to develop data literacy skills including open licensing data, depositing data on ZivaHub, data citation, FAIR data principles and other technical issues, were rated differently by surveyed academics and researchers. The need to orient researchers on standards and principles relating to OS as well as other technical skills has been noted by Hodson et al. (2018: 13). A low attendance rate in OS related workshops and training sessions was noted by some participants. This was the same case with workshops that were offered by librarians on self-archiving and copyright education to support 'green open access' (self-archiving on OpenUCT). The high selection of some strategy elements as 'Not applicable' could be reflecting lack of knowledge among UCT community members on how to use some of the available resources and hence them never attempting to investigate about the availability and use of such resources as strategy elements during participation in OS. Lower workshop attendance rates (relating to RDM and self-archiving processes) could be a reflection of lack of awareness about departments offering such workshops and lack of awareness of the relevance of these workshops to academics and researchers' work in the research cycle or in teaching, as the norm according to Sadiq et al. (2019: 438), is to publish in closed HIF journals.

During interview and focus group or individual discussions, participants also presented contrasting views on the effectiveness of adopted strategy elements, for instance, APCs worked well for some departments and for others the APC support was regarded as posing a critical theory aspect of exclusion as authors cannot access the funding as it works on a reimbursement basis. Rispel, Molomo and Dumela (2008: 19) highlighted that social exclusion is caused by power imbalances, which can be a similar experience with researchers at UCT with no capacity to pay for APCs upfront and also due to the reimbursement criterion followed at UCT. Looking at OpenUCT and ZivaHub repositories, these were very useful for some individuals and others found them to be very technical and cumbersome to use. Infrastructure seems to be adequate considering that UCT is a global south academic institution that is among African research communities acknowledged by Bezuidenhout et al. (2017b: 468-469) to lack infrastructure. Internet connectivity and sharing platforms (repositories, OJS and OMP) were confirmed to be working well and have thus far allowed for publishing and knowledge sharing. Participants agreed that OpenUCT was effective for sharing ETDs and UCT has also been noted by

participants for having policies in place to support open access publishing, albeit with a limited funding that does not sustain APC support for full open access publishing services for the year.

Some participants viewed UCT's participation in open scholarship as very minimal in green, gold and diamond open access. Sharing of OERs and data appear to be practised by a few academics and researchers and use of Vula and DataFirst have been noted as being very useful prior to the establishment of OpenUCT and ZivaHub. Kaewkungwal et al. (2020: 534) also acknowledge data sharing as being at its infancy stage on the African continent. Some academics and researchers considered platforms such as Vula (UCTs learning management platform at the time of conducting the study) as resourceful for sharing and for viewing number of downloads of resources. Sharing content on alternative sites other than official publishing avenues like journals, institutional repositories, etc. has also been noted (Manca, 2017: 20). A suggestion from some research students was to make the scholarly communication unit at UCT more visible to be able to support OS services. A general view from other themes shared indicated the need to have more members of the UCT community increase participation in all aspects of open scholarship as the extent of participation thus far will not achieve the democratic sharing goals intended by the institution which can also support a critical theory objective of human empowerment through knowledge access.

In summary, the discussion of main findings related to the fifth critical question pointed out that some strategies like infrastructures (OpenUCT, ZivaHub, DataFirst and Vula) worked well to share knowledge. The section also pointed to strategies that posed some challenges to academics and researchers and to those that were less effective, including limited funding and workshops that were not well attended as well as some strategies that were noted to be not applicable. The section that follows identifies elements that UCT academics and researchers regarded essential in developing an open scholarship strategy.

6.7 CQ6: Essential components of a strategy for the advancement of open scholarship within a critical epistemology

This section discusses findings related to elements that are regarded essential to develop a strategy to advance open scholarship within a critical epistemology. UCT is a research-intensive university guided by an egalitarian principle of opening up its resources (research and teaching services) to transform communities. This section is guided by the capability approach (CA) framework (Kuklys & Robeyns 2005; Bezuidenhout et al., 2017b) using proposed factors

that include “personal, funding, organisational (institutional or environmental) and infrastructural factors”, to ascertain what study participants view as essential elements (from which to develop a strategy for the advancement of open scholarship (OS) at UCT). Evaluating factors that influence participation can contribute to the provision for needs that facilitate action towards openness activities, for example, Cloete and Maassen (2015: 108) view physical infrastructure and professional skills as needs that support research production and dissemination in higher education institutions. Study participants agreed that all CA framework factors or needs are a priority in developing a strategy to advance open scholarship (OS). The study revealed the need for infrastructure, hardware, software and internet connection as elements essential to develop a strategy to support open practices.

Research Libraries UK (n.d.) provided a list of elements that can be part of a strategy for open scholarship, and these include policy, funding, infrastructure and means to equip the stakeholders which include marketing and/or advocacy, training and workshops. Tennant et al. (2016) acknowledge the importance of adopting open-source software and also suggest researchers’ needs assessment at different stages of the scholarly production and dissemination process including search stage, analysis stage, writing, publication and outreach stages. This study identified infrastructure, internet, and skills development through workshops as needs to support participation in OS.

Earlier, this discussion mentioned availability of funding at UCT, which is a critical resource as it supports acquiring of other resources such as data storage, software and hardware for infrastructure, hiring of resource persons to support skills development, etc. The findings also identified funding and organisational support as strategy elements essential for creating a strategy for the advancement of OS. It is evident from the findings that at UCT participation in open scholarship practices depends on the individual’s personal desire and motivation since there is no push at university level. The study also revealed lack of university-wide communication on open scholarship related issues which suggests the need for a marketing strategy to create awareness of the resources available for participation in open scholarship. Arning (2022) highlights the need to establish a policy which can provide clear guidelines on how to integrate open science as part of the research services. It is evident from the findings that policies are critical in strategy development; and UCT has both open access and RDM policies. Therefore, these policies should be marketed to create awareness across campus in order for the UCT community to integrate OS as part of their research practices and to avoid

exclusion of some researchers due to lack of awareness on OS related issues. This is in line with the critical theory's interrogation of social structures to support equality (in the context of this study, awareness can support equitable access to OS resources among researchers).

Self-archiving skills to support knowledge sharing via repositories (Bello et al., 2016: 104) and technical skills to use the infrastructure for data and knowledge sharing (Bezuidenhout et al., 2017b: 465) are seen as essential in capacitating a researcher to engage in OS activities. This study also acknowledged the need for training to acquire both technical skills and education relevant to support open scholarship, such as copyright and open license education. Lack of resources has been noted for hindering participation in OS, thus leading to the exclusion of authors or researchers from sharing knowledge, which call for a strategy development in cases of limited resources (e.g., limited funding), such as those at UCT. According to Tennant et al. (2018: 4) a strategy can be a short- or long-term plan to be used to guide an individual, department or institution to achieve a set goal. The researcher observed lack of systematic or coordinated means of engaging in open scholarship at UCT, and hence the reason to propose a strategy (see Section 6.8), based on findings from the study, that could be adopted by individuals, departments or faculties to increase free accessibility of UCT scholarly outputs. There are diverse beneficial opportunities that OS presents that can support policies such as the social responsiveness policy which emphasises sharing of UCT research with constituencies outside UCT, which can only be possible if research is openly accessible. Publishing in closed journals alienates research as these journals copyright scholarship and restrict sharing, which makes knowledge sharing an act of copyright infringement; and hence a strategy (as discussed in the section that follows) is important to guide researchers on open means of knowledge dissemination for human empowerment.

In summary of the discussion for CQ6, essential elements to develop a strategy to enhance open scholarship as guided by the CA framework were discussed identifying the need for elements such as policy and considering OS practices in promotion criteria as motivation or incentive for researchers. The discussion also covered the need for equitable access to funding, which is, from a critical epistemological perspective, crucial as UCT researchers have shown that they are economically marginalised to publish gold open access, particularly in international journals. This section also discussed the need for skills to interrogate critical theory issues of inequalities and alienation that may be caused by lack of skills and knowledge related to OS practices and use of infrastructure. The assumption is that development of a

strategy could minimise the alienation of knowledge behind paywalls and exclusion of the marginalised communities in accessing knowledge. The section that follows proposes a strategy that could be adopted by UCT and other higher education institutions to support open scholarship.

6.8 Strategy for supporting open scholarship

This section proposes a strategy for the promotion of open scholarship (OS) guided by the elements considered essential by study participants (see Section 6.8) and the literature as critical in supporting participation in open scholarship. Critical theory guided the development of the strategy that is grounded in equitable participation in OS through considering equitable access to resources presented as essential factors (also resources) that support participation in OS based on the main findings discussed in Section 6.7, particularly funding, for UCT academics. Study participants are believed to have adequate experience to identify strategy elements as they understand experiences, challenges and needs related to open scholarship. The objective of this strategy is to guide the UCT community (and other similar institutional settings) during engagement in open scholarship activities and share as much UCT knowledge (journal articles, conference papers, working papers via OpenUCT and research datasets in ZivaHub as well as on other sharing platforms). The study highlighted a scramble for funding at UCT, which excludes late applicants as funding runs out quickly. Within a critical epistemology, the researcher argues for the need for a just inclusive strategy, which is a holistic plan that aims to develop equitable processes of open communication of science through increased affordable avenues with the available resources to support the democratisation of knowledge. Inclusivity and equity are among social justice goals related to critical theory and in this section strategy development considers equity in terms of UCT authors' access to resources available at UCT. Possible means of increasing funding should also be prioritised in the strategy. Analysing the study findings using a critical lens, the researcher identified strengths, weaknesses, opportunities and threats which can assist in shaping the strategy as there are dynamic experiences at UCT with regards to participation in OS.

UCT's strengths are the availability of infrastructure (OpenUCT, ZivaHub, Continental Platform with open journals and open monographs, policies (OA and RDM policies), partial funding (APC funding and BMC APC subsidy) as well as access to library resources off campus through remote access. Weaknesses include lack of adequate marketing of policy and lack of awareness of the significance of OS and mixed feelings about sharing knowledge via

open access. Opportunities include UCT researchers utilising the read-to-publish agreements recently signed to allow UCT authors to publish in hybrid journals from the six publishers that have signed transformative agreements with UCT Libraries (University of Cape Town Libraries, 2022). APC funding is limited at UCT and read-to-publish has created a new open access publishing opportunity with no APC charges as the subscription fees will now be repurposed to cover both reading and publishing (University of Cape Town Libraries, 2022), flipping the deals where the University only subscribed to read with no free publishing service. Monitoring and evaluation would be critical in analysing the emerging transformative agreements to understand if they are benefitting UCT by increasing open access publications. The available APC funding that works on a reimbursement basis, could be managed through encouraging authors to publish in local African OA journals with less expensive APCs and thus avoid paying for APCs in foreign currency to publish in international journals. The allocated ZAR 20000 per publication might be able to cover APCs for more articles in less costly DHET accredited journals. Affordable journals can be identified from DOAJ, a directory that houses both gold and diamond OA journals as noted by other studies (for example, Seo, 2018: 27). Open access opportunities are also available through the diamond open access Continental Platform where UCT researchers can collaborate to publish research with the African academic communities with journals being hosted on this platform and in so doing, encourage early career researchers (Masters and PhD students and post-doctoral fellows) to use the APC-free diamond OA service.

Weaknesses identified in the study relate to lack of adequate marketing of the available infrastructure and how it can be utilised for open scholarship. Lack of awareness of relevant policies is also a weakness as UCT authors do not follow policy if they are not aware of the requirements and permissions according to policy. The availability of many repositories (OpenUCT, ZivaHub, DataFirst and Zenodo community) was viewed as a possible threat as users would be discouraged by the need to visit different websites to share knowledge. This also means duplication of resources and hence funding could be saved by reducing the number of ICT infrastructures and instead add the funds to much needed APC funding. Another threat could be resistance to share knowledge due to lack of incentives to reward those participating in OA. Study participants also identified the need to add open scholarship practices to promotion criteria as an incentive as they believe that can increase motivation to participate in OS. Based on the findings of this study, details provided in the sub-sections that follow explain

responsibilities and action to be taken by different stakeholders as part of a strategy to coordinate the UCT community in an effort to advance open scholarship.

i. Orientation or induction stage

The study proposes, based on findings discussed, engagement with new staff to present OS achievable individual objectives which can be presented at departmental level and a mentor follows up during the course of the year as they monitor progress of open access (both immediate and delayed OA), OERs and research data management. This stage also applies to post-doctoral fellows who can set and present OS achievable objectives to be monitored by their mentors in the department. Agreed objectives can be part of the academic performance reviews process at UCT. Orientation of research students (Masters and PhD) at faculty level should also follow the same process as students should specify how they plan to participate in OS and this should be followed up by supervisors, particularly if students are publishing and are publicly funded. During induction and orientation shown in Figure 6.1, the faculties communicate their OS objectives with academics, researchers and students providing guidance on how individuals can communicate their OS objectives at departmental level. Figure 6.1 presents stages and stakeholders that are responsible for different activities identified for a strategy to enhance open scholarship at UCT. The departments execute departmental objectives and timelines for individuals to share their OS objectives with their mentors. Both faculties and departments work with the UCT Research Office, UCTL and Post-graduate Research Office to market the OS policies and share the university strategy of accessing open publishing funding and how to access recommended affordable journals and this will be an ongoing process. The university has the responsibility to share the OS objectives at the beginning of every term as a means to show its commitment to sharing scholarship as declared in its vision (University of Cape Town, 2020c: 3) and in the social responsiveness policy (University of Cape Town, 2012). Achievements and challenges should be part of the departmental quarterly and annual reports.

ii. Ongoing collaborative stage for stakeholders

The second and ongoing stage involves all open scholarship stakeholders, and each office takes several roles including communication of objectives, advisory role on fund raising, execution of a marketing strategy for the OS policies, infrastructure and available resources, like funding, hardware, software and training facilities and training packages. Academics and researchers should communicate their OS plans with clear and specific objectives, while showing

proactiveness with a choice of OS activities aligned towards little or no funding as funding has been highlighted in this study's findings as a challenge and the study showed that APC funding is not sustainable at UCT. Librarians can support open access publishing by identifying diamond open access or journals with reduced APC cost and this information can be part of the orientation and open access publishing workshops for academics, researchers as well as post-doctoral fellows at faculty and departmental level. Ongoing workshops can be held at faculty, departmental level and through the Research Office's Emerging Researcher Programme (ERP) and other research support programmes organised at UCT to support mostly early-career researchers that would have joined UCT through training them in academic writing and the publishing process. These programmes should be opened to all researchers at the institution to avoid excluding some groups that are producing research. UCT Libraries can provide guidance on manageable and agreeable maximum APC charge that UCT researchers can work with during open access publishing in local (African) accredited journals. At the beginning of this strategy identified stakeholders (office of Deputy Vice Chancellor for Research and Internationalisation, UCTL, UCT Research Office, CILT, ICTs, eResearch) participate in fundraising as each of the identified offices work with research or OER related funding. UCTL qualifies as a fundraising stakeholder as Collyer (2018: 63) confirmed libraries to be responsible for the budget for collection development (subscription fees and acquisition of books that support teaching and learning). ICTs, eResearch and Computer department can play an advisory role on cost effective selection of ICT infrastructure including appropriate affordable open-source software and data storage solutions. Fundraising can target funders that are part of Plan S (see Section 2.3.4 of Chapter 2) as these have committed to support immediate open access.

As an information specialist office, UCTL should guide researchers, through ongoing workshops, on relevant diamond open access and affordable gold open access accredited journals that could be listed for UCT authors to publish in. Librarians should be imbedded in the faculty to allow research collaboration with academics and researchers from the beginning of a research cycle as librarians guide on identifying journals that have less embargoes (a publisher-imposed delay on access to full text of a published article) or APC-free journals. UCTL can work with UCT leadership, the Research Office and available funders to identify means to raise OA funding proposing a sustainable amount to increase open sharing. UCTL book publishing service using Open Monograph Press (OMP) should contribute to OA funding through applying for subsidy from DHET. Funders like the NRF can work with faculties and

UCTL to facilitate the fulfilment of the need for grantees to share peer-reviewed manuscripts via OpenUCT and share data that emanates from NRF funded research in ZivaHub or other data repositories as stated in the NRF open access statement (National Research Foundation, 2022). UCT teams (DVC Research and Internationalisation (or DVC Research), UCTL, Research Office, etc.) responsible for funding could draft proposals to send to different funders to source funding that can support gold OA publishing and distribute the funding equitably among departments. UCTL should also propose for open access deals with university presses and other publishers that are not yet on board with transformative agreements (see Section 3.7 of Chapter 3). UCTL should also be able to project the right amount of funding that can support gold OA publishing for researchers who cannot find relevant African diamond OA journals, as UCTL librarians work with different publishers and understand the publishing requirements for different open access models.

UCT management (including DVC Research and Deans) should be supported by UCTL and the Research Office as they discuss issues of research assessment and research impact to include OS practices as part of the academic promotions criteria in order to motivate academics and researchers to prioritise open sharing of research via green, gold or diamond open access, to create and share OERs and to manage and share research data. Supervisors should also encourage supervisees to prioritise publishing in OA local African journals and utilise the DMP tool for data management planning and manage datasets to share on ZivaHub. Faculties can also work with UCTL, the Research Office and the Postgraduate Centre and Funding Office to plan workshops for researchers' capacity building. A similar team (faculties, Research Office, UCTL, Postgraduate Centre and Funding Office and CILT) should collaborate on marketing available policies, infrastructure and resources such as funding. Funders have a role to play in mandating open access publishing by prospective grantees during grant applications and mandate the sharing of funded OS products (research, OERs and datasets). Activities noted in this stage can take place concurrently and there can be an option to begin by means of a university-wide communication to declare UCT's OS statement and objectives, which would be followed by communication at faculty level.

iii. Monitoring and evaluation stage

Monitoring and evaluation measures should be put in place by faculties, departments and various funders. The NRF needs to do a thorough follow-up through recording statistics and links of outputs shared by grantees. There should also be faculties and departments' reporting

on the achievements, challenges and newly identified needs relating to equitable participation in OS after a follow-up to evaluate performance in terms of OS objectives. UCT should introduce a reward system through including OS achievements as part of the promotions criteria as proposed by participants in the study. Departments should also follow-up with academic and research staff to determine if individual objectives are being achieved, and in stances where objectives are not achieved, staff should be able to explain challenges encountered and reset objectives for the next semester or year indicating how the situation can be improved. There are some OS practices that do not require funding, for example, self-archiving of accepted manuscripts in the institutional repository and publishing of monographs or open textbooks on the diamond open access platform (Continental Platform); such activities could be part of staff objectives. Funding challenge was evident in the study findings and hence there is need for faculties and departments to monitor and evaluate if OS funding is being executed according to the proposed criteria such as publishing in African journals to reduce the cost and to reflect on this in UCT annual reports.

Figure 6.1 presents research stakeholders and responsibilities they can assume as a strategy to advance OS. Implementation of this proposed strategy may start at induction and orientation stages for researchers and research students who are joining UCT for the first time to engage in information sessions provided to inform them on the OS resources and strategy in order for them to set OS objectives. Other stakeholders and their responsibilities are provided in different clusters that do not follow a specific order as university-wide communications, workshops and training at faculty or departmental level and fundraising activities can be ongoing. In summary, the strategy proposed in this section includes diverse stakeholders that can engage with researchers at different stages of the research cycle to support open scholarship through setting OS objectives. The strategy also includes orientation and induction to market available resources and offices that can support researchers with OS needs. The section that follows is the chapter summary of the discussion of main findings.

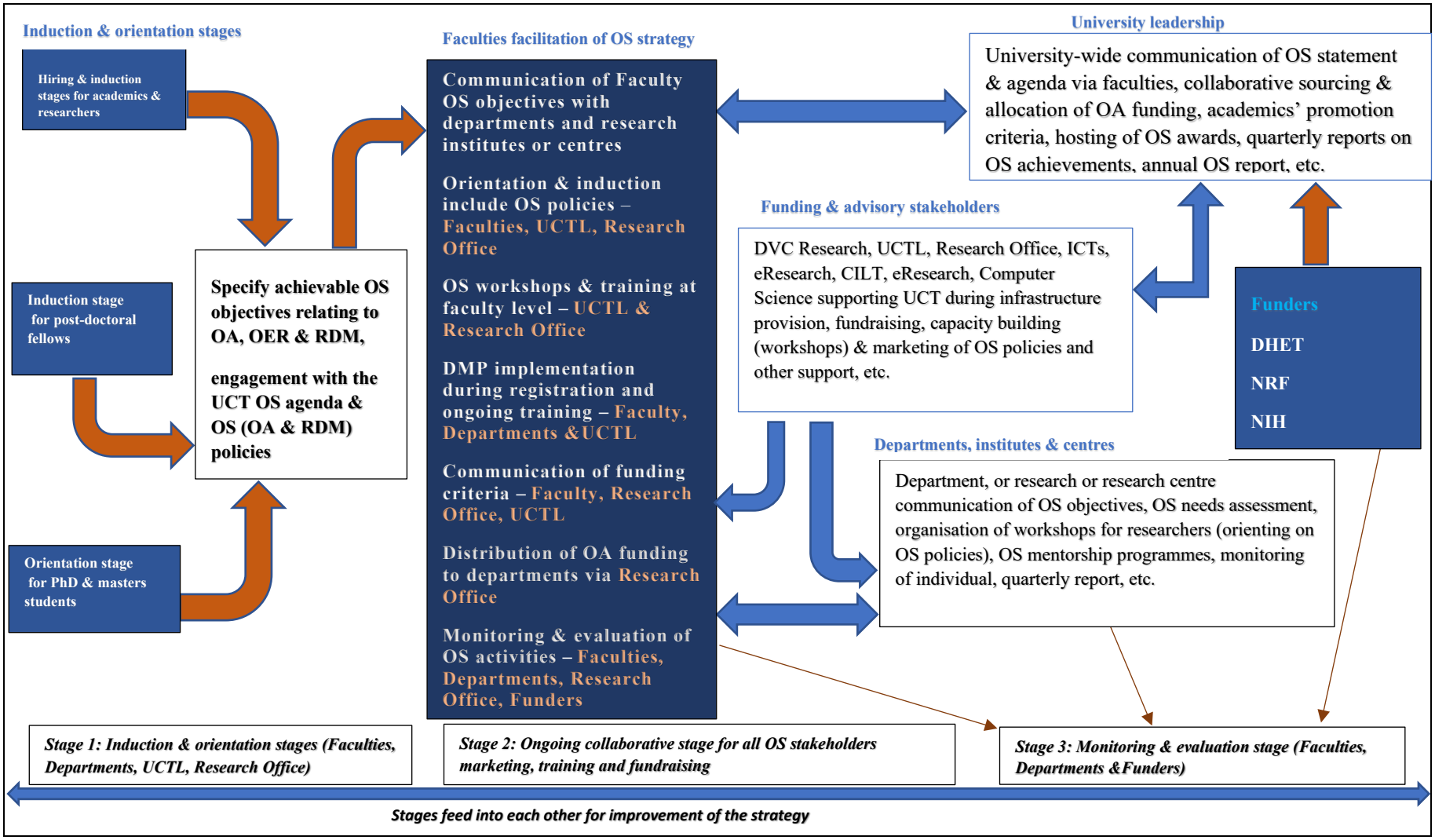

Figure 6.1: Proposed strategy to support open scholarship

6.9 Chapter summary

This chapter discussed the main findings of the study guided by the critical questions, literature and the theories that informed the study. The chapter discussion also included the extent of participation in OS activities which generally showed low intake of open access and sharing of OERs and open data described as being infant. OS practices were also discussed and high participation in both green and immediate OA was reflected on. The chapter also discussed UCT academics and researchers' views on open scholarship being critical to social justice and human development which was agreed to by many study participants, and the discussion also captured participants' agreement on social justice being the main motivating factor for their participation in OS. Some of the motivating factors that contribute to critical theory elements like author exclusion and alienation were also discussed and lack of inclusion of OS contributions in the promotions criteria at UCT was noted as a push factor exacerbating the closed publishing culture. The discussion also covered strategy elements considered critical in developing a strategy to advance open scholarship within a critical epistemology, considering the need for equitable resources and the challenges excluding UCT scholars from participating in the different OS activities. The chapter proposed a strategy, based on the study findings, for the advancement of open scholarship at UCT. The next chapter draws conclusions and makes recommendations based on the discussion of the main findings of the study.

CHAPTER 7
CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This concluding chapter provides a summary of the study, draws conclusions and makes recommendations in relation of the main findings as discussed in Chapter 6. The chapter also presents implications of the study for policy, methodology, theory as well as practice.

7.2 Study summary

The study's objective was to critically analyse the participation of the UCT community in the advancement of open scholarship (OS) and based on the study findings, to develop a strategy for the promotion of open scholarship to support knowledge sharing. UCT was selected as a case study to explore the contemporary phenomenon of open scholarship, since the university is recognised as a notable research-intensive university on the African continent. As a publicly funded university, UCT has a social obligation to share its scholarship. The university is committed to sharing its resources, including its scholarship, to support development on the African continent (University of Cape Town, 2020c) and has established policies that include social responsiveness, open access and RDM policies all of which speak to sharing of scholarship. The findings of the study reflect that UCT has established infrastructure to support the democratic means of knowledge dissemination and other essential resources, including funding to support open scholarship. The study was guided by a transformative worldview that informed the adoption of critical theory, as the openness movement emerged to transform commercially dominated scholarly communication processes. The study also adopted a capability approach framework to guide on factors (also referred to as strategies) influencing participation in open scholarship at UCT. The transformative worldview adopted also informed the selection of a convergent transformative mixed methods approach and the selection of a population inclusive of participants experiencing the phenomenon, which were UCT academics and researchers in the case of this study. Researchers in this study included emerging researchers (post-graduate research students and post-doctoral fellows); and key informants were also considered for purposes of providing relevant information to respond to the six critical questions that guided this study.

The critical questions of the study were intentioned to investigate the extent of participation in open scholarship, OS practices being engaged in at UCT, including factors motivating

participation. The study also inquired into UCT academics and researchers' perceptions of open scholarship being critical for human development and social justice, the extent of participation in OS as social good, publishing culture at UCT, activities engaged in using emerging ICTs to democratise knowledge dissemination, and challenges being encountered during participation in open scholarship at UCT. The study showed that UCT academics and researchers are engaged in OS practices and are motivated to participate in open scholarship as a social good. There is, however, lower (than anticipated) uptake in OS, which detracts from UCT's democratic role of sharing scholarship on the continent through engaged scholarship in South Africa. Academics and researchers surveyed agreed to OS being critical in supporting human development and social justice and that the adoption of emerging ICTs has made significant contribution to support the democratisation of scholarly communication processes, including hosting journals for other African universities. However, severe challenges are being encountered at UCT, for instance lack of adequate APCs funding, thus influencing a closed publishing culture at UCT. Experiences of inaccessibility to some of UCT's scholarship due to paywalls, were highlighted. Paywalls exacerbate the critical theory component of commodification of knowledge thus alienating (again, a critical theory element of restricting and estrangement) UCT authors' intellectual property from economically marginalised readers due to the cost (subscription) barrier.

The study showed lack of compliance with OS policies (open access and RDM policies) for academics and researchers who have never shared data or OERs. This reflects somewhat negatively on a university that has made a public declaration as an open scholarship advocate by signing both the Cape Town Open Education Declaration (OER Africa, n.d.: 1) and the Berlin Declaration (Paskevicius, 2011) on open access. Based on diverse factors drawn from the study's main findings (guided by the CA framework), the study proposes a strategy to advance open scholarship (see Figure 6.1 in Section 6.8 of Chapter 6) in the interest of access to scholarship for marginalised communities. The strategy development was aligned with critical theory concepts of equity, inclusion and justice to support a fair means of accessing scholarship resources available at UCT.

7.3 Conclusions

This section presents conclusions in relation to the study's main findings. This study was guided by six critical questions that were informed by two theories, critical theory and the

capability approach framework. The conclusions of the study are presented according to the six critical questions that guided the study.

7.3.1 UCT academics and researchers' extent of engaging in open scholarship practices

The study showed a low extent of participant in OS practices at UCT and there were many academics and researchers who were not participating in open data and OERs sharing. There was also no significant statistical association between faculties and the extent of participation in OS as well as no significant statistical association between levels of self-categories (established, mid-career and early-career researchers) and the extent of participation in OS. Therefore, no comparison could be made on the extent of participation among faculties or among established, mid- and early-career researchers. The study found that participants were concerned about the exclusion of OS achievements in UCT promotions and NRF rating criteria, highlighting that this exclusion is contributing to less or no participation in OS activities. Having significant numbers of academics and researchers not participating in OERs and open data sharing impacts contribution towards the South African higher education transformation agenda that is intended to improve access to education in the post-apartheid era. This also relates to the social justice call for decolonisation of education demanded by students in South Africa during the #FMF (#FeesMustFall) and #RMF (#RhodesMustFall) protests in 2016 and 2017. Both transformation and social justice are critical theory components of human emancipation, and it would seem that the extent of UCT academics and researchers' engagement in OS practices would require upscaling for increased access to knowledge for African communities that are still economically marginalised.

7.3.2 Open scholarship practices that UCT academics and researchers are engaging in

Academics and researchers are engaging in diverse open scholarship practices at UCT and are practising green and gold OA more as compared to OER and open data practices. This could be because an open access policy was established at UCT earlier that the RDM policy and that some researchers, particularly, research students, are not generally teaching and therefore, may not see the need participate in OERs creation. There could be also a misunderstanding of the difference in forms of sharing, that is, via green, gold and diamond open access as well as sharing of published (including copyrighted) materials or pre-prints on academic social networking sites (ASNS) (e.g., ResearchGate, Acadedmia.edu and others) or on pre-print servers such as ArXiv. Emerging researchers confirmed sharing copyrighted materials on

ASNS to improve accessibility of their work; therefore, support at UCT would need to include orientation of emerging researchers on copyright issues, particularly means to negotiate retaining copyright that can permit legal sharing of publications on different platforms.

7.3.3 Extent to which UCT academics and researchers are contributing to the openness movement as a social good

Academics and researchers participating in the study were unanimous about OS being critical in supporting social development and social justice; and they were motivated to participate in OS by social justice imperatives. Participation in OS was aimed at increasing openly accessible textbooks to eradicate the critical theory component of information marginalisation in higher education, as academics and researchers viewed OS as a philanthropic and public good. Adoption of emerging ICTs influenced the establishment of the Continental Platform by UCT Libraries for publishing open access journals and monographs – the platform is being shared with other African universities. It would seem that an understanding of the democratic role of OS in supporting human development has not influenced increased participation in OS at UCT, although there has been a commitment by the institution to provide diverse infrastructure. Challenges encountered in the research landscape (for example, competing to publish in prestigious HIF journals) have had knock-on effect on researchers' efforts to participate in OS as rewards focus metrics such as high impact factor.

7.3.4 Current strategies being adopted in support of UCT's open scholarship agenda

Academics and researchers in the study showed a high level of proactiveness in adopting diverse strategies identified by the CA framework (Bezuidenhout et al., 2017b: 465) including personal, funding, organisational support and infrastructural factors. UCT has made significant efforts to make provisions for infrastructure support (internet, repositories, diamond open publishing Continental Platform, partial funding, etc.). In this regard, UCT has contributed to the critical theory aspect of empowerment through provision of resources that are confirmed to be appropriate in supporting OS, according to the CA framework. However, some researchers expressed frustration and confusion due to too many repositories and technical challenges associated with the repositories. Therefore, strategies adopted performed differently for academics and researchers and based on the relatively low uptake of open scholarship, it would seem that strategies adopted have gaps in adequately supporting open scholarship.

7.3.5 The extent of effectiveness of strategies adopted in supporting the social responsiveness agenda of UCT in the scholarly communication of its outputs

Strategies adopted, for instance repositories and the Continental Platform (for open journals and open monographs), supported open scholarship, as expected by academics and researchers. Some researchers indicated a potential to do more with the available OA infrastructure. Strategies adopted at UCT supported some level of compliance with OS (open access and RDM) policies as they allowed participation in different practices to some extent. Academics and researchers who participated in OS contributed to the critical theory element of democratisation of scholarly communication processes through open dissemination of knowledge, thus improving accessibility of UCT scholarship. However, a further study of strategies that have been rated ineffective in the current study would be useful in order to conclude more fully on the effectiveness and relevance of the strategies adopted at UCT to support OS. Academics and researchers could be facing challenges that mitigate their adequate use of some OS support resources, for example, lack of relevant skills.

7.3.6 Essential components of a strategy for the advancement of open scholarship within a critical epistemology

Participating academics and researchers identified strategies they regarded as essential for developing a strategy to support open scholarship as identified by the CA framework and which included "personal, funding, organisational (also institutional or environmental) and infrastructural factors" (Bezuidenhout et al., 2017b: 465). Overall, the study acknowledged the need for organisational and individual efforts to achieve OS goals as the university would need to provide resources such as infrastructure and funding, and participation depends on individual efforts and motivation. Researchers viewed organisations as having a responsibility of moulding an openness culture. Therefore, UCT's lack of university-wide communications or statements to declare the position of the institution in terms of its OS agenda and goals, and lack of an established strategy to guide the institution in this regard, it would appear, contributed to low participation in OS. Based on the findings of this study and informed by critical theory and the CA framework which guided the study, a strategy to advance open scholarship is proposed (see Figure 6.1 of Chapter 6) for use as a pilot exercise in a research-intensive higher education institutions such as UCT, as well as to analyse if such a strategy can support participation in OS.

7.4 Recommendations

This section presents recommendations based on discussion of the study's main findings and its conclusions:

i. Marketing and awareness of OS policies

Lack of compliance with OS policies could be due to lack of awareness of OS components as confirmed in the study. Ongoing marketing of OS policies is recommended for various stages of the research cycle to increase awareness of the policy requirements. and this should include providing workshops needed to develop skills to improve participation in OS. An OS marketing strategy is recommended, and this could include a university-wide communication or statement from UCT leadership on the university's commitment to and endorsement of open scholarship.

ii. Integration of repositories

Green (delayed) open access has great potential to increase the visibility of African knowledge, particularly from a research-intensive univerity challenged by funding, as the green sharing model does not require funding as opposed to gold OA publishing which challenges universities with funding of APCs . However, findings highlighted the existence of too many repositories at UCT and that some repositories posed technical challenges to researchers. Therefore, it is recommended that universities should consider the integration of repositories into seamlelss user-friendly databases to reduce confusion and hesitation to interact with different databases during sharing.

iii. Incentivising open scholarship achievements and re-visiting research assessment criteria

The study's findings indicate that academics and researchers tend to target and publish in high impact factor (HIF) international prestigious journals which often results in the closing away of UCT scholarship behind paywalls, as both UCT promotions and national researcher rating criteria value impact factor metrics. Global trends such as HIF metrics are known for influencing a closed publishing culture, yet the metric forms part of the criteria for promotion at UCT and for NRF rating as a determinant of quality research; and this forces researchers to comply with publishing in HIF closed journals to get promoted or rated, which in turn alienates scholarship and promotes knowledge commodification. Publishing open access in international prestigious HIF journals requires significant funding as most such journals charge hyper-

inflated APCs. Therefore, it is recommended that higher education institutions such as UCT incentivise OS through including OS achievement as a metric in academic promotions criteria and they should also assess research impact based on OA as it supports re-use by others. It is also recommended that South African universities should engage in dialogue with the country's National Research Foundation (NRF) to prioritise OS achievements during research rating of scholars and for the South African Research Chairs Initiative (SARChI) selections in order to motivate increased knowledge sharing. Alignment of institutional open scholarship policies with the institution's social responsiveness policy is also recommended as these policies speak to knowledge sharing for human emancipation. Monitoring and evaluation for achievement of OS goals is also recommended during academic performance reviews.

iv. Funding raising and recognition of African-based open access journals

APCs funding is exhausted quickly at UCT and is available to researchers on a reimbursement basis with an allocation of up to ZAR 20 000 (South African rands/currency), which may not be enough to support immediate OA publishing in preferred HIF journals as publication fees are required upfront. Researchers publishing with Biomed Central (BMC) publisher have a funding pool that pays half of the APCs. Therefore, the recommendation for universities experiencing funding challenges in supporting their researchers to meet APCs costs, is to propose a fundraising strategy through collaboration with funders that have a buy-in to support gold open access publishing and open data sharing. Funders are members of Plan S (explained in Section 2.3.4 of Chapter 2) who are already funding researchers to publish in gold open access publications. Decommissioning of redundant infrastructure, particularly platforms that are not in constant use and those that require payment of expensive subscription fees for alternative free open-source infrastructure, is recommended in order to save funding that could contribute towards APCs funding. It is also recommended that universities in South African that are receiving subsidy from the Department of Higher Education and Training (DHET) generated from OA publications, should consider channelling these funds towards increasing APCs funding. Prioritising publishing in African-based accredited open access journals and rewarding researchers for publishing in African-based journals is also recommended in the interest of growing the critical theory practice of decolonising knowledge through increased publishing of relevant open and Afrocentric scientific knowledge while supporting sharing in indigenous African languages.

v. Further studies

Studies of institutional (that of UCT or other research-intensive higher education institution/s) leadership buy-in to support open scholarship is recommended. Such studies could stimulate culture change in scholarly communication, thus motivating for the inclusion of open scholarship in institutional academic promotions criteria. At present open scholarship seems to be driven in higher education institutions by a few motivated individials and departments and there seems to be no communication on the position of the instiutional leadership with reagrds to open scholarship.

7.5 Implications of the study

Implications of the study cover aspects relating to policy, methodology, theory as well as practice.

7.5.1 Implications for policy

Based on the findings of this study, it would seem that academics and researchers are not well-motivated to engage in OS practices due to the latter's misalignment with institutional academic promotion and national research rating criteria or policies. Academic promotion and national research rating generally consider research productivity utilising research metrics of scholarship visible online. Open scholarship practices are not one of the elements rewarded during promotion and NRF rating, which encourages a commitment to publish with no regard for open publishing or open licensing scholarship. While scholarship behind paywalls comes with access barriers, it is still rewarded during academic promotion and research rating applications, yet paywalls hinder the interaction of intellectual property with most economically marginalised users. The findings of this study can serve to support amendment to academic promotion and research rating policies for universities and funders alike, to meet the expectations of researchers.

7.5.2 Implications for methodology

A convergent transformative mixed methods approach (Creswell & Creswell, 2018: 69) was adopted for this study and was useful in identifying study participants experiencing the contemporary phenomenon of open scholarship. Focus group discussions were part of data collection methods used for the qualitative part of the study. The researcher's unique and unexpected experience of losing participants online (due to connectivity issues) as data had to be collected virtually to fulfil social distancing requirements of the COVID-19 pandemic,

incentivised the need to incorporate data from individual discussions with focus group discussion data. In terms of methodology, mixing both focus group and individual discussions allowed soliciting of rich data for this study and hence research methodology specialists may want to consider such flexibility in focus group data collection as a viable alternative in cases of challenges to successfully conducting a virtual group discussion due to connectivity issues which have become common in many contexts (developed and developing) in these digital times.

7.5.3 Implications for theory

Critical theory calls for the integration of philosophy with the sciences in the hope of providing a theoretical instrument intended to transform politics, society, the economy and everyday contemporary life (Bronner & Kellner, 1989: 4). This study integrated critical theory into its scholarly inquiry in order to ground the open scholarship phenomenon within a dominant scholarly communications field to explain injustices imposed on researchers due to diverse challenges experienced in the research landscape. A capability approach (CA) framework (Bezuidenhout et al., 2017b: 465) was adopted to identify factors contributing to critical theory elements of transformation or of injustice, in open scholarship at UCT. Based on the critical theory elements and factors proposed by CA framework discussed in this study, a strategy was proposed (see Figure 6.1 in Chapter 6) to support OS and such a strategy may contribute to the development of a university's framework to achieve transformation, empowerment or social justice with regards to open scholarship; and in so doing contribute to the development of a transformative theoretical instrument for the advancement of open scholarship in higher education.

7.5.4 Implications for practice

Findings from this study indicate that the norm of valuing HIF as an indicator of research quality can be misleading to researchers and is contributing to a closed publishing culture and non-compliance with open scholarship policies. In practice, research stakeholders may need to re-visit the role of HIF metrics in academic promotions and researcher rating criteria in order to encourage researchers to actively engage open scholarship practices to increase visibility of and accessibility to scholarship and to support re-use of knowledge, especially for an African developing context and its promotion of African knowledge production.

7.6 Chapter summary and general conclusion

This final chapter presented a summary of the study, conclusions and recommendations based on the main findings of the study as discussed in Chapter 6. This chapter also presented implications of the study for policy, methodology, theory and practice, and provided a general conclusion to the study.

Despite challenges of low response rate and the COVID-19 pandemic, the researcher is satisfied that the worldview or paradigm selection for the study, theories adopted, the research approach and methods were adequate in soliciting data relevant to the critical questions guiding the study. The study was delimited to participation in open access to research, OERs and open data at UCT and found that participation in OS is minimal in all the three OS categories and diverse challenges revealed in the study impact negatively on the growth of open scholarship. Such challenges and trends of a closed publishing culture that research conforms to for diverse reasons, affect the achievement of transformation and social justice goals of the openness movement. This study may be a reflection that research-intensive universities that are leading in research production on the African continent are financially challenged to open their scholarship for sharing and that the openness movement might continue to benefit global north researchers as open access mandates in countries in Europe and in the USA are declared and financially supported at national level (Else, 2021; Tollefson & Van Noorden, 2022). There is funding support in the global north coming from financially stable organisations, such as the European Commission, the European Research Council and the USA government, while this study has shown that in global south universities, such as UCT, their OA funding pool cannot afford to pay OA fees upfront and the condition of reimbursing APCs may restrict authors from publishing in gold OA journals, particularly international OA journals that charge high fees in foreign currency.

Researcher experiences at UCT are likely to be common experiences among peers affiliated to African universities (and likely worse) as many African countries are still grappling with poverty (Warsame, 2019; Sguazzin & Wilson, 2021) which affects the availability of funding and infrastructure, including internet provision, in many African countries (Baro & Otiode, 2014: 117, Bezuidenhout, 2017a: 45). Therefore, visibility online, discoverability of and accessibility to African scholarship may remain a challenge with African scholars remaining at the periphery of global knowledge production which centres global north-oriented research, while Africa strives to decolonise knowledge production and education for a transformed post-

apartheid (South Africa) and post-colonial Africa. Higher education institutions in Africa and in other global south regions experiencing a diversity of challenges in supporting open scholarship may consider piloting the strategy that emerged out of this study as elements of the proposed strategy are cognisant of experiences of economically marginalised researchers. The proposed strategy may be adapted by other universities encountering challenges similar or related to those of UCT and they may further develop or improve the proposed strategy to support OS depending on the needs of researchers and other institutional and/or national contextualities.

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APPENDICES

Appendix A: Structured questionnaire for UCT academics and/or researchers

A critical analysis of the participation of the University of Cape Town community in the advancement of open scholarship: towards a strategy for the promotion of open scholarship

Dear Academic or Researcher

My name is Lena Nyahodza and I am studying towards a PhD degree in the Department of Knowledge and Information Stewardship at the University of Cape Town (UCT), in the Faculty of Humanities. I am conducting a study to critically analyse the UCT community's participation in the advancement of open scholarship; and, to develop a strategy for the promotion of open scholarship. Professor Jaya Raju is supervising my study. Open scholarship is a philosophy inclusive of open access and open publishing, open education (including open educational resources and open teaching), and research data sharing (Veletsianos and Kimmons, 2012). Practices of open scholarship remove barriers to information access for the end user (the reader), having society as the significant beneficiary of scholarship (including textbooks) (Raju, 2016). The open scholarship philosophy aims to achieve openness assumptions of democratisation of knowledge creation and dissemination (Veletsianos and Kimmons, 2012: 168). Different research communities and stakeholders also use terms like open science and openness as synonyms of open scholarship. As part of this study, I need to collect data from a census of UCT academics and/or researchers to understand the extent of participation of the UCT community in open scholarship. I am also interested in academics' and/or researchers' views and opinions on components suitable to develop an inclusive strategy to enhance open scholarship at UCT.

Ethical considerations

Participation in this study is voluntary and you are under no obligation to respond to the items presented. Protection of individual identity is prioritised, and your participation is anonymous. Personal information provided by participants will also be treated with utmost confidentiality. Data will be anonymised before datasets are shared on UCT's open data repository. Please note that there are no direct benefits for participating in the study. However, the study will contribute to the body of knowledge on open scholarship by providing an understanding of the UCT community's participation in such scholarship, which is critical to diverse stakeholders

including funders. Should you choose to discontinue participation in this study, you may do so at any point by closing the browser.

The research has received ethics clearance from the Humanities Faculty on behalf of the University of Cape Town. For any further questions regarding the study and related ethical aspects, please contact the researcher or supervisor on contact details provided below.

Researcher: Lena Nyahodza
Email: nyhlen001@myuct.ac.za

Supervisor: Professor Jaya Raju
Email: jaya.raju@uct.ac.za

Informed consent

If you agree to participate in the study, please respond to the statements below.

I confirm that I have read the information provided and I understand the purpose of the study. ☐

I understand that my participation in the study is voluntary, and I am free to withdraw from the study at any time. ☐

I understand that my anonymity and confidentiality of information provided are assured. ☐

I consent to participate in the study. ☐

General instructions: Please select the most relevant option(s).

Section A: Biographical questions

1. Which UCT faculty are you affiliated to?
    a. Centre for Higher Education Development (CHED)
    b. Faculty of Commerce
    c. Faculty of Engineering & the Built Environment
    d. Faculty of Health Sciences
    e. Faculty of Humanities
    f. Faculty of Law
    g. Faculty of Science
    h. Graduate School of Business (GSB)

2. Which department are you affiliated to at UCT (e.g., Department of Biological Sciences)?

    _____

3. What is your rank at UCT?
    a. Professor
    b. Associate Professor
    c. Senior Lecturer
    d. Lecturer
    e. Junior Lecturer
    f. Other, please specify _____

4. If you are an NRF (National Research Foundation) rated researcher, what is your research rating?
    a. A-rated
    b. B-rated
    c. C-rated
    d. Y-rated
    e. P-rated
    f. Other, please specify:

5. How do you categorise yourself?
    a. Established researcher
    b. Mid-career researcher
    c. Early-career/emerging researcher

6. For how many years in total have you been engaging in research (at UCT as well as with institutions prior to joining UCT)?
    a. 0-5 years
    b. 6-10 years
    c. 11-20 years
    d. 21-30 years
    e. Over 30 years

Section B: Extent of participation in open scholarship

7. While "commodification of knowledge" is an information access barrier in scholarly communication, commitment to open scholarship (open access, open educational resources and open data) is critical for the democratisation of knowledge creation and dissemination (Pyati, 2007; Veletsianos & Kimmons, 2012). Through open scholarship, copyright restrictions and cost barriers are removed to allow readers free access to knowledge that is critical for development.

    On a scale of 0 to 5 (where the scale denotes: 0=Not at all, 1=To a small extent, 2=To some extent, 3=To a moderate extent, 4=To a great extent, and 5=To a very great extent), to what extent do you participate in open scholarship?

Open scholarship category	Sub-categories or models	Personal rating of extent of participation					
		0	1	2	3	4	5
Green[46] **open access**	Democratising of research dissemination through sharing versions of published research on UCT's institutional repository (OpenUCT) and on other open platforms for free access to all						
Gold[47] **& diamond**[48] **open access**	Challenging commercial publishers' dominance and information monopoly that alienate research outputs from users by publishing research via different open access channels that allow free access to research immediately after publishing						
Open educational resources	Contributing to higher education transformation and social justice to support the historically marginalised through creation and dissemination of **open licensed textbooks** to allow sharing						
	Contributing to democracy and human development through the creation and sharing of Massive Open Online Courses **(MOOCs)** on OpenUCT and on other open platforms to support skills development in South Africa and across the continent						
	Promoting equal education through sharing open licensed **lecture notes** for free access and re-use by others						
	Removing access barriers and reducing education cost for the marginalised through sharing other open licensed **educational materials** (e.g., homework assignments, quizzes, educational games, etc.) on OpenUCT and on other open platforms						

[46]Green open access involves self-archiving of copies of research outputs on institutional (Gadd & Troll Covey, 2019: 106) or subject repositories to allow authors to freely share publications.

[47]Gold open access requires an author to pay an article processing charge to make research freely available upon publication in an open access journal that makes all its content freely available to the end user (Raju, Claassen & Moll, 2017: 36).

[48]Diamond open access model "does not charge readers access fees, neither does it charge authors publication fees", which means authors publish for free and readers do not pay-to-read and the journal does not earn money through publishing (Gajović, 2017: 261).

Open data	Enhancing human development through supporting decision making and problem solving by sharing open **data** relevant to diverse community issues.						

Section C: Open scholarship practices academics and/or researchers are engaging in

8. The openness philosophy is viewed as an action intended to bring radical change in scholarly publishing through making publicly funded research freely available immediately to any reader (Pimm, 2014: 1). If you are engaging in any open scholarship practices, what practices are these?

Open scholarship category	Sub-categories or models	Yes	No
Open access to research	**Green open access:** increasing visibility of knowledge by depositing versions of published research and other scholarly outputs on UCT's institutional repository (OpenUCT) and on other open platforms, thus promoting information access for the marginalised		
	Gold & diamond open access: publishing open access with or without paying publication fees/APCs[49] to allow access to research immediately after publishing,		
Open educational resources (OERs)	Publishing **open textbooks** with licenses that allow free access, sharing and re-use to support access for the historically disadvantaged who are further excluded due to commodification of educational books		
	Creating and sharing **MOOCs** on OpenUCT and on other open platforms for access and re-use thus contributing to democracy and human development through access to free Afrocentric courses that address African challenges		
	Sharing open licensed **lecture notes** for free access, sharing and re-use of user-friendly content prepared in accessible languages to meet the needs of the African local audience		
	Sharing other open **educational materials** (e.g., homework assignments, quizzes, educational games, etc.) on OpenUCT and on other open platforms thus creating an opportunity for providing local African content to support decolonisation of the curriculum		

[49]APCs refer to article processing charges paid by authors to publish their research such that it may be accessed freely immediately after publishing (Rodrigues, Abadal & de Araújo, 2020: 5).

Open data	Sharing open **datasets** on UCT's data repository (ZivaHub) or other trusted repositories with licenses to allow sharing and re-use, thus supporting innovation, policy development and service delivery		
Other, please specify:			

9. What motivates your participation in the democratisation of knowledge creation and dissemination through open scholarship?

Open scholarship category/sub-category	**Motivating factors**	**Yes**	**No**	**Unsure**	**N/A**
Green, gold or diamond open access	UCT's open access policy				
	Students'/readers' challenges in accessing research published in journals, books, etc.				
	Personal desire to share				
	Encouragement from peers				
	Availability of UCT's institutional repository (OpenUCT) for sharing research output				
	Availability of open access publishing platforms at UCT				
	Availability of UCT funding for APCs				
Open textbook publishing	UCT's open access policy				
	Students'/readers' challenges in accessing reading materials or textbooks at no cost				
	Personal desire to share				
	Encouragement from peers				
	Availability of open access publishing platforms at UCT				
	Availability of UCT's institutional repository (OpenUCT) for sharing scholarship like open textbooks to support education				
	Availability of funding (grants) at UCT for services like language editing, graphic designing, etc.				
Creating and sharing **MOOCs**	UCT's open access policy				
	Students'/readers' challenges in accessing tuition free educational programmes useful for skills or professional development				
	Personal desire to share				
	Encouragement from peers				
	Availability of UCT's institutional repository (OpenUCT) for sharing scholarly output				

	Availability of funding (grants) to support the creation of MOOCs through payment for services like video production, graphic designing, etc.				
Creation and sharing of other open licensed **educational materials**	UCT's open access policy				
	Students'/readers' challenges in accessing educational materials like lecture notes or, quizzes to enhance the understanding of subjects in a curriculum				
	Personal desire to share				
	Encouragement from peers				
	Availability of UCT 's institutional repository (OpenUCT) for sharing scholarship like OERs				
	Availability of funding (grants) to support the creation of OERs through payment for services like video production, creating reader-friendly interactive formats, etc.				
Sharing of open licensed **datasets**	UCT's research data management policy				
	Students'/readers' challenges in accessing data for re-use for further research creation and re-use in other critical human development projects				
	Personal desire to share				
	Encouragement from peers				
	Availability of data repository (ZivaHub) at UCT				
	Availability of funding (grants) to support collection and management of primary data, including statistician services and purchasing of equipment required for different data processing				
Other, please specify:					

Section D: Participation in openness as a social good

10. Openness philosophy promotes the removal of copyright restrictions and cost barriers to make information freely accessible for re-use (Suber, 2019) thus affording communities opportunities to implement a social justice agenda aimed to achieve public good (including human development). This is achieved through sharing of open research, open educational resources (including free textbooks, free online courses, etc.) and open research data that can be utilised for further research creation and for decision making to improve human lives.

Drawing from your experience in the research field, would you regard the following open scholarship practices as being critical in supporting human development and social justice?

Open scholarship category/sub-category	Disagree	Neutral	Agree
Open access (e.g., free access to journal/research articles, conference proceedings, research reports, etc.)			
Sharing of open textbooks (e.g., free access to textbooks licensed to allow sharing with others)			
Creating and sharing Massive Open Online Courses (**MOOCs)**			
Sharing other open educational resources with licenses that allow to share with others (e.g., videos of lectures, homework assignments, quizzes, etc.)			
Sharing of open research data that have no restrictions on sharing with others to allow re-use by others for research purposes and other critical services			

11. UCT encourages its community to participate in engaged scholarship through utilisation of research and other expertise to empower the marginalised communities in South Africa (University of Cape Town, 2018) as research has great potential to enhance human lives.

    On a scale of 0 to 5 (where the scale denotes: 0=Not at all, 1=To a small extent, 2=To some extent, 3=To a moderate extent, 4=To a great extent, and 5=To a very great extent), as a UCT academic and/or researcher, to what extent do you participate in the openness movement as a social good?

Open scholarship category/sub-category	0	1	2	3	4	5
Gold & diamond open access (publishing research that will be freely available to readers immediately after publishing)						
Green open access (self-archiving copies of research output on UCT's institutional repository (OpenUCT) and on other open platforms to make knowledge freely available to readers)						
Open textbook publishing (make textbooks freely available to readers with a license to share with others)						
Creating and sharing **MOOCs** to allow readers to develop skills for personal and career development at no cost						
Sharing other **open educational materials,** e.g., lecture notes, quizzes, course reading materials, etc., with a license that allow users to share with others						
Sharing of **open research data** that have no restrictions on sharing with others to allow re-use for research purposes and other critical services						

12. Engaged scholarship at UCT requires sharing of knowledge from diverse research disciplines of the institution. However, in the current research landscape researchers engage either in traditional (closed) scholarly publishing or in open access scholarly publishing.

As a UCT academic and/or researcher, would you regard the following as your publishing behaviour/culture?

Publishing behaviour/culture	**Always**	**Sometimes**	**Never**
I prioritise open access publishing			
I prioritise subscription/closed journals			
I stopped publishing in commercial (closed) journals			
I prioritise only high impact factor international journals when I am publishing			
I sign away my copyright to the publisher(s) and I am not interested in open access			
I sign away copyright to the publisher(s), only if I have permission from the journal/publisher to share a copy on my institutional repository (OpenUCT)			
Other, please specify:			

13. Among the new trends that emerged with the openness movement, universities, academic libraries, faculties and departments in various disciplines have adopted collaborative information communication technology (ICT) infrastructure to support open publishing and sharing activities.

What activities are you, as a UCT academic and/or researcher, engaging in, to support social good through the democratisation of knowledge creation and dissemination using emerging ICTs? (*You may select (✓) more than one response.*)

Social good supporting activities	**(✓)**
Managing[50] of open access journals that do not charge publication fees/APCs	
Managing of journal(s) with low publication fees/APCs	
Serving as Editor-in-chief[51] of an open access journal (directing the overall strategy of the journal)	
Serving as an Editor-in-chief managing and monitoring the review and production processes of manuscripts submitted in open access journal(s)	
Peer-reviewing research in open access journals	
Training researchers on how to choose authentic open access journals	
Orienting fellow researchers on the importance of publishing open access	
Serving on editorial boards to promote quality of open access journals	
Training researchers on copyright and open licenses	
Mentoring emerging researchers and peers on research writing	
Mentoring researchers on research data management aspects	
Other, please specify:	

14. Academics and/or researchers encounter diverse challenges as they participate in open scholarship due to scarcity of resources, which influences particularly those from low/middle income communities.

[50]Journal management role includes creating the journal, adding policies and all the information required for the journal to attract users. Another part of the role is troubleshooting, which is supporting users (authors and reviewers) with technical issues, setting emails and other required templates. The manager works in consultation with the Editor-in-chief and the editorial board of the journal.

[51]The Editor-in-chief has the role to manage all submissions (manuscripts) received in the journal workflow and see them through the processes of review, revision, editing and publishing the final reviewed manuscript in a new issue.

What challenges do you encounter as you participate, or make efforts to participate, in open scholarship at UCT?

Challenges encountered	Yes	No
I am required to pay access fees for journal articles which are not available in my library		
Identification of authentic open access journals		
Lack of understanding of the difference between open access and closed/subscription journals		
Lack of awareness of the availability of open access publication funding/APCs at UCT or elsewhere		
Unaffordability of publication fees/APCs as most international journals charge APCs in foreign currency		
Uncertainty as to whether my research outputs (journal articles, conference papers, etc.) can be shared on the institutional repository (OpenUCT) or on other open platforms		
Uncertainty as to whether my research data is shareable		
Lack of understanding of the concept of open licenses		
Lack of understanding of open education issues (e.g., how to create OERs)		
Lack of time to conduct research due to high volume in workload		
Lack of trust of open access journals		
Fear of being unknowingly lured into publishing in journals that are fraudulent		
Language barrier (challenge to communicate research in English)		
Other, please specify:		

Section E: Strategies to support/advance open scholarship

15. The capability approach framework facilitates a rich assessment of individuals' capabilities to undertake valued and valuable activities, with the classification scheme of the framework categorised into "personal, funding, organisational [institutional or environmental] and infrastructural factors" (Bezuidenhout et al., 2017b: 465). These are critical in assessing the capability to equitably participate in open scholarship, particularly in the global south, where resources are scarce

    Guided by the capability approach classification scheme (including personal, funding, organisational (also referred as institutional or environmental) and infrastructural factors), what elements have you adopted as part of your strategy to participate in open scholarship at UCT?

Capability approach categories (strategy elements)	**Yes**	**No**
Personal elements *(Availability of skills and other elements that are the result of personal effort)*		
I developed self-archiving skills to deposit my scholarly outputs on OpenUCT and on other open platforms		
I oriented myself on copyright and open license issues		
I used personal funding to publish open access		
I developed technical skills to handle and manage research data		
I took initiative to attend training on metadata, archiving standards and sharing principles important in research and data sharing (e.g., FAIR data principles)		
Funding elements *(Provision of funding by research stakeholders)*		
I used open access funding provided by UCT to support open access publishing		
I used UCT subsidy funding with BioMed Central to publish open access		
I had collaboration with international researchers who have funding for APCs to publish open access		
I had access to other research funding to publish open access		
I used UCT OER grant to create OERs that I shared with others		
I had access to research funds to purchase storage space for my raw data		
Institutional/environmental elements **(***Support from institution or organisation and peers***)**		
Librarians offered workshops on self-archiving and copyright education to support 'green open access' (self-archiving on OpenUCT)		
Librarians & data curators offered workshops to develop data literacy skills including open licensing data, depositing data on ZivaHub, data citation, FAIR data principles and other technical issues		
I had access to library databases to use information off campus		
I had access to all the research I need to conduct research		
I received orientation on where to get support on open access publishing		
UCT offered training on copyright & open licenses		
I had access to UCT's open publishing platforms		
UCT created awareness on the institution's open access policy		
UCT created awareness on the institution's research data management policy		
I received orientation on UCT's social responsiveness agenda that supports engaged scholarship & human development of the local communities		
Infrastructural elements (*Provision of interconnected ICTs*)		

I had free access to UCT's cloud space for research creation and collaboration		
UCT provided infrastructure, that is, established an institutional repository (OpenUCT), where I can share my research		
UCT provided infrastructure, that is, established an open data repository (ZivaHub), where I can share my research datasets		
UCT provided connectivity to support online research collaboration		
I had access to UCT storage space on campus for my raw data		
I had access to UCT's data visualisation equipment		

Section F: Extent of effectiveness of adopted strategies in supporting the social responsiveness agenda of the university

16. On a scale of 0-6 (with 6 being extremely effective and 0 not effective, and N/A for cases where responses are not applicable), how would you rate the extent of effectiveness of the strategy elements you adopted at UCT to participate in open scholarship?

Capability approach categories (strategy elements)	**N/A**	**0**	**1**	**2**	**3**	**4**	**5**	**6**
Personal elements *(Availability of skills and other elements that are result of personal effort)*								
I developed self-archiving skills to deposit my scholarly outputs on OpenUCT and on other open platforms								
I oriented myself on copyright and open license issues								
I used personal funding to publish open access								
I developed data management and processing skills								
I developed technical skills to handle and manage research data								
I took initiative to attend training on metadata, archiving standards and sharing principles important in research and data sharing (e.g., FAIR data principles)								
Funding elements *(Provision of funding by research stakeholders)*								
I had access to open access funding provided by UCT to support open access publishing								
I had access to UCT subsidy funding with BioMed Central to publish open access								
I collaborated with international researchers who have funding for APCs to publish immediate open access								
I had access to other research funding to publish open access								
I had access to UCT OER grant to create OERs that I shared with others								
I had access to research funds to purchase storage space for my raw data								
Institutional/environmental elements (*Support from institution or organisation and peers*)								
Librarians offered workshops on self-archiving and copyright education to support 'green open access' (self-archiving on OpenUCT)								
Librarians & data curators offered workshops to develop data literacy skills including open licensing data, depositing data on ZivaHub, data citation, FAIR data principles and other technical issues								
I had access to library databases to use information off campus								

I had access to all the research I need to create more knowledge							
I received orientation on where to get support on open access publishing							
UCT offered workshops on copyright & open licenses							
I had access to UCT's open publishing platforms							
UCT created awareness campaigns on the institution's open access policy							
UCT created awareness on the institution's research data management policy							
I received orientation on UCT's social responsiveness agenda that supports engaged scholarship & human development of the local communities							
Infrastructural elements (*Provision of interconnected ICTs*)							
I had free access to UCT's cloud space for research creation and collaboration							
UCT provided infrastructure, that is, established an institutional repository (OpenUCT), where I can share my research							
UCT provided infrastructure, that is, established an open data repository (ZivaHub), where I can share my research datasets							
UCT provided internet connectivity to support online research collaboration							
I had access to UCT storage space on campus for my raw data							
I had access to UCT's data visualisation equipment							

Section G: Elements of a strategy to promote open scholarship within a critical epistemology

17. Within a critical epistemology, academics and/or researchers from marginalised, low-income countries (including African countries grappling with poverty) struggle to participate in open scholarship due to diverse challenges. The "capability approach framework" (Bezuidenhout et al., 2017b) can be useful in assessing people's capabilities to contribute towards open scholarship through evaluating "personal, funding, organisational [institutional/environmental] and infrastructural" factors, which could also be critical in developing a strategy to support equitable participation in the openness movement.

    Guided by the capability approach framework (of personal, funding, organisational (institutional/environmental), and infrastructural factors), would you consider the following as essential components of a strategy to support and sustain academics and/or researchers' open scholarship practices at UCT?

Capability approach categories (essential strategy elements)	Yes	No
Personal elements *(Availability of skills and other elements that are result of personal effort)*		
Self-archiving skills		
Personal skills on copyright and open licenses		
Positive attitude to open sharing philosophy		
Personal skills on research data management processes		
Skills to work with available open access software		
Technical skills and knowledge on metadata, archiving standards and sharing principles (e.g., FAIR data principles) to manage, process and share research data		
Funding elements *(Provision of funding by research stakeholders)*		
Provision of funding by UCT for APCs to support open access publishing		
Provision of OER grants to support the creation of OERs through payment for critical services such as video production, etc.		
Provision of research funding to purchase software required for diverse research activities		
Provision of training to handle software that supports research production and free dissemination		
Provision of funding for storage space for raw data		
Institutional/environmental elements **(***Support from institution or organisation and other stakeholders***)**		
Training from the library to support self-archiving and develop metadata skills		
Organisation of seminars and workshops with librarians and data curators for the development of data literacy skills to support research data management and sharing		
Organisation of seminars on open access publishing		
Support for research collaboration and sharing		
Support with access to information databases off campus		
Orientation on all policies that are bases for open scholarship		
Training on copyright and open licenses		
Infrastructural elements (*Provision of interconnected ICTs*)		
Provision of free cloud space by UCT to store and share research resources		
Provision of collaborative research infrastructure by UCT		

Provision of platforms/open-source software repositories by UCT for data and research sharing		
Provision of internet connectivity by UCT to support research activities and networking		
Provision of hardware, computer software, programmes and applications that support the creation and sharing of scholarly products		
Provision of data visualisation equipment		
Other, please specify:		

Section H: General

18. Please feel free to make any general comments relating to UCT academics and/or researchers' participation in open scholarship, which have not been covered in the sections above.

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Thank you for participating in this study.

Appendix B: Semi-structured interview schedule for representatives of faculty research committees

A critical analysis of the participation of the University of Cape Town community in the advancement of open scholarship: towards a strategy for the promotion of open scholarship

Preamble

My name is Lena Nyahodza, and I am studying towards a PhD degree in the Department of Knowledge and Information Stewardship at the University of Cape Town (UCT) in the Faculty of Humanities. I am conducting a study to critically analyse the UCT community's participation in the advancement of open scholarship; and, to develop a strategy for the promotion of open scholarship. Professor Jaya Raju is supervising my study. Open scholarship is a philosophy inclusive of open access and open publishing, open education (including open educational resources and open teaching), and research data sharing (Veletsianos and Kimmons, 2012). Practices of open scholarship remove barriers to information access for the end user (the reader), having society as the significant beneficiary of research, data and educational materials (including textbooks) (Raju, 2016). The open scholarship philosophy aims to achieve openness assumptions of democratisation of knowledge creation and dissemination (Veletsianos and Kimmons, 2012: 168). Different research communities and stakeholders also use terms like open science and openness as synonyms of open scholarship. As part of this study, I need to interview purposively selected *representatives of faculty research committees* to understand the extent of participation of the UCT community in open scholarship. I am also interested in participants' views and opinions on components suitable to develop an inclusive strategy to enhance open scholarship for the UCT community.

By completing and signing the consent form you have agreed to participate in this study. To, re-iterate, you are no under obligation to respond to questions being asked by the researcher. Protection of individual identity through anonymisation of data provided, is assured. Confidentiality of all responses provided by the participant is also assured. With your consent, the interview will be recorded for referral purposes during data capturing. Data will be anonymised before datasets are shared on UCT's open data repository. Should you choose to withdraw from the interview, you may do so at any point.

Interview schedule for purposively selected representatives of faculty research committees

[*Date, venue and duration of interview will be noted as some of this information is critical metadata for the datasets. Due to the COVID-19 pandemic, the interviewees will be requested to meet virtually for the interview.*]

Section A: Biographical questions

1. Faculty of affiliation of the interviewee:
2. Rank of the interviewee (e.g., Associate Professor):

Section B: Extent of participation in open scholarship

3. While "commodification of knowledge" is an information access barrier in scholarly communication, commitment to open scholarship (open access, open educational resources and open data) is critical for the democratisation of knowledge creation and dissemination (Pyati, 2007; Veletsianos & Kimmons, 2012). Through open scholarship, copyright restrictions and cost barriers are removed to allow readers free access to knowledge that is critical for development.

   In view of this assertion, to what extent do researchers in your faculty participate in open scholarship?

Section C: Open scholarship practices academics and/or researchers are engaging in

4. The openness philosophy is viewed as an action intended to bring radical change in scholarly publishing through making publicly funded research freely available immediately to any reader (Pimm, 2014: 1).

   In this context, if academics and/or researchers in your faculty are engaging in any open scholarship practices, what practices are these?
5. From your observation, what do you believe motivates participation of academics and /or researchers in your faculty in the democratisation of knowledge creation and dissemination through open scholarship?

Section D: Participation in openness as a social good

6. Openness philosophy promotes the removal of copyright restrictions and cost barriers to make information freely accessible for re-use (Suber, 2019) thus affording communities

opportunities to implement a social justice agenda aimed to achieve public good (including human development). This is achieved through sharing of open research, open educational resources (including free textbooks, free online courses, etc.) and open research data that can be utilised for further research creation and for decision making to improve human lives

Drawing from your knowledge of research in your faculty, would you regard open scholarship as being critical in supporting human development and social justice?

7. UCT encourages its community to participate in engaged scholarship through utilisation of research and other expertise to empower the marginalised communities in South Africa (University of Cape Town, 2018) as research has great potential to enhance human lives.

   In view of this, to what extent do you think UCT academics and/or researchers in your faculty are participating in the openness movement as a social good?

8. Engaged scholarship at UCT requires sharing of knowledge from diverse research disciplines of the institution. However, in the current research landscape researchers engage either in traditional (closed) scholarly publishing or in open access scholarly publishing.

   What would you regard as the publishing behaviour or culture of UCT academics and/or researchers in your faculty?

9. Among the new trends that emerged with the openness movement, universities, academic libraries, faculties and departments in various disciplines have adopted collaborative information communication technology (ICT) infrastructure to support open publishing and sharing activities.

   From your observations in your faculty, what activities are UCT academics and/or researchers engaging in, to support social good through the democratisation of knowledge creation and dissemination using emerging ICTs?

10. Academics and/or researchers encounter diverse challenges as they participate in open scholarship due to scarcity of resources, which influences particularly those from low/middle income communities.

    In your capacity as faculty research committee representative, what do you observe as challenges that academics and/or researchers encounter during participation in open scholarship at UCT?

Section E: Strategies to support/advance open scholarship

11. The capability approach framework facilitates a rich assessment of individuals' capabilities to undertake valued and valuable activities, with the classification scheme of the framework

categorised into “personal, funding, organisational [institutional or environmental] and infrastructural factors” (Bezuidenhout et al., 2017b: 465). These are critical in assessing the capability to equitably participate in open scholarship, particularly in the global south, where resources are scarce.

Guided by the capability approach classification scheme (including elements like personal, funding, organisational (also referred as institutional or environmental) and infrastructural factors), what elements, do you think, academics and/or researchers in your faculty have adopted as part of their strategy to participate in open scholarship at UCT?

Prompt: *Probing will include personal development by researchers to be able to participate in open scholarship, provision of the right tools by the institutions of affiliation, provision of funding to support open practices, etc.*

Section F: Extent of effectiveness of adopted strategies in supporting the social responsiveness agenda of the university

12. How would you rate the extent of effectiveness of the strategy elements adopted by academics and/or researchers in your faculty to participate in open scholarship?

    Prompt: *Probing will include personal development by researchers to be able to participate in open scholarship, provision of infrastructure by the institutions of affiliation, provision of funding to support open practices, etc.*

Section G: Elements of a strategy to promote open scholarship within a critical epistemology

13. Within a critical epistemology, academics and/or researchers from marginalised, low-income countries (including African countries grappling with poverty) struggle to participate in open scholarship due to diverse challenges. The “capability approach framework” (Bezuidenhout et al., 2017b) can be useful in assessing people’s capabilities to contribute towards open scholarship through evaluating “personal, funding, organisational [institutional/environmental] and infrastructural” factors, which could also be critical in developing a strategy to support equitable participation in the openness movement.

    Guided by the capability approach framework (of personal, funding, organisational (institutional/environmental), and infrastructural factors), what would you regard as

essential components of a strategy that can support and sustain open scholarship practices of academics and/or researchers in your faculty?

Prompt: *During the interview this question should be guided by the modified classification scheme of the capability approach framework (categorised into personal, funding, and infrastructural factors).*

Section H: General

14. Please feel free to make any general comments relating to UCT academics' and/or researchers' participation in open scholarship, which have not been covered in this interview.

Debriefing

Thank you for participating in the study.

Appendix C: Semi-structured interview schedule for purposively selected key informants

A critical analysis of the participation of the University of Cape Town community in the advancement of open scholarship: towards a strategy for the promotion of open scholarship

Preamble

My name is Lena Nyahodza and I am studying towards a PhD degree in the Department of Knowledge and Information Stewardship at the University of Cape Town (UCT), in the Faculty of Humanities. I am conducting a study to critically analyse the UCT community's participation in the advancement of open scholarship; and, to develop a strategy for the promotion of open scholarship. Professor Jaya Raju is supervising my study. Open scholarship is a philosophy inclusive of open access and open publishing, open education (including open educational resources and open teaching), and research data sharing (Veletsianos and Kimmons, 2012). Practices of open scholarship remove barriers to information access for the end user (the reader), having society as the significant beneficiary of research, data and educational materials (including textbooks) (Raju, 2016). The open scholarship philosophy aims to achieve openness assumptions of democratisation of knowledge creation and dissemination (Veletsianos and Kimmons, 2012: 168). Different research communities and stakeholders also use terms like open science and openness as synonyms of open scholarship. As part of this study, I need to interview purposively selected key informants to understand the extent of participation of the UCT community in open scholarship. I am also interested in key informants' views and opinions on components suitable to develop an inclusive strategy to enhance open scholarship for the UCT community.

By completing and signing the consent form you have agreed to participate in this study. To, re-iterate, you are no under obligation to respond to questions being asked by the researcher. Protection of individual identity through anonymisation of data provided, is assured. Confidentiality of all responses provided by the participant is also assured. With your consent, the interview will be recorded for referral purposes during data capturing. Data will be anonymised before datasets are shared on UCT's open data repository. Should you choose to withdraw from the interview, you may do so at any point.

Interview schedule for purposively selected key informants

[*Date, venue and duration of interview will be noted as some of this information is critical metadata for the datasets. Due to the COVID-19 pandemic, the interviewees will be requested to meet virtually for the interview.*]

Section A: Biographical questions

1. Department: (UCT Libraries [ ]; Research Office [ ]; UCT Board Press [ ]
2. Designation of the interviewee:

Section B: Extent of participation in open scholarship

3. While "commodification of knowledge" is an information access barrier in scholarly communication, commitment to open scholarship (open access, open educational resources and open data) is critical for the democratisation of knowledge creation and dissemination (Pyati, 2007; Veletsianos & Kimmons, 2012). Through open scholarship, copyright restrictions and cost barriers are removed to allow readers free access to knowledge that is critical for development.

   In view of this assertion, to what extent, do you believe, that UCT researchers participate in open scholarship?

Section C: Open scholarship practices academics and/or researchers are engaging in

4. The openness philosophy is viewed as an action intended to bring radical change in scholarly publishing through making publicly funded research freely available immediately to any reader (Pimm, 2014: 1).
   In this context, if UCT academics and/or researchers are engaging in any open scholarship practices, what practices are these?
5. From your observation, what do you believe motivates participation of UCT academics and/or researchers in the democratisation of knowledge creation and dissemination through open scholarship?

Section D: Participation in openness as a social good

6. Openness philosophy promotes the removal of copyright restrictions and cost barriers to make information freely accessible for re-use (Suber, 2019) thus affording communities opportunities to implement a social justice agenda aimed to achieve public good (including

human development). This is achieved through sharing of open research, open educational resources (including free textbooks, free online courses, etc.) and open research data that can be utilised for further research creation and for decision making to improve human lives

From your observation, do UCT academics and/or researchers regard open scholarship as being critical in supporting human development and social justice?

7. UCT encourages its community to participate in engaged scholarship through utilisation of research and other expertise to empower the marginalised communities in South Africa (University of Cape Town, 2018) as research has great potential to enhance human lives.

   In view of this, to what extent do you think UCT academics and/or researchers are participating in the openness movement as a social good?

8. Engaged scholarship at UCT requires sharing of knowledge from diverse research disciplines of the institution. However, in the current research landscape researchers engage either in traditional (closed) scholarly publishing or in open access scholarly publishing.

   From your observations, what would you regard as UCT academics' and/or researchers' publishing behaviour or culture?

   Prompts:

   - *When interviewing the representative from the UCT Research Office, respondent's experience with academics and/or researchers during research evaluation and impact for promotion and funding applications should be brought into context.*
   - *During interviews with librarians/information specialists, their experience with research impact and new trends in open access models should be brought into context.*
   - *During the interview with UCT Press Board, respondent's experience with academics and/or researchers' choices of publishing models should be brought into context.*

9. Among the new trends that emerged with the openness movement, universities, academic libraries, faculties and departments in various disciplines have adopted collaborative information communication technology (ICT) infrastructure to support open publishing and sharing activities.

From your observations, what activities are UCT academics and/or researchers engaging in to support social good through the democratisation of knowledge creation and dissemination using emerging ICTs?

10. Academics and/or researchers encounter diverse challenges as they participate in open scholarship due to scarcity of resources, which influences particularly those from low/middle income communities.

    From your observations, what challenges do UCT academics and/or researchers encounter as they participate in open scholarship at UCT?

Section E: Strategies to support/advance open scholarship

11. The capability approach framework facilitates a rich assessment of individuals' capabilities to undertake valued and valuable activities, with the classification scheme of the framework categorised into "personal, funding, organisational [institutional or environmental] and infrastructural factors" (Bezuidenhout et al., 2017b: 465). These are critical in assessing the capability to equitably participate in open scholarship, particularly in the global south, where resources are scarce

    Guided by the capability approach classification scheme (including personal, funding, organisational (also referred as institutional or environmental) and infrastructural factors), what elements have you adopted as part of your strategy to participate in open scholarship at UCT?

    Prompt: *Probing will include personal development by researchers to be able to participate in open scholarship, provision of the right tools by the institutions of affiliation, provision of funding to support open practices, etc.*

Section F: Extent of effectiveness of adopted strategies in supporting the social responsiveness agenda of the university

12. How would you rate the extent of effectiveness of the strategy elements adopted by UCT academics and/or researchers to participate in open scholarship?

Prompt: Probing will include personal development by researchers to be able to participate in open scholarship, provision of infrastructure by the institutions of affiliation, provision of funding to support open practices, etc.

Section G: Elements of a strategy to promote open scholarship within a critical epistemology

13. Within a critical epistemology, academics and/or researchers from marginalised, low-income countries (including African countries grappling with poverty) struggle to participate in open scholarship due to diverse challenges. The "capability approach framework" (Bezuidenhout et al., 2017b) can be useful in assessing people's capabilities to contribute towards open scholarship through evaluating "personal, funding, organisational [institutional/environmental] and infrastructural" factors, which could also be critical in developing a strategy to support equitable participation in the openness movement.

    Guided by the capability approach framework (of personal, funding, organisational (institutional/environmental), and infrastructural factors), would you consider the following as essential components of a strategy to support and sustain academics and/or researchers' open scholarship practices at UCT?

    Prompt: During the interview, this question should be guided by the modified classification scheme of the capability approach framework (categorised into personal, funding, and infrastructural factors).

Section H: General

14. Please feel free to make any general comments relating to UCT academics and/or researchers' participation in open scholarship, which have not been covered in this interview.

Debriefing

The interviewer will invite the interviewee to share thoughts on the interview and allow the respondent to ask questions, if any.

The researcher will thank the respondent for participating in the study.

Duration: [record length of time of the interview]

Appendix D: Focus group schedule for UCT masters and PhD students, and post-doctoral fellows

A critical analysis of the participation of the University of Cape Town community in the advancement of open scholarship: towards a strategy for the promotion of open scholarship

Preamble

My name is Lena Nyahodza and I am studying towards a PhD degree in the Department of Knowledge and Information Stewardship at the University of Cape Town (UCT), in the Faculty of Humanities. I am conducting a study to critically analyse the UCT community's participation in the advancement of open scholarship; and, to develop a strategy for the promotion of open scholarship. Professor Jaya Raju is supervising my study. Open scholarship is a philosophy inclusive of open access and open publishing, open education (including open educational resources and open teaching), and research data sharing (Veletsianos and Kimmons, 2012). Practices of open scholarship remove barriers to information access for the end user (the reader), having society as the significant beneficiary of research, data and educational materials (including textbooks) (Raju, 2016). The open scholarship philosophy aims to achieve openness assumptions of democratisation of knowledge creation and dissemination (Veletsianos and Kimmons, 2012: 168). Different research communities and stakeholders also use terms like open science and openness as synonyms of open scholarship. As part of this study, I am conducting six separate focus group discussions with *masters and PhD students, and post-doctoral fellows* to understand the extent of their participation in open scholarship. I am also interested in participants' views and opinions on components suitable to develop an inclusive strategy to enhance open scholarship for the UCT community.

By completing and signing the consent form you have agreed to participate in this study. Please note that you are no under obligation to participate in the group discussion. Protection of individual identity through anonymisation of data provided (if any names are mentioned during the discussion) is assured. Confidentiality of all information provided by the participant is also assured. With the group's consent, the discussion will be recorded for referral purposes during data capturing. Data will be anonymised before datasets are shared on UCT's open data repository. Should you choose to withdraw from the discussion, you may do so at any point.

Focus group schedule for masters and PhD students, and post-doctoral fellows

Facilitator's initial task

At the outset, as the discussion facilitator, I will explain relevant concepts for the participants to have a common understanding of definitions key to the study, which may inform discussion linked to the study's research questions, for example, open scholarship; open access (green, gold and diamond); open educational resources; open data; and RDM services)

I will encourage participants to be compassionate towards one another and assure them that there is no right or wrong answers. I will also request participants to exercise confidentiality and encourage them not to share other participants' information outside the focus group discussion.

[*Date, venue* and *duration of discussion will be noted as some of this information is critical metadata for the datasets. Due to the COVID-19 pandemic, the participants will be requested to meet virtually for the interview.*]

Section A: Biographical information

[*If participants do not consent to audio recording of the discussion, a note taker will be brought in with the consent of the group participants and will be assigned a note taking responsibility.*]

1. Note number of respondents:_____
2. List representation of faculties of participants:_____
3. List departments or discipline represented:_____

Section B: Extent of participation in open scholarship

4. While "commodification of knowledge" is an information access barrier in scholarly communication, commitment to open scholarship (open access, open educational resources and open data) is critical for the democratisation of knowledge creation and dissemination (Pyati, 2007; Veletsianos & Kimmons, 2012). Through open scholarship, copyright restrictions and cost barriers are removed to allow readers free access to knowledge that is critical for development.

   In view of this assertion, discuss the extent to which masters students/PhD students/post-doctoral fellows [researcher to select as appropriate] participate in open scholarship.

   Section C: Open scholarship practices academics and/or researchers are engaging in

5. The openness philosophy is viewed as an action intended to bring radical change in scholarly publishing through making publicly funded research freely available immediately to any reader (Pimm, 2014: 1).

   In this context, if you, as UCT research students, are engaging in any open scholarship practices, please discuss what practices these are.

   Prompt: *Participants will be asked to share their contributions to open scholarship and their observations of established researchers' contributions in their diverse fields.*

   Prompt: *Participants will be asked to share their experience with using open scholarship.*
6. Discuss factors that motivate your participation (as emerging researchers) and that of established researchers in the democratisation of knowledge creation and dissemination through open scholarship?

   Prompt: *The facilitator will emphasise the inclusion of what participants observe as motivating factors for seasoned researchers to engage in open scholarship practices*.

Section D: Participation in openness as a social good

7. Openness philosophy promotes the removal of copyright restrictions and cost barriers to make information freely accessible for re-use (Suber, 2019) thus affording communities opportunities to implement a social justice agenda aimed to achieve public good (including human development). This is achieved through sharing of open research, open educational resources (including free textbooks, free online courses, etc.) and open research data that can be utilised for further research creation and for decision making to improve human lives.

   Would you regard open scholarship as being critical in supporting human development and social justice? Please share your views on the relationship between openness of content and promotion of human development and social justice.
8. UCT encourages its community to participate in engaged scholarship through utilisation of research and other expertise to empower the marginalised communities in South Africa (University of Cape Town, 2018) as research has great potential to enhance human lives.

   Please share your views, as early career researchers, on the extent of your participation in the openness movement as a social good.
9. Engaged scholarship at UCT requires sharing of knowledge from diverse research disciplines of the institution. However, in the current research landscape researchers engage either in traditional (closed) scholarly publishing or in open access scholarly publishing.

   In view of this, please discuss your publishing behaviour or culture, in your discipline.

10. Among the new trends that emerged with the openness movement, universities, academic libraries, faculties and departments in various disciplines have adopted collaborative information communication technology (ICT) infrastructure to support open publishing and sharing activities.

    What activities are you, as post-graduate research students/early career researchers [depending on which focus group discussion is being facilitated], engaging in to support social good through the democratisation of knowledge creation and dissemination using emerging ICTs? Discuss your views providing examples.

11. Academics and/or researchers encounter diverse challenges as they participate in open scholarship due to scarcity of resources, which influences particularly those from low/middle income communities.

    Discuss challenges that you, as post-graduate research students/early career researchers [depending on which focus group discussion is being facilitated], encounter as you participate, or make efforts to participate, in open scholarship at UCT.

    Prompt: *Participants' personal experiences and what they have observed, should be clarified.*

Section E: Strategies to support/advance open scholarship

12. The capability approach framework facilitates a rich assessment of individuals' capabilities to undertake valued and valuable activities, with the classification scheme of the framework categorised into "personal, funding, organisational [institutional or environmental] and infrastructural factors" (Bezuidenhout et al., 2017b: 465). These are critical in assessing the capability to equitably participate in open scholarship, particularly in the global south, where resources are scarce.

    Guided by the capability approach classification scheme (including elements like personal, funding, organisational (also referred as institutional or environmental) and infrastructural factors), discuss elements you adopted as part of your strategy to participate in open scholarship at UCT.

Section F: Extent of effectiveness of adopted strategies in supporting the social responsiveness agenda of the university

13. Discuss the extent of effectiveness of the strategy elements you, as research students/early career researchers [depending on which focus group discussion is being facilitated], adopted at UCT to participate in open scholarship.

Prompt: *During the discussion, participants will be guided to focus on the effectiveness of the capability approach factors adopted to promote open scholarship including personal, organisational, infrastructural and funding factors.*

Section G: Elements of a strategy to promote open scholarship within a critical epistemology

14. Within a critical epistemology, academics and/or researchers from marginalised, low-income countries (including African countries grappling with poverty) struggle to participate in open scholarship due to diverse challenges. The "capability approach framework" (Bezuidenhout et al., 2017b) can be useful in assessing people's capabilities to contribute towards open scholarship through evaluating "personal, funding, organisational [institutional/environmental] and infrastructural" factors, which could also be critical in developing a strategy to support equitable participation in the openness movement.

    Within a critical epistemology, discuss components you would consider essential to include as part of a strategy to support and sustain open scholarship practices in your discipline.

    Prompt: *During the discussion this issue should be guided (on the part of the facilitator) by the modified classification scheme of the capability approach framework (categorised into personal, funding, and infrastructural factors)*

Section H: General

15. Please feel free to make any general comments relating to UCT academics and/or researchers' participation in open scholarship, which have not been covered in this discussion.

Debriefing

The facilitator will invite participants to share their thoughts on the discussion and allow them to ask questions, if any.

The researcher will thank the respondents for participating in the study.

Duration: [record length of time of the interview]

Appendix E: Document analysis guide

A critical analysis of the participation of the University of Cape Town community in the advancement of open scholarship: towards a strategy for the promotion of open scholarship

Preamble

The objective of this study is to critically analyse the UCT community's participation in the advancement of open scholarship. The study also aims to develop a strategy for the promotion of open scholarship. Open scholarship is a philosophy inclusive of open access and open publishing, open education (including open educational resources and open teaching), and research data sharing (Veletsianos and Kimmons, 2012). Practices of open scholarship remove barriers to information access for the end user (the reader), having society as the significant beneficiary of research, data and educational materials (including textbooks) (Raju, 2016). The open scholarship philosophy aims to achieve openness assumptions of democratisation of knowledge creation and dissemination (Veletsianos and Kimmons, 2012). Different research communities and stakeholders also use terms like open science and openness as synonyms of open scholarship. As part of data collection for this study, I need to analyse relevant documents to understand the extent of the UCT community's participation open scholarship. Documents identified are relevant to the critical questions guiding the study as these may report on research productivity including open scholarship practices at UCT.

Ethical considerations

The process of analysing documents does not directly involve human interaction. However, anonymisation of data will be considered where names are mentioned in any reports or blogs to avoid exposing individuals to any risk. Documents identified are freely accessible and will not require the researcher to seek permission for their use. The researcher will follow re-use permissions on the documents if they have Creative Commons Licenses. Where necessary, the source providing secondary data will be acknowledged or cited during the reporting of findings. If copyright permits, data collected from the documents will be merged with other datasets, analysed and open licensed for sharing in ZivaHub (UCT data repository). The documents identified have the potential to inform the study's critical questions as these media are intended to communicate research related events, which may include new trends within the research landscape including open scholarship practices.

Documents identified in the table below are regarded useful in providing data to inform the study. The data identified could be relevant to some of the study's critical questions and will be useful for triangulation with other datasets emerging from other data-gathering instruments including interviews, focus group discussions and self-administered questionnaires.

Documents	Aspects to guide the researcher
UCT's annual research reports	Open scholarship practices Motivation Challenges Strategies Participation and social good/benefits
Open access funding reports	
Open access reports/blogs	
Data sharing records/reports	

The following questions will be addressed by the researcher during document analysis.

Section A: Biographical questions

1. What document type is being analysed?
2. Which university section is responsible for authorship of the document?
3. When was the document produced?
4. Which department is being reported about?
5. What is the main theme (events reported) of the document?
6. How is information relevant to open scholarship?

Section B: Extent of participation in open scholarship

7. While "commodification of knowledge" is an information access barrier in scholarly communication, commitment to open scholarship (open access, open educational resources and open data) is critical for the democratisation of knowledge creation and dissemination (Pyati, 2007; Veletsianos & Kimmons, 2012). Through open scholarship, copyright restrictions and cost barriers are removed to allow readers free access to knowledge that is critical for development.

   In the context of this assertion, identify information reported in the documents that relates to the extent of UCT academics and/or researchers' participation in open scholarship.

Section C: Open scholarship practices academics and/or researchers are engaging in

8. The openness philosophy is viewed as an action intended to bring radical change in scholarly publishing through making publicly funded research freely available immediately to any reader (Pimm, 2014: 1).

   Extract from relevant documents information on open scholarship practices that UCT academics and/or researchers are engaging in.
9. Identify, from relevant documents, possible factors influencing the participation of UCT academics and/or researchers in the democratisation of knowledge creation and dissemination through open scholarship.

Section D: Participation in openness as a social good

10. Openness philosophy promotes the removal of copyright restrictions and cost barriers to make information freely accessible for re-use (Suber, 2019) thus affording communities opportunities to implement a social justice agenda aimed to achieve public good (including human development). This is achieved through sharing of open research, open educational resources (including free textbooks, free online courses, etc.) and open research data that can be utilised for further research creation and for decision making to improve human lives.

    List any information that discusses academics and/or researchers' views or perceptions on how critical open scholarship is in supporting human development and social justice.
11. UCT encourages its community to participate in engaged scholarship through utilisation of research and other expertise to empower the marginalised communities in South Africa (University of Cape Town, 2018) as research has great potential to enhance human lives.

    What information has been recorded on the extent of UCT academics and/or researchers' participation in the openness movement as a social good?
12. Engaged scholarship at UCT requires sharing of knowledge from diverse research disciplines of the institution. However, in the current research landscape researchers engage either in traditional (closed) scholarly publishing or in open access scholarly publishing.

    In the documents being reviewed, what publishing behaviour or culture emerges as being associated with UCT academics and/or researchers?
13. Among the new trends that emerged with the openness movement, universities, academic libraries, faculties and departments in various disciplines have adopted collaborative

information communication technology (ICT) infrastructure to support open publishing and sharing activities.

Identify, from the documents, activities that UCT academics and/or researchers are engaging in to support social good through the democratisation of knowledge creation and dissemination using emerging ICTs.

14. Academics and/or researchers encounter diverse challenges as they participate in open scholarship due to scarcity of resources, which influences particularly those from low/middle income communities.

    From the relevant documents being reviewed, list any challenges encountered by UCT academics and/or researcher as they participate, or make efforts to participate, in open scholarship at UCT.

Section E: Strategies to support/advance open scholarship

15. The capability approach framework facilitates a rich assessment of individuals' capabilities to undertake valued and valuable activities, with the classification scheme of the framework categorised into "personal, funding, organisational [institutional or environmental] and infrastructural factors" (Bezuidenhout et al., 2017b: 465). These are critical in assessing the capability to equitably participate in open scholarship, particularly in the global south, where resources are scarce

    Guided by the capability approach framework that categorises capability factors into personal, funding, institutional and infrastructural, identify any elements, from the documents being reviewed, that UCT academics and/or researchers have adopted as part of their strategy to participate in open scholarship at UCT.

Section F: Extent of effectiveness of adopted strategies in supporting the social responsiveness agenda of the university

16. Identify information from the documents being reviewed that throw light on the extent of effectiveness of the strategy elements that have been adopted by UCT academics and/or researchers to participate in open scholarship?

Section G: Elements of a strategy to promote open scholarship within a critical epistemology

17. Within a critical epistemology, academics and/or researchers from marginalised, low-income countries (including African countries grappling with poverty) struggle to

participate in open scholarship due to diverse challenges. The "capability approach framework" (Bezuidenhout et al., 2017b) can be useful in assessing people's capabilities to contribute towards open scholarship through evaluating "personal, funding, organisational [institutional/environmental] and infrastructural" factors, which could also be critical in developing a strategy to support equitable participation in the openness movement

Identify and extract information from the documents being reviewed on possible essential elements for a strategy to support and sustain UCT academics' and/or researchers' open scholarship practices within a critical epistemology.

End of document analysis guide

Section F: Extent of effectiveness of adopted strategies in supporting the social responsiveness agenda of the university

18. How would you rate the extent of effectiveness of the strategy elements adopted by UCT academics and/or researchers to participate in open scholarship?

    Prompt: *Probing will include personal development by researchers to be able to participate in open scholarship, provision of infrastructure by the institutions of affiliation, provision of funding to support open practices, etc.*

Section G: Elements of a strategy to promote open scholarship within a critical epistemology

19. Within a critical epistemology, academics and/or researchers from marginalised, low-income countries (including African countries grappling with poverty) struggle to participate in open scholarship due to diverse challenges. The "capability approach framework" (Bezuidenhout et al., 2017b) can be useful in assessing people's capabilities to contribute towards open scholarship through evaluating "personal, funding, organisational [institutional/environmental] and infrastructural" factors, which could also be critical in developing a strategy to support equitable participation in the openness movement.

    Guided by the capability approach framework (of personal, funding, organisational (institutional/environmental), and infrastructural factors), would you consider the following as essential components of a strategy to support and sustain academics and/or researchers' open scholarship practices at UCT?

Prompt: *During the interview, this question should be guided by the modified classification scheme of the capability approach framework (categorised into personal, funding, and infrastructural factors).*

Section H: General

20. Please feel free to make any general comments relating to UCT academics and/or researchers' participation in open scholarship, which have not been covered in this interview.

Debriefing

The interviewer will invite the interviewee to share thoughts on the interview and allow the respondent to ask questions, if any.

The researcher will thank the respondent for participating in the study.

Duration: [record length of time of the interview]

Appendix F: Informed consent for representatives of faculty research committees

A critical analysis of the participation of the University of Cape Town community in the advancement of open scholarship: towards a strategy for the promotion of open scholarship

Dear Participant

My name is Lena Nyahodza and I am studying towards a PhD degree in the Department of Knowledge and Information Stewardship at the University of Cape Town (UCT), in the Faculty of Humanities. I am conducting a study to critically analyse the UCT community's participation in the advancement of open scholarship; and, to develop a strategy for the promotion of open scholarship. Professor Jaya Raju is supervising my study. Open scholarship is a philosophy inclusive of open access and open publishing, open education (including open educational resources and open teaching), and research data sharing (Veletsianos and Kimmons, 2012). Practices of open scholarship remove barriers to information access for the end user (the reader), having society as the significant beneficiary of research, data and educational materials (including textbooks) (Raju, 2016). The open scholarship philosophy aims to achieve openness assumptions of democratisation of knowledge creation and dissemination (Veletsianos and Kimmons, 2012: 168). Different research communities and stakeholders also use terms like open science and openness as synonyms of open scholarship. As part of this study, I need to interview *representatives of faculty research committees* to understand the extent of UCT researchers' participation in open scholarship. I am also interested in interviewees' views and opinions on components suitable to develop an inclusive strategy to enhance open scholarship for the UCT community.

Ethical considerations

Participation in this study is voluntary and you are under no obligation to respond to questions being asked by the researcher. Protection of individual identity is assured in this study and your participation will remain anonymous in the reporting of findings. Confidentiality of all responses provided by participants is also assured. Data will be anonymised before datasets are shared on UCT's open data repository. Please note that there are no direct benefits for participating in the study. However, the study will contribute to the body of knowledge on open scholarship by providing an understanding of the UCT community's participation in such

scholarship, which is critical to diverse stakeholders including funders. Should you choose to discontinue the interview, you may do so at any point.

The study has received ethics clearance from the Humanities Faculty on behalf of the University of Cape Town. For any further questions regarding the study and related ethical aspects, please contact the researcher or supervisor on contact details provided below

Researcher: Lena Nyahodza

Email: nyhlen@myuct.ac.za

Supervisor: Professor Jaya Raju

Email: jaya.raju@uct.ac.za

Informed consent

If you decide to participate in the study, please respond to the statements below by ticking (✓) each statement, if you agree with it.

I confirm that I have read the information provided, I understand the purpose of the study, and I have had the opportunity to ask questions about the study.		
I understand that my participation in the study is voluntary, and I am free to withdraw from the study at any time.		
I understand that my anonymity and confidentiality of information provided are assured.		
I agree to the interview being audio recorded.	Yes	No
I hereby grant consent to participate in the study.		

Your voluntary participation in this study is greatly appreciated.

Lena Nyahodza (Researcher)

Appendix G: Informed consent for purposively selected key informants

A critical analysis of the participation of the University of Cape Town community in the advancement of open scholarship: towards a strategy for the promotion of open scholarship

Dear Participant

My name is Lena Nyahodza and I am studying towards a PhD degree in the Department of Knowledge and Information Stewardship at the University of Cape Town (UCT), in the Faculty of Humanities. I am conducting a study to critically analyse the UCT community's participation in the advancement of open scholarship; and, to develop a strategy for the promotion of open scholarship. Professor Jaya Raju is supervising my study. Open scholarship is a philosophy inclusive of open access and open publishing, open education (including open educational resources and open teaching), and research data sharing (Veletsianos and Kimmons, 2012). Practices of open scholarship remove barriers to information access for the end user (the reader), having society as the significant beneficiary of research, data and educational materials (including textbooks) (Raju, 2016). The open scholarship philosophy aims to achieve openness assumptions of democratisation of knowledge creation and dissemination (Veletsianos and Kimmons, 2012: 168). Different research communities and stakeholders also use terms like open science and openness as synonyms of open scholarship. As part of this study, I have scheduled to interview key informants (such as, librarians and representatives from UCT Research Office and UCT Press) to solicit data that can inform the extent of UCT academics and/or researchers' participation in open scholarship. I am also interested in key informants' views and opinions on components suitable to develop an inclusive strategy to enhance open scholarship for the UCT community.

Ethical considerations

Participation in this study is voluntary and you are under no obligation to respond to questions being asked by the researcher. Protection of individual identity is assured in this study and your participation will remain anonymous in reporting of findings. Confidentiality of all responses provided by participants is also assured. Data will be anonymised before datasets are shared on UCT's open data repository. Please note that there are no direct benefits for participating in the study. However, the study will contribute to the body of knowledge on open scholarship by providing an understanding of the UCT community's participation in such scholarship, which

is critical to diverse stakeholders including funders. Should you choose to discontinue the interview, you may do so at any point.

The study has received ethics clearance from the Humanities Faculty on behalf of the University of Cape Town. For any further questions regarding the study and related ethical aspects, please contact the researcher or supervisor on contact details provided below.

Researcher: Lena Nyahodza

Email: nyhlen@myuct.ac.za

Supervisor: Professor Jaya Raju

Email: jaya.raju@uct.ac.za

Informed consent

If you decide to participate in the study, please respond to the statements below by ticking (✓) each statement, if you agree with it.

I confirm that I have read the information provided, I understand the purpose of the study, and I have had the opportunity to ask questions about the study.		
I understand that my participation in the study is voluntary, and I am free to withdraw from the study at any time.		
I understand that my anonymity and confidentiality of information provided are assured.		
I agree to the interview being audio recorded.	Yes	No
I hereby grant consent to participate in the study.		

Your voluntary participation in this study is greatly appreciated.

Lena Nyahodza (Researcher)

Appendix H: Informed consent for UCT masters and PhD students, and post-doctoral fellows

A critical analysis of the participation of the University of Cape Town community in the advancement of open scholarship: towards a strategy for the promotion of open scholarship

Introduction

My name is Lena Nyahodza and I am studying towards a PhD degree in the Department of Knowledge and Information Stewardship at the University of Cape Town (UCT), in the Faculty of Humanities. I am conducting a study to critically analyse the UCT community's participation in the advancement of open scholarship; and, to develop a strategy for the promotion of open scholarship. Professor Jaya Raju is supervising my study. Open scholarship is a philosophy inclusive of open access and open publishing, open education (including open educational resources and open teaching), and research data sharing (Veletsianos and Kimmons, 2012). Practices of open scholarship remove barriers to information access for the end user (the reader), having society as the significant beneficiary of research, data and educational materials (including textbooks) (Raju, 2016). The open scholarship philosophy aims to achieve openness assumptions of democratisation of knowledge creation and dissemination (Veletsianos and Kimmons, 2012: 168). Different research communities and stakeholders also use terms like open science and openness as synonyms of open scholarship. As part of this study, I need to conduct focus group discussions with *masters and PhD students, and post-doctoral fellows* to understand the extent of their participation in open scholarship. I am also interested in the participants' views and opinions on components suitable to develop an inclusive strategy to enhance open scholarship for the UCT community.

Ethical considerations

Participation in this study is voluntary and you are under no obligation to respond to issues raised by the researcher. Protection of individual identity is assured in this study and your participation will remain anonymous in reporting of findings. Confidentiality of all responses contributed by participants is also assured. Data will be anonymised before datasets are shared on UCT's open data repository. Please note that there are no direct benefits for participating in the study. However, the study will contribute to the body of knowledge on open scholarship by providing an understanding of the UCT community's participation in such scholarship, which

is critical to diverse stakeholders including funders. Should you choose to discontinue participation in the discussion, you may do so at any point.

The study has received ethics clearance from the Humanities Faculty on behalf of the University of Cape Town. For any further questions regarding the study and related ethical aspects, please contact the researcher or supervisor on contact details provided below.

Researcher: Lena Nyahodza

Email: nyhlen001@myuct.ac.za

Supervisor: Professor Jaya Raju

Email: jaya.raju@uct.ac.za

Informed consent

If you decide to participate in the study, please respond to the statements below by ticking (✓) each statement, if you agree with it.

I confirm that I have read the information provided, I understand the purpose of the study, and I have had the opportunity to ask questions about the study.		
I understand that my participation in the study is voluntary, and I am free to withdraw from the study at any time.		
I understand that my anonymity and confidentiality of information provided are assured.		
I agree to the discussion being audio recorded.	Yes	No
I hereby grant consent to participate in the study.		

Your voluntary participation in my study is greatly appreciated.

Lena Nyahodza (Researcher)

Appendix I: Ethics approval for Doctoral researcher

Department of Knowledge & Information Stewardship
University of Cape Town
Upper Campus

Private Bag X1, RONDEBOSCH, 7701 South Africa
Level 6 Hlanganani, The Chancellor Oppenheimer Library
Tel: +27 (0) 21 650 4546 Fax: +27 (0) 21 650 2629
E-mail: dkis@uct.ac.za
Internet: www.dkis.uct.ac.za

Ref No.: UCTDKIS2020-09-08 25 Sep. 20

Dear Lena Nyahodza,
Re: Ethics approval for Doctoral research

I am pleased to inform you that ethics clearance has been granted by an Ethics Review Committee of the Department of Knowledge and Information Stewardship on behalf of the Faculty of Humanities, University of Cape Town, for you to proceed with collecting data for your Doctoral study on '**A critical analysis of the participation of the University of Cape Town community in the advancement of open scholarship: towards a strategy for the promotion of open scholarship**'.

We wish you well with your data collection and the completion of your research.

Yours faithfully,

Signed by ethics chair person

Dr Mzwandile Shongwe
Chair: Department (DKIS) Research Ethics Committee

Appendix J: Permission: access to UCT staff for research purposes from UCT human resources office

HR194	**ACCESS TO UCT STAFF FOR RESEARCH PURPOSES**	UNIVERSITY OF CAPE TOWN IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

NOTES

- Forms must be downloaded from the UCT website: http://forms.uct.ac.za/forms.htm
- This form must be completed by applicants who are requesting to access UCT staff for the purpose of research.
- A copy of the research proposal as well as the Ethics Committee approval must be attached.
- It is the **responsibility of the researcher/s to apply for ethical clearance** from the relevant Faculty's Research in Ethics Committee (RiEC).
- If you are requesting staff information, you are required to complete the HR Information Request Form (HR190) and submit it together with all the required documentation.
- The turnaround time for a reply is **approximately 10 working days unless specified as urgent.**
- Return the completed application form and all the above documentation to Joy Henry via email: joy.henry@uct.ac.za; or deliver to: For the Attention: Executive Director, Human Resources Department, Bremner Building, Room 214, Lower Campus, UCT.

SECTION A: APPLICANT DETAILS

Title	Ms	Name	Lena Nyahodza
Telephone number	X5469	Email address	lena.nyahodza@uct.ac.za
Student number	NYHLEN001	Staff number	01444004
Visiting researcher ID / passport number			
Faculty Officer contact details			
University or institution at which employed or a registered student	UCT		
Faculty or department in which you are registered or work	Department of Knowledge and Information Stewardship, Humanities Faculty		
Address (if not UCT)			

SECTION B: SUPERVISOR DETAILS

	Title and name	Telephone number	Email address
Supervisor	Prof Jaya Raju	X3091	jaya.raju@uct.ac.za
Co-Supervisor	n/a		

SECTION C: APPLICANT'S FIELD OF STUDY (if applicable) / TITLE OF RESEARCH PROJECT / STUDY

Degree	PhD		
Research project or title	A critical analysis of the participation of the University of Cape Town community in the advancement of Open Scholarship: towards a strategy for the promotion of Open Scholarship as a means of access to information		
Research proposal attached	☒ Yes	☐ No	
Target population (number of UCT staff)	Online questionnaire using SurveyMonkey to all UCT academic and researchers (census). Semi-structured interviews with purposively sampled key informants (6 PASS staff) from University of Cape Town Libraries, UCT Press Board and Research Office; and Representatives of Research Committees of each faculty.		
Amount of time required for an interview and/or questionnaire	45 minutes each for semi-structured interview (phase 2)		
Lead Researcher details	Lena Nyahodza		
Proof of ethical clearance status attached	☒ Yes	☐ No	

SECTION D: FOR OFFICE USE (Approval status to be completed by the Executive Director, Human Resources or Nominee)

Support or approval			Role	Signature	Date
Supported?	☒ Yes	☐ No	Joy Henry (Office Co-Ordinator)	signed by officials	17.10.2020
Approved?	☒ Yes	☐ No	Miriam Hoosain (Executive Director: HR)	Signed by officials	19.10.2020

Appendix K: Permission: research access to students from department of student affairs

	RESEARCH ACCESS TO STUDENTS	DSA 100

NOTES

1. This form must be **FULLY** completed by all applicants who want to access UCT students for the purpose of research or surveys.
2. Return the fully completed **(a) DSA 100** application form **by email**, in **the same word format**, together with **your: (b) research proposal inclusive of your survey, (c) copy of your ethics approval letter / proof (d) informed consent letter** to: Moonira.Khan@uct.ac.za. Cc: Nadierah.Pienaar@uct.ac.za. You application will be attended to by the Executive Director, Department of Student Affairs (DSA), UCT.
3. The turnaround time for a reply is **approximately 10 working days.**
4. NB: It is the responsibility of the researcher/s to apply for and to obtain **ethics approval and to comply with amendments that may be requested;** as well as **to obtain** approval to access UCT staff and/or UCT students, from the following, at UCT, respectively: (a) **Ethics:** Chairperson, Faculty Research Ethics Committee' (FREC) for ethics approval, (b) **Staff access:** Executive Director: HR for approval to access UCT staff, and (c) **Student access:** Executive Director: Student Affairs for approval to access UCT students.
5. **Note:** UCT Senate Research Protocols requires compliance to the above, **even if prior approval has been obtained from any other institution/agency. UCT's research protocol requirements applies to *all* persons, institutions and agencies from UCT and external to UCT who want to conduct research on human subjects for academic, marketing or service related reasons at UCT.**
6. **Should approval be granted to access UCT students for this research study, such approval is effective for a period of one year from the date of approval (as stated in Section D of this form), and the approval expires automatically on the last day.**
7. **The approving authority reserves the right to revoke an approval based on reasonable grounds and/or new information.**

SECTION A: RESEARCH APPLICANT/S DETAILS

Position	Staff / Student No	Title and Name	Contact Details (Email / Cell / land line)
A.1 Student Number	NYHLEN001	Ms Lena Nyahodza	lena.nyahodza@uct.ac.za X5469
A.2 Academic / PASS Staff No.	01444004	Ms Lena Nyahodza	lena.nyahodza@uct.ac.za X5469
A.3 Visitor/ Researcher ID No.			
A.4 University at which a student or employee	UCT	Address if *not* UCT:	
A.5 Faculty/ Department/School	Department of Knowledge & Information Stewardship, Humanities Faculty		
A.6 APPLICANTS DETAILS If different from above	Title and Name	Tel.	Email

SECTION B: RESEARCHER/S SUPERVISOR/S DETAILS

Position	Title and Name	Tel.	Email
B.1 Supervisor	Prof Jaya Raju	X3091	jaya.raju@uct.ac.za
B.2 Co-Supervisor/s	n/a		

SECTION C: APPLICANT'S RESEARCH STUDY FIELD AND APPROVAL STATUS

C.1 Degree – if applicable	PhD
C.2 Research Project Title	A critical analysis of the participation of the University of Cape Town community in the advancement of open scholarship: towards a strategy for the promotion of open scholarship
C.3 Research Proposal	Attached: Yes [X] No [ ]
C.4 Target population	Matsers students, PhD students and UCT Postdoctoral research fellows
C.5 Lead Researcher details	If different from applicant:
C6. Will use research assistant/s	Yes [ ] No [X] If yes- provide a list of names, contact details :
C.7 Research Methodology and Informed consent	Research methodology: Case study using UCT academcis and researchers including Masters students, PhD students and UCT postdoctoral fellows that will participate to the study through focus group discussions. The researcher will ensure that all the health precautions are followed during data collection to reduce chances of exposure to COVI-19 Informed consent will be provided for participants to give consent prior to data collection
C.8 Ethics clearance status from UCT's Faculty Ethics in Research Committee /Chair (EIRC)	Approved by the UCT EIRC: Yes [X] With amendments: Yes [ ] No [ ] (a) Attach copy of your UCT ethics approval. Attached: Yes [X] No [ ] (b) State date / Ref. No / Faculty of your UCT ethics approval: UCTDKIS2020-09-08 Ref. / Faculty: Humanities

SECTION D: APPLICANT/S APPROVAL STATUS FOR ACCESS TO STUDENTS FOR RESEARCH PURPOSE

(To be completed by the UCT - ED, DSA or Nominee)

	Approved / With Terms / Not	* Conditional approval with terms		Applicant/s Ref. No.:
D.1 APPROVAL STATUS	(i) Approved [ ] (ii) With terms (iii) Not approved	a) Access to students for this research study must only be undertaken after written ethics approval has been obtained. b) In event any ethics conditions are attached, these must be complied with before access to students.		
D.2	Designation	Name	Signature	Date of Approval

APPROVED BY:	Executive Director Department of Student Affairs			