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Abstract

Information technology has influenced scholarly communication and how higher education institutions assess research impact. This has extended the role that the academic library plays in supporting researchers in the research life cycle. These global trends have impacted academic libraries in Africa too, albeit to different extents. This paper reports from the literature and empirical findings of a single aspect of a wider study on research impact assessment that enquired into best practices for assessing research impact in higher education institutions in Africa and the evolving role of academic libraries in support of research impact assessment. The paper draws from a qualitative aspect of the wider mixed-methods study informed by research impact theory, and specifically findings from semistructured interviews with relevant stakeholders such as academic librarians, university research office personnel, and African research council managers. The paper concludes that librarians traditionally have been well placed to play a pivotal role in research impact assessment due to their professional competencies. Academic libraries will continue to evolve and in doing so play a significant role in the research life cycle of higher education knowledge systems. African academic libraries need to contextualize research impact assessment such that it speaks to the research needs of African contexts.

Introduction

The higher education landscape, internationally, has encountered much change because of evolving information technology, shrinking funding, and diminishing government subsidies, which in return have transformed scholarly communication and the role of academic libraries. These

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changes in information technology and scholarly communication have resulted in academic libraries rethinking and reimagining their services to meet changing user needs and requirements with regard to research, teaching, and learning. Changes in higher education and scholarly communication should be viewed in the context of shrinking government subsidies and research funding (Corrall, Kennan, and Afzal 2013, 636; Sputore, Humphries, and Steiner 2015), which have resulted in many researchers having to compete for limited resources at national and regional levels, and even internationally. This pressure on researchers has resulted in academic libraries restructuring their services to accommodate these "emerging" areas of research support. The Association of College and Research Libraries (ACRL) had, already in 2014, identified altmetrics as one the top trends affecting academic libraries (ACRL Research Planning and Review Committee 2014).[1] On the African continent, it was reported a few years later that some academic libraries in South Africa had restructured their services to provide bibliometric services as part of their research support suite (Raju, Raju, and Johnson 2016).[2] As research activities evolve, research support must evolve with it (Research Libraries UK 2012). Academic librarians' roles have evolved over the past decade from playing a reactive role to a proactive partner in the research process (Raju et al. 2018; Hwalima and Khanye 2021). The role that the academic library plays in supporting researchers throughout the research life cycle, as seen in the research life cycle adapted for research support by Raju and Schoombee (2013), cannot be considered complete without the "measure" stage, which focuses on assessing the impact of research, the focus of this paper. Bibliometrics, altmetrics, and research data management are still regarded as "emerging" trends in library support on the African continent, though they might be considered established academic library services in other parts of the world. These "emerging" trends have been fast tracked by developments in information technology and scholarly communication. These trends are being increasingly embraced on the African continent, especially research data management services, while bibliometrics and related activities have been lagging with only some academic libraries having already adopted such services. This paper reports (from the literature and empirically) on a single aspect of a bigger study (Mfengu 2022) on research impact assessment and focuses on a single critical question of the study that enquired into best practices for assessing research impact in higher education institutions in Africa and the evolving role of academic libraries in support of research impact assessment.

The Literature

Historically, academic libraries have played a role in the research life cycle (Vaughan et al. 2013, 310; Atkinson 2016, 138). However, more recently academic libraries have assumed an important role as collaborators in

the research process rather than just being custodians of books (Corrall 2014). The evolution of the academic library from a traditional role to a more modern one (Åström, Hansson, and Olsson 2011, 4) has resulted in academic libraries having to provide services throughout the research life cycle, a life cycle adapted for library research support in six stages (prepare, gather, create, share, preserve, and measure) in which academic libraries can align services with user needs and expectations at each stage (Raju and Schoombee 2013). Over the years academic libraries have been offering services to support each stage of the research life cycle to a differing extent, but more in recent years the "measure" stage has gained attention due to pressure from policy makers, funders, and government for researchers to demonstrate their impact for various academic milestones (funding, tenure, promotion, etc.; Braun 2017, 112). Research impact is understood to refer to the influence, effect, contribution, change, or benefits that result from the research, and thus impact of research can be academic or beyond academia (societal impact) as the context within which impact takes place is broad; it goes beyond academia into the realms of society, economy, public policy or services, health, the environment, and quality of life (Chandler 2014, 3). The European Science Foundation (2012, 3) posits that the prime objective of research evaluation is to support and strengthen the quality of research. Research evaluation (or impact assessment) traditionally has been the most widely used tool for allocation of funding by funders, and hence it is important to many institutions and supporting departments such as academic libraries. Research evaluation support services in higher education institutions have usually been provided by academic libraries in collaboration with universities' research administrators, but over the years academic libraries have extended this support in response to researchers' needs and expectations, thus playing an increasingly critical role in the research life cycle.

Bibliometrics

Bibliometrics has historically been an important subfield of research in library and information science (LIS) and firmly established in the 1970s, when the focus was on using citation analysis and related techniques in collection development, management, and assessment, especially for journals (Corrall, Kennan, and Afzal 2013, 641; Åström and Hansson 2016, 316). During the 2000s, bibliometrics attracted increasing interest not only in the LIS field of research but also among professional practitioners in libraries, primarily in higher education (Ball and Tunger 2006, 564; Åström and Hansson 2016, 316). The focus lately has shifted from informing library decisions on selection and evaluation of printed materials and electronic resources to supporting the analysis and assessment of research output at individual, departmental, and institutional levels (Gumpenberger, Wieland, and Gorraiz 2012, 177). Although traditional

applications to collection development have continued in libraries internationally, the new trends have taken center stage (Corrall, Kennan, and Afzal 2013, 641). Academic libraries are introducing bibliometric services because of their professional competencies in metadata and bibliographic database management (Joint 2008, 351; Åström and Hansson 2016, 316). Librarians and other information professionals are playing a pivotal role in research impact assessment as they are able to contextualize the numbers (metrics), thus providing improved confidence in the metrics as well as assisting researchers to better communicate their impact (Lasda 2019, 137). Bibliometric analysis has been identified as a "new business area" for information professionals in libraries (Ball and Tunger 2006, 561; Drummond and Wartho 2016, 273). As a way of redefining and widening the role of the library, academic libraries are incorporating bibliometric activities; this implementation of bibliometric practice is motivated by ambitions to provide more complete scholarly communication-related services as well as to increase the visibility and status of libraries in relation to the wider university organization (Braun 2017, 113).

With the introduction of the Research Excellence Framework and Excellence in Research for Australia, academic libraries in Australia and internationally have been forced to reassess the type of support offered to researchers and parent institutions (Drummond and Wartho 2016, 271). Changing pedagogy and rapid growth of enabling technologies have triggered a demand for research support services such as bibliometrics (Raju, Raju, and Johnson 2016, 168). Therefore, developing appropriate methodologies to assess the impact of citations is of enduring and paramount importance in the higher education landscape (Drummond and Wartho 2016, 271). Many academic libraries have undergone restructuring to accommodate new user needs and strategic goals of the university in terms of research support and have included research impact measurement services or bibliometrics services (Kennan, Corrall, and Afzal 2014, 678; Drummond and Wartho 2016, 270). A similar trend has been observed in Africa, especially in South African higher education institutions. Raju, Raju, and Johnson (2016, 172) reported that in 2016 the libraries of 50 percent of the top six universities in South Africa were offering a bibliometric service that involved assisting researchers with demonstrating their value in applications for researcher rating, funding, and promotion.

An Association of Research Libraries (ARL) study on scholarly communication assessment services in the United States found that 96 percent of the respondents (who were academic librarians from ARL member libraries) provided services related to scholarly output assessment, such as publication or citation reports and institutional repository reports, resource guides, consultation, and education about research impact assessment (Lewis, Sarli, and Suiter 2015, 11). The National Institute of Standards and Technology and the National Institutes of Health's library in

the United States also provide cutting-edge services related to bibliometrics and research impact (e.g., performing topical network analysis, text mining, cluster analysis, and other sophisticated methodologies with their impact data; Lasda 2019, 134). These specialist departments tend to provide a comprehensive and sophisticated service as this is their core focus compared to what academic libraries offer as part of the suite of their services. At academic libraries like University of Cape Town (UCT) Libraries in South Africa, librarians work with the university's Research Office to assist with measuring research output for institutional submission to the national government for financial publication rewards for peer-reviewed research output (Raju, Raju, and Johnson 2016, 172). Academic libraries are assisting academics and researchers with metrics to support grant and promotion applications. Such bibliometric service has been targeted at individuals, academic units, and institutional levels and marketed in various ways for institutional internal or external purposes, including advice on publishing strategies and support for job applications or salary/faculty review (Corrall, Kennan, and Afzal 2013, 643; Drummond and Wartho 2016, 276). These bibliometric services available in the Global North are similar to what UCT Libraries in South Africa, for example, offer; that is, they provide support to researchers for various applications such as funding, academic promotion, and South African National Research Foundation researcher ratings, in addition to supporting publication counts (Raju et al. 2018, 9). Such research support services have established academic libraries as key stakeholders in the research process and in the research impact assessment landscape.

Restructuring for Relevance

Academic libraries have had to restructure their services to embrace new trends in support of their users' needs (Research Libraries UK 2012). Research impact assessment support and tools, while common internationally, are not offered by many academic libraries on the African continent and thus are still unfamiliar (Dlamini 2020, 87) or are offered on a limited and basic scale, focused only on citations (Mabweazara and Zinn 2020, 103). Similarly, Onyancha (2018, 3) reports that there is limited bibliometrics and altmetrics activity in countries with developing economies and that many libraries on the African continent have managed to develop research impact assessment guides rather than providing this research support service. In South Africa, however, UCT Libraries have taken initiative in this area and provide a comprehensive bibliometric service; they are some of the many libraries in South Africa offering this service, which is not the case for academic libraries on the continent generally, as pointed out by Onyancha (2018, 3). Raju and colleagues (2018, 421) maintain that UCT Libraries embarked on a restructuring process so that they could better align themselves with the university's strategic agenda through be-

ing proactive research partners to both academic staff and students. This restructuring process saw the specialization of research librarians in new areas or trends in librarianship such as research data management, open scholarship, and bibliometrics (including altmetrics), thus indicating that academic libraries needed to restructure their services and become proactive in addressing user needs and raising awareness of these emerging services. In Australia, for example, the University of New South Wales Library went through a similar restructuring process, and this provided the library with an opportunity to support the academic community in innovative ways, with the main focus of this transformation being the development of a service to provide valuable information for individual promotion, grant applications, and institutional comparison (Drummond and Wartho 2016, 279). Bibliometric services are dedicated toward helping universities and researchers maximize research impact and promote their research (Kennan, Corrall, and Afzal 2014, 680). Academic libraries, like those of UCT, offer bibliometric services that involve, but are not limited to, a series of workshops and consultations to meet faculty requests when applying for funding and researcher rating. UCT Libraries also offer a value-added service, providing narratives to explain/contextualize the "raw" bibliometrics and altmetrics measures (UCT Libraries Bibliometrics Working Group 2021, 3). Likewise, the University of Minnesota Libraries in the United States have extended their bibliometric service to new domains by focusing on helping users become better stewards of the information they use during their scholarship, thus showing that the LIS field is evolving (for example, in the area of research evaluation support) and not what it used to be (Braun 2017, 127). These new services attest to the evolving role of academic librarians as scholarly communication becomes more sophisticated and as researchers are increasingly under pressure to demonstrate their impact.

Challenges and Biases with Research Impact Assessment

In the search for accountability and research excellence, easily available research metrics from scientific citation indexes such as Clarivate's Web of Science, Elsevier's Scopus, and Google Scholar have been used as they provide a quick, easy solution to evaluate research (Steele, Butler, and Kingsley 2006, 278). These authors cogently argue that these scientific citation indexes have assumed an importance that has not been "tempered by an understanding of the fault-lines inherent in the system" (280). Moreover, policy makers are often unaware of the problems in the use of the data—such as inherent bias with language and country, differences in citation patterns between disciplines, lack of coverage of certain disciplines, and bias in journal indexing, thus underrepresenting some areas of the world in their coverage (280). Hence, scholarly output from Africa remains under the radar, making it largely inaccessible and unavailable for

comprehensive and strategic studies of research performance because "local" publications are often not captured by international bibliographical databases like Web of Science and Scopus (Tijssen 2015, 62). Nevertheless, bibliometric analysis is still the most widely used method for assessing research impact but not always the best method for researchers from the Global South and researchers from social sciences and humanities disciplines. Hence, it is important to find meaningful methods for research impact assessment in Africa that take into consideration differences and local realities. The challenges and misuse of the research metrics used to showcase research impact (Haustein and Larivière 2015, 1; DORA 2013) cannot be overstated, but journal impact factor (JIF) still plays a primary role when researchers choose where to publish their work.[3] The misuse of JIF resulted in a number of recommendations by the San Francisco Declaration on Research Assessment (DORA), which suggests that journal metrics should be avoided when trying to assess individual papers or individuals for hiring, promotion, and funding decisions and that one should evaluate the content of individual papers and take into account other research outputs, such as data sets, software, and patents as well as a researcher's influence on policy and practice (DORA 2013). While higher education institutions in Africa claim to support DORA principles on the misuse of the JIF, a quick search in early 2022 on the DORA signatories show little sign of higher education institutions in Africa, but instead signatories tend to originate from research institutes, associations, and individual researchers. Hatch and Curry (2020, 2) add that progress toward gender and race equality in research impact assessment has been made in recent years, but the pace of change remains unacceptably slow. Also, the use of proxy measures (i.e., measures used to demonstrate impact of quality research such as JIF, h-index, etc.) still preserves biases against scholars who continue to feel the force of historical and geographical exclusion from the research community (Hatch and Curry 2020, 2). Equally, gender has been identified as a critical factor in research impact assessment. For example, the COVID-19 pandemic has further affected women researchers because of their caregiving roles, and hence there has been a call for research assessments to factor this ("COVID-19 Is Amplifying" 2021). A shift in current research assessment practices toward responsible research assessment processes has the potential to create equal opportunities for diverse individuals. Responsible research assessment is an umbrella term for approaches to assessment that incentivize, reflect, and reward the plural characteristics of high-quality research, in support of diverse and inclusive research cultures (Curry et al. 2020, 7).

Skills and Competencies for Academic Librarians in Research Impact Assessment

The 2021 International Federation of Library Associations and Institutions (IFLA) trend report emphasized the importance of soft skills as

part of librarians' knowledge base and the need for LIS professionals to have appropriate qualifications or a higher level of education to be able to navigate the changing research support landscape (IFLA 2021, 24). This applies specifically to the focus of this paper, which is research impact assessment and academic libraries. As the role of academic librarians evolve, they are expected to have appropriate skills to innovate and adapt to these changes as the value of soft skills has increased across all sectors and the library profession is not exempted from this (IFLA 2021, 11). As aptly pointed out by IFLA, as the needs and expectations of the research community and general use community evolve, so should the skills that librarians have; librarians also need to evolve and so should the role that librarians play (IFLA 2021, 11). In a study from sub-Saharan Africa, the authors posit that due to the economic state of the country (Zimbabwe), there is a lack of appropriately qualified librarians to effectively provide research support in the digital environment (Hwalima and Khanye 2021)—this phenomenon is not unique to Zimbabwe but common on the African continent, with the exception of better resourced countries such as South Africa. An earlier international study by Corrall, Kennan, and Afzal (2013, 636) identified that "gaps in knowledge, skills, and confidence were significant constraints which impeded support for bibliometrics and particularly data management." In relation to specifically research assessment and research data management related library research support, Hwalima and Khanye (2021), writing in the African context, concur that librarians need to have a multilayered understanding of the research environment to effectively support their users and institutions. Onyancha (2018, 1) explains that the general lack of adoption of bibliometrics on the African continent can be attributed to several reasons such as lack of appropriate knowledge and skills (Corrall, Kennan, and Afzal 2013, 667) and costly subscriptions of required propriety databases to support academic libraries in research impact assessment.

While academic librarians in Africa have been involved in upskilling and reskilling to respond to "emerging" areas of research support, formal education and continuous professional development have been identified as critical areas in assisting academic librarians to gain appropriate knowledge and skills on research impact assessment (Corrall, Kennan, and Afzal 2013, 667). Onyancha (2018, 4) asserts that websites of LIS schools in sub-Saharan Africa reveal that bibliometrics is nonexistent in most formal curricula and therefore most practicing librarians in the region possess limited or no knowledge of bibliometrics. However, Raju (2017) identifies in a competency index for academic libraries that bibliometrics and altmetrics support is one of the research support areas in which academic libraries need to be knowledgeable and skilled. It would seem that a combination of formal and informal education and training is key to producing highly skilled research librarians. Train-the-trainer sessions (offered

by vendors) have also been useful in upskilling of research librarians as well as metrics-related guides and online programs, such as the Research Impact online course by Elsevier's Library Connect Academy on research metrics, research collaboration, research data management, collection assessment, open science, and more (Elsevier 2022). Such programs provide a quick reference guide on research metrics to assist librarians to gain confidence in using these metrics for research support.

Methods

Research impact assessment often focuses on quantitative methodologies such as bibliometrics and altmetrics. The best practices aspect of the wider study (Mfengu 2022), which this paper reports on, took an intentional approach to focus on qualitative aspects, which are often ignored in research impact assessment. This aspect of the study (Mfengu 2022) used a qualitative method, specifically semistructured interviews, to explore research impact assessment and the evolving role of academic libraries related to this. Interviews were undertaken with three UCT research librarians, two UCT Research Office staff, and five key informants from research councils in South Africa and other organizations in the continent of Africa, such as the Council for the Development of Social Science Research in Africa (CODESRIA). The interviews (approximately an hour each) were conducted virtually via Zoom, between January and April 2021. The interview schedule was informed by the specific critical questions guiding this aspect of the study, which sought to understand best practices for assessing research impact in higher education institutions in Africa and the role of academic libraries in this regard. To explore best practices the study focused on three critical questions: What other indicators should be used for measuring research impact considering the limitations with bibliometrics? What meaningful methods can be used for assessing research impact, considering the Payback Framework (Buxton and Hanney 1996) multidimensional categorization of impact? And considering institutional structures, norms, and culture, what best practices should be used for assessing impacts across disciplines in higher education? The study was informed theoretically by the Payback Framework, a framework developed to examine the "impact" or "payback" from research (Donovan and Hanney 2011). The Payback Framework (Buxton and Hanney 1996) focuses on the return on investment from research and was initially used in health research but over the years has been applied in multidisciplinary contexts such as in the social sciences and humanities (Donovan and Hanney 2011, 182). This framework was appropriate for this study as the Payback Framework focuses on both academic and societal impact from research, which has been a shortcoming of many studies originating from the African continent, where the focus has been on quantitative aspects of research impact and confined largely to impact within academia.

Findings and Discussion

In a search for best practices for assessing research impact in higher education institutions in Africa, the study sought to understand such best practices in this context. Academic libraries in Africa have for many years provided research impact assessment support, which, as indicated in the previous section, has globally become more comprehensive and sophisticated over the years. Interviewed research librarians noted that the service and support they provide to academics and researchers are very much limited by the funder, government, and institutions as there is often little room to add qualitative aspects of the research as research impact assessment is very metrics driven. Similarly, interviewed research support managers (from UCT's Research Office) also indicated that the research support they provide researchers is limited by funder assessment criteria, which are often confined to bibliometrics with very little space for the use of altmetrics and narratives to showcase impact of research beyond academia. While altmetrics has been useful for many researchers, especially those engaged in research in the creative arts fields, many funders do not recognize altmetrics but tend to focus only on bibliometrics, which may disadvantage other researchers. Undeniably, altmetrics as a methodology for research impact assessment is still in its development stages, but it is useful as an early indicator of research impact in society and that which cannot be easily measured via bibliometrics (Thelwall et al. 2013). An interviewed research librarian shared that "we do not have the breadth and scope to use appropriate indicators to better showcase the impact of a researcher or group especially in terms of societal impact." Interview participants added that metrics are sometimes not available for some research outputs such as books that are published locally and this disadvantages book-focused disciplines such as in the social sciences and humanities. Most publication metrics are poor on their own and therefore must be used in conjunction with others approaches (Hicks et al. 2015, 430). Interviewed participants agree that research impact assessment needs to take a holistic view and to focus not only on bibliometrics but also on qualitative aspects, such as "collaborations as metrics alone are a rudimentary measure," as mentioned by an interviewed director from a research council. In addition, a participant from CODESRIA noted that metrics are "external and they exclude the context," which (for this paper's authors) is critical to African research and necessary to capture the realities of African communities as well as respond to local challenges. African research needs to be relevant to the African continent and to contribute to locally relevant frameworks that are locally conceptualized. Though university rankings have encouraged institutions in Africa to focus on metrics that are used in international ranking to measure institutional productivity, this could, at times, be at the expense of locally relevant research. Similar sentiments have been expressed by Adler and Harzing (2009, 84), who argue that

individual and university academic ranking systems not only are "inconsistent, volatile, and in many ways inherently unfair" but also tend to prioritize individual self-interest rather than societal good. Funder mandates and priorities influence and guide research impact assessment. Therefore, it is important for funders to embrace responsible research assessment practices and to look beyond numbers in research impact assessment.

Similarly, a research support manager (from a South African research council) and a research librarian commented on the lack of diversity in what is recognized and rewarded in research impact assessment, which is still primarily focused on traditional output such as journal articles. Yet scholarly communication has evolved, especially in the current digital age, and so should research impact assessment. Such change is critical for a continent like Africa seeking transformation from traditional Western scholarly practices and knowledge systems, which may be less beneficial for the continent and its people, hence the need to adopt research impact assessment practices that would encourage researchers to focus on local challenges. It is generally known that journal articles receive greater recognition and weighting in research impact assessment due to their greater chance of being cited and the JIF than book chapters or other outputs and their ability to attract a higher financial publication reward (as in the case of South Africa's state subsidy reward system for publications). However, local and regional journals do not receive the same appreciation as international journals (Academy of Science of South Africa 2006, vii; Lee and Simon 2018, 1) thus making Global North publications seem superior to or of better quality than journals from the Global South. Therefore, recognizing local and regional content and journals that carry such content would move Africa closer to decolonizing current research impact assessment practices. Academic librarians can assist in raising awareness in this regard as librarians have done with open access and its implementation. Furthermore, the tension between research and teaching among academics was highlighted during an interview by a director from a funding council as a key issue when individuals are applying for funding, research rating, or academic promotion. The focus for these purposes tends to be on articles in high impact journals rather than looking holistically at the individuals' impact, including teaching impact. This too is an area in which academic libraries can play a role, by advocating for holistic research impact assessment and equipping researchers with necessary skills to do so.

Both interviewed research librarians and research support managers (from research councils in South Africa) emphasized the importance of open science in research impact assessment. They claimed that open science needs to be recognized and rewarded in research impact assessment as this would encourage and incentivize researchers and academics to participate in open access and open science.[4] This is critical for Africa as there is a low uptake and adoption of open access (Dulle, Minishi-Majanja,

and Cloete 2010; Ezema and Onyancha 2016, 1), which can be improved through better recognizing and rewarding of open science. Raju and colleagues (2020) argue that strong advocacy for open access needs to be balanced by equal support for inclusive participation by Global South researchers and support by policy makers. The reward and recognition of open access and open science in research impact assessment speak to the core philosophical principles of open access, which are social justice principles, and this would move the African continent one step closer toward embracing responsible research assessment practices. Related to open access and open science, and with the changing scholarly communication landscape, research needs be assessed on its discoverability and accessibility to relevant communities as this is what the digital space affords. During interviews, directors from research and funding councils shared similar sentiments on this issue, noting the importance of recognition of open access in research impact assessment. An interview participant from CODESRIA commented, "Open access is critical, especially for the Global South, as it has the ability to make African scholarship accessible and discoverable internationally." It would seem then that open access and open science should foreground metrics especially on the African continent, where discovery and accessibility of African scholarship are still challenges (Ezema and Onyancha 2016, 20). Saenen and others (2019, 22) point out that the "low-ranking position" of open science and open access indicates that openness is not commonly included in university incentives and rewards and hence its low importance by researchers. Therefore, academic libraries in this landscape could be innovative and find creative ways to showcase both the academic and the societal impact of researchers in an inclusive and equitable manner.

In essence, interview participants agreed that current practices of research impact assessment do not allow researchers to tell a story about their impact beyond academia, and thus best practices need to include both qualitative and quantitative approaches to assessing the impact from research. An interviewed director from a research council commented that "research impact assessment is biomedically driven space; social sciences and humanities research is seen as not being impactful, thus, [it] pushes these researchers in a different trajectory [toward what funders are willing to support] rather than research that has local relevance." Interviewed research librarians from the UCT remarked that they are privileged to have subscriptions to databases that help them to better support researchers with showcasing their impact, especially those related to mapping contributions to sustainable development goals and researchers' collaboration profiles. While knowledge and skills in these databases and platforms used for research impact assessment are key, interviewed research librarians also revealed how fortunate some academic libraries are to have subscriptions to platforms and databases such as Elsevier's SciVal and Clarivate's

InCites, as without these kinds of tools it would be very difficult to support researchers in demonstrating the impact of their research. Unfortunately, there are many academic libraries in Africa that do not have the privilege of such resources. The "new" focus on science communication, engagement, and research translation noted by research support managers (from a South African funding council) provides a further motivation to look at more meaningful measures for research impact assessment, and academic libraries are well suited to play a significant role in this because of their expertise and ability to contextualize impact and advise on appropriate assessment methods due to their professional knowledge and skills.[5] As funders are paying special interest to societal impact, there is a need for appropriate approaches to assess this kind of impact. Interviewed study participants usefully commented on the fact that there is no single approach that would suit the diversity of disciplines and researchers, and thus research impact assessment needs to be flexible and diverse enough as well as inclusive. Hence, academic libraries need to work with funders and researchers to find innovative, flexible, and context-relevant approaches to support research in research impact assessment.

Conclusion

Godsell (2021, 101) argues that assessment is an integral part of knowledge production in higher education spaces, however "assessment is rarely brought into the decolonization conversation . . . as it performs a crucial inclusion or exclusion function." This, in the view of the authors of this paper, also applies to research impact assessment and the need to decolonize research impact assessment practices so that they are contextualized and cocreated within Africa. Open science and open access are currently not adequately incentivized in academic promotion, research rating, and funding applications; the alignment of open-access- and open-science-related policy and research impact assessment practices may move the continent a step closer to achieving equitable and responsible research impact assessment. Librarians traditionally have been well placed to play a pivotal role in research impact assessment due to their professional competencies that allow them to contextualize research impact metrics, thus providing improved confidence in the measures used in research impact assessment. While research impact assessment to a large extent is dependent on funder criteria and available tools and resources, academic libraries and librarians, especially in the current context of their evolving new roles in scholarly communication in the digital environment, can and should take a leading and key role in how these criteria are developed and what tools institutions should invest in for equitable and responsible research impact assessment practices. Librarians have for a long time been advocates for the value of libraries and their services, hence moving forward academic libraries would need to advocate for equitable and responsible research im-

pact assessment. Moreover, academic libraries have always been involved in raising awareness about new trends such as open access, research data management, and others and in training researchers in these trends—this role should now expand into the area of research impact assessment. While academic librarians in some parts of the continent have been proactive in providing research impact assessment support, this has not been the case for less privileged countries. Further, these findings prompt a call for LIS schools, especially in such less privileged contexts, to integrate emerging trends in research impact assessment into LIS curricula for the professional education of librarians and for LIS associations to provide the continuing professional education needed by practicing librarians.

Like open access, research impact assessment is a multifaceted issue. It is not lacking in rationale for transformation but rather faces competing and conflicting interests such as quantity and quality of research produced instead of a focus on the impact of the research on society; and as the role of academic libraries evolves, they need to find innovative ways to support institutions in navigating these uncharted waters. This paper reported from the literature and empirically from a single critical question of a wider study (Mfengu 2022) about best practices for assessing research impact in higher education institutions in Africa and the evolving role of academic libraries in support of research impact assessment. The paper concludes that while research impact assessment is a complex issue, it is crucial that higher education institutions collaborate with academic libraries to align research impact assessment practices with relevant existing policies and develop (with their academic libraries) policies, where these are absent, that are in line with responsible research impact assessment practices. Globally, the academic library role has evolved over the years and will continue to do so as it continues to play a fundamental role in the research life cycle of higher education knowledge systems propelled by digital technology. The African case will be no different except for the need for African academic libraries to intentionally contextualize this evolution, and specifically their work in research impact assessment, and in transformation and decolonization imperatives that speak to the research realities and requirements of local and regional African contexts.

Notes

1. Altmetrics provides tools to monitor, track, and measure in real time the online activity and use (such as views, downloads, comments, etc.) of scientific publications and scholarly literature beyond formal citations, unlike bibliometric indicators, like citations, that take time to reflect and accumulate (Donato 2014, 1–2).
2. Bibliometrics refers to the statistical measurement and analysis of published scholarly literature such as number of publications, citation counts, journal impact factor, and so on (Holden, Rosenberg, and Barker 2005, 70; Delasalle 2011, 16).
3. Journal impact factor (JIF) refers to the frequency with which the "average article" in a journal has been cited in a particular year, and for many years JIF was regarded as the best tool to determine the prestige and quality of a journal (Heinemann 2013, 377). JIF was

originally created as a tool to assist librarians with determining what journals to purchase rather than a measure of the scientific quality of research articles (Haustein and Larivière 2015, 1; DORA 2013).

4. Open science is the conduct of science in such a way that others can collaborate and contribute, where research data, laboratory notes, and other research processes are freely available, with license terms that allow reuse, redistribution, and reproduction of the research (FOSTER 2022). It encompasses open-source software, open data, open access, and open educational resources. Open access to literature, specifically, is regarded as "digital, online, free of charge, and free of most copyright and licensing restrictions . . . barrier-free" access (Suber 2019, 1).
5. In the past decade funders have been placing an emphasis on broader impacts of research such as science communication, science engagement, and research translation; previously, little importance was placed on these impacts for the social sciences and humanities disciplines.

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