



Knowledge Production Practices and Attributes at University of Zambia School of Medicine

Christine Wamunyima Kanyengo

University of Zambia Library, Lusaka, Zambia
Correspondence author email : ckanyengo@yahoo.com

ABSTRACT

Knowledge production practices and attributes of faculty are important in academia. The aim of the paper was to investigate the production, diffusion and use of knowledge products at University of Zambia School of Medicine. A survey methodology was adopted for the study; with data collected through semi-structured questionnaires. Using SPSS, data was analysed by simple descriptive statistics and Ms Excel for presentation into figures and tables. The results indicate the knowledge that is produced fits into the framework of knowledge produced by academia; the knowledge is produced, diffused and used frequently. The sources of information used in the knowledge production process are mostly from the internet and the university library. The knowledge is ethically and peer reviewed; frequently produced, utilised and diffused mostly through journals and books. The study concludes that the three processes of knowledge production, diffusion and use are frequently carried out at the University of Zambia School of Medicine.

© 2022 EduLib

ARTICLE INFO

Article History:

Submitted/Received Jun 11, 2022

First Revised Sep 20, 2022

Accepted Nov 12, 2022

First Available online Nov 13, 2022

Publication Date Nov 14, 2022

Keyword:

*Knowledge Dissemination,
Knowledge Production,
Knowledge Use,
Knowledge Utilization,
University of Zambia*

1. INTRODUCTION

In Africa, the conceptualisation of university was meant to drive the development agenda of the postcolonial state (Badat, 2009; Castells, 2009; Cloete, 2012; Cloete & Maassen, 2015; Moshia, 1986). The idea of establishing universities in African countries “was, and still is, for the institutions to play a pioneering role in addressing problems of poverty, social organisation, low production, unemployment, hunger, illiteracy, diseases, that is, the problems of underdevelopment, which appeared to be common on the African continent” (Moshia, 1986). It has been argued that the Universities in Africa have always been viewed as one of the institutions that should contribute to the overall development of the African countries in which they are located (Ajayi et al., 1996; Woldegiorgis & Doevenspeck, 2013). The aspirations of the role of the university are similar in Zambia. Immediately, after Zambia became independent in 1964, the developmental role of the university was articulated (Kelly, 1999; Mwanakatwe, 1969; Mwanakatwe, 1971). The University of Zambia was from inception setup with this developmental role in mind. Prof L. H. K Goma, a former Vice Chancellor of the University of Zambia had in 1969 already expressed the University’s developmental role and emphasised that its research should be relevant to the needs of the country (Kelly, 1999). In this regard, the University of Zambia has a triple mission of: teaching, research and community service (University of Zambia, 2015; University of Zambia, 2018). One of the missions of the University of Zambia, research, produces research outputs, which is part of knowledge production.

Knowledge production primarily refers to explicit communicable knowledge aimed to be disseminated to a wider audience (Nokkala, 2007). Knowledge production has also been defined as the “cluster of related activities in the university that has to do with producing new knowledge” (Cloete and Bunting, 2013). In their discussion of knowledge production, they expand its coverage to include both graduates and publications. In this paper knowledge production refers to the activities, processes and systems as they relate to the production of knowledge through mainly publications, which arise out of research and are sometimes referred to as research output. Research output is the product of research, usually in some written format existing in an electronic or print form. Publication is a key measure of research output because it is the way findings are communicated and placed on the record (Martin, 2009). The product of performing research activities (Wootton, 2013). This may include writing journal articles and books, obtaining research grants, supervising research students, acting as an examiner, serving on editorial boards, presenting lectures, etc. We are specifically interested in research outputs that have been recorded in a published or non-published format such as books, journal articles, conference proceedings etc (Wootton, 2013). These research outputs are the ones that are articulated by the University of Zambia Human Resources Committee in their Policy, Procedures and Criteria for the Promotion of Academic Staff (Akakandelwa et al., 2016; University of Zambia, 2017). Once knowledge has been produced, it requires to be communicated to society in a process of knowledge diffusion or knowledge dissemination, after which it will be up taken by society in another process called knowledge utilisation. Knowledge production, diffusion and utilisation are all key processes in the knowledge production process. The objective of the paper is to investigated the knowledge production practices and attributes at University of Zambia School of Medicine.

2. METHODS

The survey was conducted in one of the state universities in Sri Lanka. A random sample of A survey method was adopted for the study. Semi-structured questionnaires were

administered to the 57 respondents during the period May 2016 to January 2017. The administration of questionnaires was based on convenience; i.e. whoever the researcher could access in a specific academic rank and who were available when the researcher visited the various departments of the University of Zambia School of Medicine. Additionally, some questionnaires were administered in meetings where the targeted staff members could be available. In some instances, the participants indicated to the researcher to wait for the questionnaires whilst they were filling it in, and in other instances the researcher was asked to come back on another day to collect the filled in questionnaire. Before asking the participants to volunteer to participate in the study, they were first asked by the researcher to respond to the consent form asking them to consent to participating in the study.

After it became difficult to collect the questionnaire physically from some academic staff, the researcher converted the questionnaire into an online survey using Google forms (<https://www.google.com/forms/about/>) to collect data specifically among academic staff in the lowest rank; i.e. academic staff in the Academic Salary Scales (ACS) 06 salary scales. Similarly, a consent form was attached to the Google form in which they were asked to consent before filling in the questionnaire. This was a replica of the printed semi-structured questionnaires that were distributed to the same category of respondents. Quantitative data obtained from the semi-structured questionnaires were computed and analysed using descriptive statistical methods. Open-ended questions from the questionnaires were isolated, themes extracted and analysed thematically.

3. RESULTS AND DISCUSSION

Background Characteristics of the Respondents

There was a response rate of 72%, with 41 respondents having responded to the questionnaire. To ground the responses in context, background characteristics of the respondents were sought.

Demographic Profile of Respondents

The results from the study indicate that the respondents with PhD qualifications were 19 (46.3%) and those with Master's degree were 22 (53.7%). Eleven (26.8%) of the respondents were employed at the Lecturer III grade, 10 (24.4%) at the Lecturer II grade, 9 (22.0%) were at the Lecturer I grade, 3 (7.3%) were Senior Lecturers, 4 (9.8%) were Associate Professors and 4 (9.8%) were Professors. In terms of work experience, the largest number of the respondents had worked for the institution for a period of 5-12 years (17, 41%), (Table 1).

Table 1. Demographic profile of respondents

| | | Frequency | Percent | Cumulative Percent | |
|--------------------------------|-------------------|---------------------|--------------|--------------------|-------|
| Highest Level of Qualification | Masters | 22 | 53.7 | 53.7 | |
| | PHD | 19 | 46.3 | 100 | |
| Total | | 41 | 100.0 | | |
| Academic Rank | ACS 06 | Lecturer III | 11 | 26.8 | 26.8 |
| | ACS 05 | Lecturer II | 10 | 24.4 | 51.2 |
| | ACS 04 | Lecturer I | 9 | 22.0 | 73.2 |
| | ACS 03 | Senior Lecturer | 3 | 7.3 | 80.5 |
| | ACS 02 | Associate Professor | 4 | 9.8 | 90.2 |
| | ACS 01 | Professor | 4 | 9.8 | 100.0 |
| Total | | 41 | 100.0 | | |
| Work Experience | Less than 4 years | 8 | 20 | 20 | |
| | 5-12 years | 17 | 41 | 61 | |

| | Frequency | Percent | Cumulative Percent |
|--------------------|-----------|--------------|--------------------|
| 13-20 years | 8 | 20 | 81 |
| More than 20 years | 8 | 19 | 100.0 |
| Total | 41 | 100.0 | |

Type of Knowledge Output by the Academic staff

Knowledge outputs or research outputs are those products that academic researchers produce as the outcome of their research, in other words, they are the products of research. These research outputs require a communication channel in order to reach their intended audience. Others have termed them as knowledge products and in a study on development of a knowledge readiness framework for medical research; knowledge product has been defined as “knowledge resulting from research with potential to improve individual or public health” (Engel et al., 2019, p. 1). In asking this question the researcher was interested in finding out the knowledge outputs that the academic staff used to communicate their research findings. By far the most frequently used channels that the respondents indicated they used to convey their knowledge output or knowledge produced were journal articles (95.0%), followed by Masters student dissertations (62.5%), PhD student theses (42.4%), research monographs (32.5%), refereed conference proceedings (27.5%), policy briefs (22.5%), un-refereed conference proceedings (17.5%) and the least used were newspaper articles (7.5%). Table 2.

Table 2. Type of Research Output to Convey Knowledge Produced

| Type of Research Output | Frequency | Percentage |
|------------------------------------|-----------|------------|
| Research journal articles | 38 | 95.0 |
| Masters student dissertations | 25 | 62.5 |
| PhD student dissertations/theses | 17 | 42.5 |
| Research books | 13 | 32.5 |
| Refereed conference proceedings | 11 | 27.5 |
| Policy briefs | 9 | 22.5 |
| Un-refereed conference proceedings | 7 | 17.5 |
| Newspaper articles | 3 | 7.5 |

Purpose for which Knowledge is Produced

Respondents were asked to state for what purpose they produce knowledge. There were several responses, and these ranged from 35 (85.4%) respondents who indicated it was for research purposes, to 33 (80.5%) who said it was for academic promotion and to produce new knowledge, to 30 (73.2%) who said to improve teaching, to 25 (61.0%) to provide evidence, to 21 (51.2%) to change practice, to 17 (41.5%) to improve policy, to 17 (41.5%) for personal enrichment, and 10 (24.4%) for research funding. The most favoured reasons as to why the respondents engaged with knowledge production were for research purposes, to produce new knowledge and for academic advancement. See Table 3 below.

Table 3. Purpose of Knowledge Production

| Purpose | Frequency | Percentage |
|------------------------|-----------|------------|
| For research | 35 | 85.4 |
| Produce new knowledge | 33 | 80.5 |
| For academic promotion | 33 | 80.5 |
| To improve teaching | 30 | 73.2 |
| To provide evidence | 25 | 61.0 |

| Purpose | Frequency | Percentage |
|--------------------------|-----------|------------|
| To change practice | 21 | 51.2 |
| To improve policy making | 17 | 41.5 |
| For personal enrichment | 17 | 41.5 |
| For research funding | 10 | 24.4 |

Attributes of the Knowledge Produced

The attributes of the knowledge produced in the academic environment are important factors in the knowledge production cycle. Therefore, respondents were asked to indicate the attributes of the knowledge that they produce. The major attributes mentioned were that the knowledge they produced was ethically produced (34, 82.9 %) and that it was evidence based (33, 80.5). A significant number indicated that the knowledge they produced advances critical scholarship (26, 63.4%) and that it was trustworthy (26, 63.4%). Sixteen respondents (39.0%) indicated that the knowledge they produced was socially beneficial and 15 (36.6%) specified that it can be transferred. Only six respondents (14%) each, stated that the knowledge that they produced can be preserved and that it was economically beneficial. See Table 4 below.

Table 4. Attributes describing Knowledge Produced

| Attributes of Knowledge | Frequency | Percentage |
|-------------------------------|-----------|------------|
| Ethically produced | 34 | 82.9 |
| Evidence based | 33 | 80.5 |
| Advances critical scholarship | 26 | 63.4 |
| Trustworthy | 26 | 63.4 |
| Socially beneficial | 16 | 39.0 |
| Transferable | 15 | 36.6 |
| Preservable | 6 | 14.6 |
| Economically beneficial | 6 | 14.6 |

Information Media and Sources used in Knowledge Production

A further factor that was important to determine was the information media that the academic staff used in the knowledge production process, It is clear from the responses depicted in Table 5 below that the largest proportion indicated they consulted electronic journals (37, 92.5%), followed by electronic books (25, 62.5%) and in equal proportion print journals (24, 60.0%) and print books at (24, 60.0%). See Table 5.

Table 5. Information Media Consulted for Knowledge Production

| | Frequency | Percentage |
|---------------------|-----------|------------|
| Electronic Journals | 37 | 92.5 |
| Electronic books | 25 | 62.5 |
| Print Journals | 24 | 60 |
| Print Books | 24 | 60 |

Sources of Information

Upon being questioned further where the respondents found the information media, they indicated that they obtained the information they consulted from different sources. The significantly largest proportion was from the Internet (40, 97.6%), followed by the University Library (23, 56.1%), University departments (18, 43.9%), Personal Portable

Devices (PDAs) (15, 36.6%), Colleagues (13, 31.7%) and Government departments (11, 26.8%). See Table 6.

Table 6. Sources of Information

| Sources | Frequency | Percent |
|----------------------------------|-----------|---------|
| Internet | 40 | 97.6 |
| Library | 23 | 56.1 |
| University departments | 18 | 43.9 |
| Personal portable devices (PDAs) | 15 | 36.6 |
| Colleagues | 13 | 31.7 |
| Government departments | 11 | 26.8 |

Frequency of Knowledge Production

Respondents were asked to indicate the frequency with which they utilise knowledge products in their work. It is important that people who work in an industry where the mission is to create and produce knowledge in whatever format; as this may indicate not only the importance they attach to knowledge but also their willingness to contribute to that institution’s knowledge production. See Table 7 for their responses. The results show that a large number of the respondents (19, 46.3%) were frequently producing knowledge products in the work environment. Table 7 below.

Table 7. Frequency of Knowledge Production

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|-------------|-----------|---------------|--------------------|
| Valid | Rarely | 2 | 4.9 | 5.0 |
| | A few times | 10 | 24.4 | 30.0 |
| | Frequently | 19 | 46.3 | 77.5 |
| | Always | 9 | 22.0 | 100.0 |
| | Total | 40 | 97.6 | 100.0 |
| Missing | System | 1 | 2.4 | |
| Total | | 41 | 100.0 | |

Frequency of diffusion of Knowledge Products

The respondents indicated that they diffused or disseminated knowledge frequently 11(26.83%), Always 21 (51.22%), and rarely 2 (4.88%), while none said never, See Table 8 below.

Table 8. Frequency of diffusion of Knowledge Products

| | Frequency | Percentage |
|--------------|-----------|---------------|
| A Few Times | 11 | 26.83 |
| Frequently | 21 | 51.22 |
| Always | 7 | 17.07 |
| Never | 0 | 0.00 |
| Rarely | 2 | 4.88 |
| Total | 41 | 100.00 |

Frequency of use of Knowledge Products

Regarding the frequency with which the academic staff were using knowledge products for knowledge production purposes, it was established that the majority of the respondents (24, 58.5%) frequently used knowledge products, 11 (26.8%) indicated always and only 6 (14.6%) indicated a few times, while none said never or rarely, See Table 9.

Table 9. Frequency of Knowledge Products Use

| | Frequency | Percentage |
|--------------|-----------|------------|
| A Few Times | 6 | 15 |
| Frequently | 24 | 58 |
| Always | 11 | 27 |
| Never | 0 | 0 |
| Rarely | 0 | 0 |
| Total | 41 | 100 |

The researcher wanted to establish the knowledge production practices and attributes of the academic staff at UNZA SOM. Accordingly, questions were asked about the type of knowledge produced by academic staff, purpose for which knowledge was produced, attributes of the knowledge produced, information materials used in knowledge production, and sources of information used in knowledge production, diffusion and utilisation processes.

Type of Knowledge Outputs by the Academic staff

The type of knowledge produced by academic staff of the University of Zambia is consistent with other findings such as those from Akakandelwa and Rousseau in 2016. In their study, they established that the “majority of the research output document types were journal articles (68.6%), followed by book reviews (12.3%), and meeting abstracts (5.3%) . The journal article form of communicating knowledge was still leading and evidence shows that there increased urgency for journals from Africa being indexed in major databases such as Medline and other international indexing databases . Indexing of journals increases discoverability and visibility of local scholarship, and potentially leading to increased usage. Other scholars looking at research output of universities in Africa have come to the same conclusion: that the journal is the leading choice amongst researchers and academic staff (Ahmed et al., 2010; Kebede et al., 2014; Nwagwu, 2016). Indeed, the journal article is usually the goal for any researcher to publish in. This is motivated by several factors and primarily because, journal articles contribute more to a researcher’s overall publication output than any other publication format when it comes to career promotions. _Research publications in peer- reviewed scholarly and technical journals are often seen as the prime output of high-quality scientific knowledge production” (Tijssse, 2015). In a similar vein, the use of refereed journals (internal and external) in research dissemination is a key determinant of an academic’s career progress as far as research is concerned, since publishing in journals renders individual academics visible nationally or internationally (Musiiige and Maassen, 2015). It goes without discussion, therefore that lecturers and researchers at any university will seek out a communication channel that advances their career progression further over other channels and in this case the journal form of communication; be it online or print ranks as number one. Further, this may also be a function of the networking opportunities and impact that the journal brings to one’s field or discipline.

Purpose for which Knowledge is produced

The availability of and access to electronic journals for teaching and research by the academic staff of Faculty of Agriculture, University of Zimbabwe’ found that in general academic staff were more involved in teaching and research and therefore used information from electronic sources to support these activities (Malapela, 2014). In the study, he found

that 48 (100%) used the information for research, 46 (95.8%) for teaching, 12 (25%) for student supervision, 8(16.6%) for consultancy, whilst 2 (4%) cited other reasons for using electronic information . In academia, it seems that both students and faculty prefer electronic sources of information, as opposed to print sources (Makondo et al., 2018; Monde et al., 2017; Monde et al., 2020). This is especially important in today's context where communities are grappling with the Coronavirus disease (COVID-19).

For libraries, electronic provision of information would ensure that they still provide services to both faculty and students and therefore limit their access to the physical libraries and concentrate on provision of e-services. The publication of research results is an important broadcast device that expands the possibilities for its application, as it allows the other students to consume the knowledge being produced, debate, refute, replicate and apply (Ferreira, 2013). A survey is not complete if you have not published their results. A bound research, without visitation and citation, lies lonely and go [sic] down in history as an unfinished work". At its core is the issue of peer reviewing; used a validation process. It is very well to publish research output in various publication channels, however, unless that research makes an impact on people's lives it is a futile exercise. In the end such an endeavour would defeat the very foundation upon which knowledge production is based and is critical to the existence of universities and other knowledge producing institutions. In universities, the bulk of the knowledge produced is used for academic purposes; teaching, learning, research and community services.

Attributes of the Knowledge Produced

Academic knowledge attributes are an important aspect of the knowledge production cycle and complex. This is especially true for knowledge that is produced from universities as people have come to expect certain standards from the knowledge produced. To the extent that knowledge produced should be trusted, it is critical for people to trust the process of that knowledge production, especially since the outcomes of that knowledge have implications for society. For instance, drugs produced out of that knowledge may be used in the treatment of people or production of seeds for farming. In fact, changes in government's policies may have far reaching consequences for society if it is based on a false premise; and for that reason, government policy should always be evidence-based. The study findings indicate that all the attributes of the knowledge produced by the University of Zambia School of Medicine academic staff point to gaining endearing trust and confidence from society. They point to the fact that the knowledge was ethically produced, evidence-based, an advance of critical scholarship, trustworthy, socially beneficial, transferable, preservable and economically beneficial to society (Cloete et al., 2018; Grobbelaar, 2015; Kanyengo, 2009a; Mubazi, 2019; Ramsden, 1994). From this perspective, Ferreira (2013) argues that:

“social responsibility and commitment by the researcher with the diffusion and application of knowledge produced is an important expression of the ethics of research, the producer should not settle for their product and be satisfied with the success of the results, only by the scope of the theoretical production. As part of the social responsibility of the researcher, the satisfaction must be collective, arising out the potential of its application and its effective transfer to a practical level, in an attempt of which has scientific and social impact with what was produced”.

Indeed it is the responsibility and duty of those involved in the knowledge production process to ensure that throughout this process, they hold themselves accountable to not only themselves and their institutions but ultimately to society.

Information Media used in Knowledge Production

A further factor that was important to determine was the information media that the academic staff used in the knowledge production process. It is clear from the responses provided that the largest proportion indicated they consulted electronic journals (37, 92.5%), followed by electronic books (25, 62.5%) and in equal proportion print journals (24, 60.0%) and print books at (24, 60.0%). These information media, for use in both research works as well as in the production of their knowledge products, such as books and journals, are an important component of the knowledge production process. Increasingly, the materials used are either in electronic or print forms but we have seen, increasingly, the move to electronic digital sources all over the world. In universities and research institutions such as the University of Zambia, journals seem to be the preferred choice of medium in which research output is published; this finding confirms what other previous studies on knowledge production have found (Ahmed et al., 2010; Akakandelwa & Rousseau, 2016; Kebede et al., 2014; Musiige & Massen, 2015; Nwagwu, 2016; Tijssen, 2015). The findings agree with those of Nwone and Mutula attesting to the fact that the many respondents in their study preferred publishing their research output in subscription based journals and fee-based open access journals again confirming the attraction of journals as a publication outlet for academic staff). The journal is a well trusted outlet that has been there for some time making it a favourite publication medium with universities everywhere and accepting that reliable journals follow the required quality assurance rigour that is accepted by universities worldwide.

Source of Information used in Knowledge Production

Sources of information for researchers to use in both their research, as well as in the production of their knowledge products, such as books and journals, are an important component of the knowledge production process. The library has always been important in the production of knowledge (Arslane, 2021; Hisle, 2002; Munatsi, 2020; Muthanna & Sang, 2019; Zeleza, 1996). However university libraries in Zambia have always been struggling to fulfill this role because of funding problems they have been going through (Kanyengo, 2007; Kanyengo, 2009b; Simui & Kanyengo, 2004). The funding challenges have also affected other university libraries in Africa and worldwide (Hoskins & Stilwell, 2011; Muema Kavulya, 2006; Okiy, 1997; Okojie, 2010; Rosenberg, 1996). Funding challenges to libraries worldwide was the top challenge at an *Academic Library* conference held in 2016 (Cheng, 2016). These challenge for librarians included: “competing for funding, growing the library's resources within allocated means, and defending the amount of library resources” . And in Africa, University libraries have for a long time now been struggling to meet the needs of university faculty and students due to various challenges that include limited funding (Hoskins & Stilwell, 2011; Jain & Akakandelwa, 2016; Muema Kavulya, 2006; Okiy, 1997; Okojie, 2010; Rosenberg, 1996). The struggle to meet the information needs of the students and faculty by University of Zambia libraries is well documented (Government of the Republic of Zambia, 1998; Hoppenbrouwer & Kanyengo, 2007; Kakana et al., 2010; Kanyengo, 2007; Kanyengo, 2009b; Lungu, 1991; Simui & Kanyengo, 2004). Nowadays, these sources are not only found in the library. Yes, the library is still important in facilitating access to these

sources more especially in developing countries where widespread access to the Internet is still mired in a host of problems.

Upon being questioned further, on the place where they found the information they needed for the knowledge production activities, they indicated that they obtained the information from different sources. In their responses they pointed out that their sources of information were the Internet (40, 97.6%), followed by the University Library (23, 56.1%), University departments (18, 43.9%), Personal Portable Devices (PDAs) (15, 36.6%), colleagues (13, 31.7%) and government departments (11, 26.8%). However, it is essential to note that although print materials are still very prevalent in most African countries such as Zambia, there is a general move worldwide to electronic digital sources even in African countries (Owusu-Ansah, 2020; Siyao et al., 2017; Zibani & Kalusopa, 2019). Similar findings were found by Nwone and Mutula (2018) in their study, where their results showed that online databases and electronic journals were used extensively for “seeking information for teaching and research” . The Internet was the most popular source of information for the lecturers from Rivers State University of Science and Technology (RSUST), Port Harcourt. In their work on “Finding organising and using health information: a training manual for students, researchers and health workers in Africa”, Ajuwon divided these sources of information into four groups namely; human sources (colleagues and peers), archives, libraries and the Internet ; Cheng, 2016). They further explain, that these are sources where one goes to get information . However, at Madonna University, the majority of academic staff there primarily used the library (53.6%) as a source of information and in the library used mainly print materials; this might have been a case when the Internet was still in its infancy in most African countries. The situation has since changed, with most libraries in Africa moving to the digital world as already alluded to above. The findings of this study and the literature cited generally confirm the universal phenomenon, of most researchers and knowledge producers relying on the Internet as a source of information.

Frequency of Production of Knowledge Products

Respondents were again asked to show the frequency with which they produce knowledge products in their work. Frequency of production of knowledge products by researchers in institutions where the mission is to create and produce knowledge in whatever format may indicate their appreciation of knowledge and their willingness to contribute to that institution’s knowledge production. The results show that a large number of the respondents (19, 46.3%) were frequently producing knowledge products in the work environment. In other words, the staff was involved in research productivity frequently. In a study on faculty productivity in higher education found that faculty/academic staff was involved in publishing research output at least annually .

The findings point to the fact that the majority of academic staff at the School of Medicine, University of Zambia, used knowledge products or research outputs in the production of knowledge, diffusion and utilisation of knowledge. It is apparent that knowledge products are required at all stages of the knowledge production cycle. The frequency with which academic staff produce knowledge, diffuse knowledge and utilise knowledge may also have a bearing on an individual researcher’s research output and this may similarly impact their academic promotion as well as their visibility both locally and internationally. Equally, this frequency of knowledge production, diffusion and utilisation by academic staff may affect an institution’s visibility, its ability to attract increased grant funding and overall ranking in the world university rankings. The knowledge production requires the input of knowledge in order to be a success (Kurtoğlu, 2016).

Frequency of Diffusion of knowledge products in work processes

The study established that the majority of the respondents used knowledge products in their work. Knowledge production is a full circle, requiring diffusion and utilisation after knowledge has been produced. Diffusion of knowledge is always purposeful and targeted to the recipient audience. Diffusion efforts that are adapted specifically to targeted user groups by the producers of research knowledge are relatively uncommon as it is a fruitless exercise (Chagnon et al., 2010). Additionally, this process needs to be undertaken in order for the knowledge cycle to be fulfilled. The Book and the Journal are still some of the popular methods of knowledge diffusion despite them being non interactive . Additionally, collaborative networks are essential in the knowledge diffusion process especially among academia.

Frequency of Knowledge Utilisation by the Academic staff

Knowledge utilisation is critical in the knowledge production enterprise. The study revealed that the academic staff at UNZA SOM frequently utilised knowledge products in their work. The findings are similar to other studies that allude to knowledge utilisation being dependent on the information medium, the information content itself and how relevant that content is to the user. Knowledge utilisation needs, as well as the appropriate messages and formats for transmitting knowledge, differ greatly depending on whether users are practitioners, programme administrators, or political decision-makers” and that the likelihood of knowledge being utilised more is greater when the knowledge is tailored to the user’s needs . In this study, the differences in knowledge utilisation are a result of the academic ranking of the academic staff member, the age, and perhaps the subject specialisation of that academic staff member. The frequency of use of the knowledge and relevance in what one is doing was critical to that knowledge being utilised. Staff were frequently using publications of the bank in their work because the staff believed the bank’s publication had influence “their thinking about development issues”; meaning that they knowledge consulted were useful in the work they were doing as the bank was involved in development work . In this context, it is important that research output or once knowledge has been produced, the research outcomes [are] maximally utilised .

4. CONCLUSION

The type of knowledge produced, channels of communication in which knowledge was produced by academic staff, purpose for which knowledge was produced, attributes of the knowledge produced, information materials used in knowledge production and sources of information are all critical stages in the knowledge production process. Knowledge production is a continuous cycle that requires knowledge as an input process, requires a medium in which knowledge can be transmitted and then it requires that the knowledge is up taken and utilised by society. It then gets back to be produced in academia once experiences or lessons have been learnt, beginning the whole process all over. The study further established knowledge produced at the UNZA School of Medicine is used for research, for new knowledge, for academic promotion, to improve teaching and provide evidence; to change practice, to improve policy making, for personal enrichment and to get more research funding. Moreover, the staff frequently used and produced knowledge in their work that was communicated through mostly journals and books; and the majority of them found on the knowledge they needed for their work either on the internet or through their local library. The overall conclusion the study makes is that knowledge produced at the

University of Zambia School of Medicine follows similar trends to knowledge produced in academia, that it is knowledge which is predominantly existing as research journal articles and books, ethically produced, evidence based, advances critical scholarship, trustworthy, socially beneficial, transferable, preservable and economically beneficial.

5. AUTHOR'S NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

6. REFERENCES

- Ahiauзу, B. E., & Ani, O. E. (2015). A Survey of Information Seeking-Behavior of Academic Staff in a Nigerian University in Digital Age. *Science Journal of Education*, 3(4), 88–94.
- Ahmed, Y., Kanyengo, C. W., & Akakandelwa, A. (2010). Mapping Postgraduate Research at the University of Zambia: a review of dissertations for the Master of Medicine Programme. *Medical Journal of Zambia*, 37(2), 52–57.
- Ajayi, I. F. A., Goma, L. K. H., & Johnson, G. A. (1996). *The African experience with higher education*. Ohio University Press.
- Ajuwon, A. G., Anne, A., Malapela, T., Kanyengo, C. W., Kamau, N., Mbagu, S., Horta, C., & Chikonzo, A. (2011). *Finding Organising and Using Health Information: A training Manual*. Network of African Medical Librarians & Deans Secretariat. http://www.academia.edu/1263852/Finding_Organising_and_Using_Health_Informati_on_A_training_Manual
- Akakandelwa, A., Makondo, F. N. S., Kanyengo, C. W., & Ahmed, Y. (2016). *Tracing the footprints of the University of Zambia's research output, 1966-2016*. UNZA Press.
- Akakandelwa, A., & Rousseau, R. (2016). A synopsis of fifty years of research at the University of Zambia. In A. Akakandelwa, F. N. S. Makondo, W. C. Kanyengo, & Y. Ahmed (Eds.), *Tracing the footprints of the University of Zambia's research output, 1966-2016* (pp. 17–42). UNZA Press.
- Ani, O. E., Ngulube, P., & Onyancha, B. (2014). Effect of accessibility and utilisation of electronic information resources on productivity of academic staff in selected Nigerian universities. *Science Research*, 2(6), 166–171.
- Ani, O. E., Ngulube, P., & Onyancha, B. (2015). Perceived effect of accessibility and utilisation of electronic resources on productivity of academic staff in selected Nigerian universities. *SAGE Open*, 5(4), 1–7.
- Arslane, G. (2021). Libraries, Learning, and Knowledge Production in Islamic History: An interview with Nur Sobers-Khan. *Wasafiri*, 36(4), 83–87.
- Asian Development Bank. (2012). *Special evaluation study - knowledge products and services: building a stronger knowledge institution*. Asian Development Bank. <https://www.adb.org/documents/special-evaluation-study-adb-s-knowledge-products-and-services>
- Badat, S. (2009). The role of higher education in preparing teachers. *Education 3-13*, 42(5), 457–459.

- Castells, M. (2009). The role of universities in development, the economy and society. In *Castells in Africa: Universities and Development*. (pp. 57–65). African Minds.
- Chagnon, F., Pouliot, L., Malo, C., Gervais, M.-J., & Pigeon, M.-È. (2010). Comparison of determinants of research knowledge utilisation by practitioners and administrators in the field of child and family social services. *Implementation Science*, 5(41), 1–12.
- Cheng, J. (2016). *The Top 10 Challenges Academic Librarians Face in 2016*. The Wiley Network. <https://www.wiley.com/network/archive/the-top-10-challenges-academic-librarians-face-in-2016>
- Cloete, N. (2012). Higher education and economic development in Africa: the academic core. In M. Vukasović, P. Maassen, M. Nerland, B. Stensaker, R. Pinheiro, & A. Vabø (Eds.), *Effects of Higher Education Reforms: Change Dynamics* (pp. 137–152). Sense Publishers.
- Cloete, N., & Bunting, I. (2013). *Strengthening knowledge production in universities: five South African case studies*. OECD. [https://www.oecd.org/sti/Strengthening knowledge production.pdf](https://www.oecd.org/sti/Strengthening%20knowledge%20production.pdf)
- Cloete, N., Bunting, I., & van Schalkwyk, F. (2018). *Research Universities in Africa*. African Minds.
- Cloete, N., & Maassen, P. (2015). Roles of universities and the African context. In *Knowledge Production and Contradictory Functions in African Higher Education* (pp. 1–17). African Minds. <https://muse.jhu.edu/chapter/1497495/pdf>
- Engel, C., Silberglitt, R., Chow, B., Morgan Jones, M., & Grant, J. (2019). *Development of a Knowledge Readiness Level Framework for Medical Research*. RAND Corporation.
- Ferreira, M. d. A. (2013). Production of knowledge and responsibility of the researcher. *Escola Anna Nery*, 17(3), 405–408.
- Government of the Republic of Zambia. (1998). *Report of the Bobby Bwalya Commission of Inquiry appointed to inquire into operations at the University of Zambia and the Copperbelt University*. Government Printers.
- Grobbelaar, S. S. (2015). *Handbook series: literature review on knowledge utilisation*. Association of Commonwealth Universities, Development Research Uptake in Sub-Saharan Africa [DRUSSA]. <https://www.acu.ac.uk/publication/download?publication=604>
- Hisle, W. (2002). Top issues facing academic libraries: a report of the Focus on the Future Task Force. *College & Research Libraries News*, 63(10), 714–715.
- Hofman, K. J., Kanyengo, C. W., Rapp, B. A., & Kotzin, S. (2009). Mapping the health research landscape in Sub-Saharan Africa: a study of trends in biomedical publications. *Journal of the Medical Library Association: JMLA*, 97(1), 41–44.
- Hoppenbrouwer, J., & Kanyengo, C. W. (2007). Current access to health information in Zambia: A survey of selected health institutions. *Health Information and Libraries Journal*, 24(4).

- Hoskins, R., & Stilwell, C. (2011). Library funding and journal cancellations in South African university libraries. *South African Journal of Libraries and Information Science*, 77(1), 51–63.
- Jain, P., & Akakandelwa, A. (2016). Challenges of twenty-first century academic libraries in Africa. *African Journal of Library Archives and Information Science*, 26(2), 147–155.
- Kakana, F., Kanyengo, C. W., Makondo, F. N. S., & Chifwepa, V. (2010). Information Seeking Behaviour and Massification of higher Education: a case study of the University of Zambia Library. *Zambia Library Association Journal*, 25(1 & 2), 34–43.
- Kanyengo, C. W. (2007). Serials Management in Africa: A Review of Survival Strategies at the University of Zambia. *Serials Review*, 33(1), 33–39.
- Kanyengo, C. W. (2009a). Managing digital information resources in Africa: Preserving the integrity of scholarship. *International Information and Library Review*, 41(1), 34–43.
- Kanyengo, C. W. (2009b). Meeting collection development needs in resource poor settings: The University of Zambia medical library experience. *Collection Building*, 28(1), 26–30.
- Kebede, D., Zielinski, C., Mbondji, P. E., Sanou, I., Kouvidila, W., & Lusamba-Dikassa, P.-S. (2014). Research output of health research institutions and its use in 42 sub-Saharan African countries: results of a questionnaire-based survey. *Journal of the Royal Society of Medicine*, 107(1 Suppl), 105–114.
- Kelly, M. J. (1999). *The origins and development of education in Zambia: precolonial times to 1996 - a book of notes and readings*. Image Publishers Limited.
- Kurtoğlu, Y. (2016). Knowledge Production, Knowledge Management and the Competitiveness. *International Journal of Managerial Studies and Research*, 4(1), 86–97.
- Lungu, C. B. M. (1991). University of Zambia Library as the National Reference Library of Zambia. In R. R. Nair (Ed.), *Academic Library Development* (pp. 1–10). Ess Ess Publications.
- Makondo, F. N. S., Kanyengo, C. W., & Kakana, F. (2018). Online search behaviour of University of Zambia Library and Information Studies students. *Library Hi Tech*, 36(4), 70-732.
- Malapela, T. (2014). *A study into the availability of and access to electronic journals for teaching and research by the academic staff at the Faculty of Agriculture, University of Zimbabwe* [Thesis, University of Cape Town]. https://open.uct.ac.za/bitstream/handle/11427/13108/thesis_hum_2014_malapela_t.pdf
- Martin, B. (2009). Research productivity: some paths less travelled. *Australian Universities' Review*, 15(1), 14–20.
- Masaiti, G. M., Mwila, K., Kulyambanino, C., & Njobvu, T. (2021). Faculty productivity in Zambian higher education in the face of internationalization: Unpacking research, publication and citation at the University of Zambia. *Scholarship of Teaching and Learning in the South*, 5(1), 66–86.

- Monde, M. W., Akakandelwa, A., & Kanyengo, C. W. (2017). Nurses and use of research information in clinical practice: a case study of the University Teaching Hospital in Zambia. *Library Philosophy and Practice (e-Journal)*, 1560, 1–15.
- Monde, M. W., Ndalmeta-Theo, E. M., Mwafuililwa, C. M., Malambo, M. K., & Kanyengo, C. W. (2020). Information Support for Distance Nursing Students at the University of Zambia School of Nursing Sciences. *Zambia Journal of Library & Information Science*, 4(1), 19–38.
- Mosha, H. J. (1986). The Role of African Universities in National Development: A Critical Analysis. *Comparative Education*, 22(2), 93–109.
- Mubazi, J. K. E. (2019). Quality Criteria of a Research Output. *American Journal of Biomedical Science & Research*, 3(3), 265–266.
- Muema Kavulya, J. (2006). Trends in funding of university libraries in Kenya: a survey. *The Bottom Line*, 19(1), 22–30.
- Munatsi, R. (2020). National Research and Knowledge Systems: Role of Libraries. In C. T. Chisita (Ed.), *Cooperation and Collaboration Initiatives for Libraries and Related Institutions* (pp. 273–293). IGI Global.
- Musiige, G., & Massen, P. (2015). Faculty perceptions of the factors that influence research productivity at Makerere University. In N. Cloete & P. Massen (Eds.), *Knowledge Production and Contradictory Functions in African Higher Education* (pp. 109–127). African Minds.
- Muthanna, A., & Sang, G. (2019). State of University Library: Challenges and Solutions for Yemen. *The Journal of Academic Librarianship*, 45(2), 119–125.
- Mwanakatwe, J. M. (1969). Adult education and political and social change. *Paper Presented at Third Conference of the African Adult Education Association, April 19-24 1971, Univ. of Dar Es Salaam, Tanzania; Also Presented as a Lecture Delivered at the First National Seminar of the Adult Education Association of Zambia A Lecture*. <https://files.eric.ed.gov/fulltext/ED050318.pdf>
- Mwanakatwe, J. M. (1971). The Growth of Education in Zambia since Independence. *British Journal of Educational Studies*, 19(1), 103–104.
- Nnadozie, C. O., & Nnadozie, C. (2008). The information needs of faculty members in a Nigerian Private University: A self-study. *Library Philosophy and Practice*, 196, 1–9.
- Nokkala, T. (2007). *Network building, motivation and learning in inter-organisational R&D collaboration projects-theoretical considerations*. University of Surrey. <http://epubs.surrey.ac.uk/1571/1/fulltext.pdf>
- Nwagwu, W. E. (2016). Ten years of biomedical research in West Africa. *Malaysian Journal of Library & Information Science*, 21(2), 41–65.
- Nwone, S., & Mutula, S. (2018). Information seeking behaviour of the professoriate in selected federal universities in southwest Nigeria. *South African Journal of Libraries and Information Science*, 84(1), 20–34.
- Okiy, R. (1997). Funding university libraries in Nigeria: problems and challenges. *Research in*

Education, 4(1 & 2), 1–17.

- Okojie, V. (2010). Innovative financing for university libraries in sub-Saharan Africa. *Library Management*, 31(6), 404–419.
- Owusu-Ansah, C. M. (2020). Conceptions of digital libraries: an African perspective. *Digital Library Perspectives*, 36(3), 231–247.
- Ramsden, P. (1994). Describing and explaining research productivity. *Higher Education*, 28(2), 207–226.
- Rosenberg, D. (1996). A Review of University Libraries in Africa. *Development in Practice*, 6(1), 77–80.
- Simui, M., & Kanyengo, C. W. (2004). *An Investigation into the Funding of University Libraries in Zambia*. INASP.
- Siyao, P. O., Whong, F. M., Martin-Yeboah, E., & Namamonde, A. (2017). Academic libraries in four Sub-Saharan Africa countries and their role in propagating open science. *IFLA Journal*, 43(3), 242–255.
- Tijssen, R. (2015). Research output and international research cooperation in African flagship universities. In N. Cloete, P. Maassen, & T. Bailey (Eds.), *Knowledge production and contradictory functions in African higher education* (pp. 61–74). African Minds.
- University of Zambia. (2015). *The University of Zambia calendar 2014-2016*. UNZA Press.
- University of Zambia. (2017). *Policy, Procedures and Criteria for the Promotion of Academic Staff*.
- University of Zambia. (2018). *University of Zambia strategic plan 2018 - 2022*. UNZA Press. https://www.unza.zm/sites/default/files/article_files/2018-08/Strategic_Plan_2018-22.pdf
- Woldegiorgis, E., & Doevenspeck, M. (2013). The Changing Role of Higher Education in Africa: A Historical Reflection. *Higher Education Studies*, 3(6), 35–45.
- Wootton, R. (2013). A simple, generalisable method for measuring individual research productivity and its use in the long-term analysis of departmental performance, including between-country comparisons. *Health Research Policy System*, 11(2), 1–14.
- Zezeza, P. T. (1996). Manufacturing and Consuming Knowledge: African Libraries and Publishing (Fabrication et consommation de connaissances: les bibliothèques et l'édition en Afrique / Criando e consumindo conhecimento: bibliotecas africanas e editoras / Manufacturando y consu. *Development in Practice*, 6(4), 293–303.
- Zibani, P., & Kalusopa, T. (2019). E-Resources Marketing in African Academic Libraries: Contexts, Challenges and Prospects. In P. Ngulube (Ed.), *Handbook of Research on Advocacy, Promotion, and Public Programming for Memory Institutions* (pp. 261–283). IGI Global.