

FACTORS INFLUENCING ADOPTION OF INSTITUTIONAL REPOSITORIES IN TERTIARY EDUCATION INSTITUTIONS: LIBRARIANS' PERSPECTIVE

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Abstract

One way of improving visibility and accessibility of national research is for institutions of higher learning to use Institutional Repositories (IRs). Studies done to date show that generally, academic staff do not deposit their research outputs on or even use IRs for academic related work. However, in recognition of the diverse stakeholders on IR adoption and success, there have been calls for a wider understanding of the role of university administration, funding agencies, librarians, academic disciplines, commercial publishers, conference and workshop organizers and other entities that are directly and indirectly involved in the contemporary scholarly publishing cycle on scholars' failure to adopt university IRs. This multi-site case study, therefore, investigated the role of librarians in creating an enabling environment to assist academic staff to utilise IRs. This study adopted an interpretivist approach and used Engeström's Third Generation Activity Theory to guide the investigation. The research data was obtained through semi-structured interviews with librarians in two tertiary institutions. The findings of the study show that there is need for institutional repository advocacy and outreach programs by academic librarians to familiarise academic staff on utilisation of IRs. The study also established the need for librarians to reconsider their information resource capturing and dissemination practices, including user support services.

Keywords: document management, institutional repositories, African scholarly research

1.0 Background

1.1 Information communication technologies and open access

The Internet and Information Communication Technologies (ICTs) have drastically changed scholarly publishing as it has transformed the ease and speed with which scholarly communication is generated and shared. This has led to users expecting free and quick access to scientific research. This led to the emergence of Open Access as a substitute for subscription-based business models which used to be the norm in scientific research publications (Pimm, 2014). Open Access is defined as "digital literature that is free of most copyright and licensing restrictions" and is freely available online (Suber, 2004, p.1.). The only requisite is consent of the author or copyright holder for the work to be made digitally available to users (Schroter & Tite, 2006).

There are several Open Access models: Gold Open Access, Green Open Access and Diamond Open Access (Czerniewicz & Goodier, 2014; Yang & Li, 2015; Johnson, 2018). Gold Open Access journals can either be freely accessible to users online from the time of publication or subject to an embargo period, during which articles are made available in the IR as bibliographic records (Czerniewicz & Goodier, 2014; Yang & Li, 2015). Diamond Open Access is when “not-for-profit, non-commercial organizations, associations or networks publish material that is made available online in digital format, free of charge to readers and authors and does not allow commercial and for-profit re-use” (Fuchs & Sandoval, 2013, p.438). Predominantly, Diamond Open Access model publishes Open Access journals, open monographs and open textbooks by utilising open source software which “makes academic knowledge a common good, reclaims the common character of the academic system and entails the possibility of fostering job security by creating public service publishing jobs” (Fuchs & Sandoval, 2013, p. 438). Green Open Access refers to self-archiving of preprint or post-print journal articles in institutional or subject repositories (Björk et al., 2014; Rowley et al., 2017).

To cover production charges of Open Access content, researchers pay the journal publisher article processing charges to cover the peer-review and publishing costs per article (Czerniewicz & Goodier, 2014). In recognition of the associated cost implications of Open Access, most universities such as the University of Botswana (UB) provide financial support for Open Access processing charges of articles with the goal of promoting free and unlimited access to the content which enhances the visibility of research outputs (Moahi, 2010). Globally and locally, higher education institutions in Botswana such as the UB, Botho University and others have embraced the open access initiative by establishing IR or Green Open Access with the hope that their university communities will adopt and integrate IR content in teaching, learning and research output deposit. Bell, Foster, and Gibbons (2005, p.1) define an IR as “an electronic system that captures, preserves and provides access to the digital work products of a community.” McMillen and Tucker (2010, p.19) define the IR as an “Open Access archive that facilitates the deposit of scholarly research in a centrally accessible online database.” IRs typically store searchable and index-able institutional content online such as peer-reviewed articles (pre- and post-print), subject to copyright conditions, theses, dissertations, projects, course notes, seminar papers, conference proceedings, administrative documents, learning objects and other forms of grey literature, technical reports and many more institution specific materials.

1.2 Benefits of adopting an IR

Institutional Repositories make electronic published scholarly work visible and freely available, and this improves access (Van Wyk & Mostert, 2011). Accessibility means that potential users can gain access to the electronic format of the research provided copyright issues are addressed. According to Dhanavandan and Tamizhchelvan (2013), contributors enjoy several benefits from utilizing IRs such as self-archiving and free access to articles. This increases the

impact of a researchers' work due to increased citation. Other benefits include improved visibility of content through abstracting and indexing databases and through availability in library collections and web-based publishing. This makes it easier for other researchers, students, and national development practitioners to identify and address local issues (Abrahams, Burke & Mouton, 2010). According to Omeluzor (2014), Bhardwaj (2014), and Utulu and Akadri, (2014) adopting IRs has the following benefits at institutional level: a) It makes the research outputs of an institution available timeously; b) It increases the visibility of an institution's research which raises the prestige and public value of the institution; c) It increases the ranking of the institution both locally and internationally; d) It enhances learning, online teaching and research which facilitates knowledge creation and sharing; e) It stimulates innovation in a disaggregated publishing structure, and f) It enhances resource sharing.

2.0 Statement of the problem

Despite findings on the value added by adoption of IR, studies done to date show that generally, academic staff do not deposit their research outputs in their academic institutions IRs. While studies such as Yang and Li (2015), Makori, Njiaine, and Talam (2015) and Dhanavandan and Tamizhchelvan (2013) attribute non deposit of research outputs to academic staff's lack of awareness of their universities IRs as an information resource, other studies differ from this assertion. De Hart, Chetty and Archer (2015) established that academic staffs' awareness and knowledge of IRs does not translate to active participation or utilization of IRs on their part. Studies by Dhanavandan and Tamizhchelvan (2013), Lwoga and Questier (2015), Mammo and Ngulube (2013), Peekhaus and Proferes (2016), Shuva and Taisir (2016), Chilimo, Adem Otieno and Maina (2017) and Saulus, Mutula and Dlamini (2018) established that adoption of IRs by staff is shaped by several factors. These factors include infrastructural access, legal permission, conceptual awareness, technical capacity, material availability, individual or institutional volition, cultural and social variables, performance and effort expectancy, facilitating conditions, contextual factors, extrinsic benefits, behavioural intention and individual characteristics. However, a dearth of funding mechanisms to cover article processing charges, lack of mechanisms to guide academic researchers on where to publish, lack of accreditation mechanisms for regional and national journals, insufficient finance and inadequate manpower expose academic researchers to unscrupulous journal publishers and predatory publishing outlets. Other factors that have been found to affect adoption of IRs by academic staff include fear to violate publishers' copyright policies, failure to integrate IRs into mainstream information services of the library and failure to integrate different forms of information such as graphics, video and sound into the IR (Makori, Njiaine & Talam, 2015).

In Botswana, Tladi and Seretse (2018) established that adoption of Botswana Open University IR was impeded by inadequate training of academic staff on the use of IR, inadequate ICT and connectivity resources, inadequate funding as well as an inadequate academic staff

complement. Research conducted at UB has also established that the institutional repository has been ignored by UB staff academic staff as they do not feel compelled to use it (Oladokun, 2015).

2.1 Implications

Non deposit of content in IRs has adverse impact on research output visibility, digital accessibility, and impact, especially in Africa. Abrahams, Burke and Mouton (2010) established that there is low visibility of published research from Africa in comparison to research published by authors in journals from the global North where IR adoption is higher. Except for South Africa, Southern African countries have low levels of research visibility at both local and global levels (Abrahams, Burke & Mouton, 2010). Kayawe (2015) states that none of Botswana tertiary institutions featured in the top 30 African Universities and higher institutions ranking of Journals Consortium. Low visibility of published research means that institutional research often does not reach audiences that could most benefit from it, such as government, industry or civil society. Visibility raises awareness of problems under investigation, methodologies, and proposed solutions for the problems. However, Moahi (2010) argues that failure of research to reach stakeholders can also be attributed to the fact that developing countries do not integrate their universities in their national development agendas and programmes especially since universities do not get any funding for research for national development mandate.

It should be highlighted that, predominantly, studies on barriers to IR adoption are premised on the assumption that the barriers are due to failure by scholars to manage IR innovation (Westell, 2006). These studies do not analyse the impact of diverse IR stakeholders on IR innovation adoption and success. It is, however, imperative that IRs are regarded as innovations which have diverse stakeholders who construct and shape IR innovation realities differently, making it critical that studies investigate the impact of the diverse university community members on the adoption of IR as it has a bearing on the construction and shape of IR innovation realities (Westell, 2006). There is need for a wider understanding of the role of each stakeholder in the adoption of University IRs which goes beyond research staff and students to include University administration, funding agencies, librarians, academic disciplines, commercial publishers, conference and workshop organizers and other entities that are directly and indirectly involved in the contemporary scholarly publishing cycle (Utulu & Akadri, 2014). For example, studies have not paid much attention to how librarians interact with IR software. Studies on IR adoption barriers should consider how scholarly publishing is structured by commercial publishers, universities, and other stakeholders (Utulu & Ngwenyama, 2019). Raju et al. (2013) indicate that IRs must be capable of “receiving and hosting deposited content of the members of an institution, manage content and its accompanying metadata, offer services to facilitate searching and access to materials in the repository, be sustainable and trusted and be well-supported and well-managed.” These tasks are the mandate of librarians. It is in consideration of these arguments that this study investigates perceptions of academic librarians

on factors that affect adoption of IR in some tertiary institutions in Gaborone. The following research questions were used to guide the study.

- a) What policies exist to guide libraries in ensuring adoption of the IRs by all stakeholders?
- b) What are the perceptions of university IRs library staff on factors that affect adoption of institutional repositories?
- c) What is the impact of repository advocacy and outreach programs that academic librarians engage in to familiarise academic Staff on utilisation of IR?

3.0 Theoretical framework

The research questions were informed by Engeström's Third Generation Activity Theory claim that contradictions occur within and between activity systems. These contradictions are:

- a) Primary contradictions which occur within a node of an activity, primary contradictions occur in instances where a particular task might be assigned to two different groups who have conflicting views about priorities,
- b) Secondary level contradictions which involve two or more nodes within an activity such as contradictions between tools and rules,
- c) Tertiary contradictions which arise due to the tensions that exist when a newly established version of an activity interacts with remnants of the previous version, and d) tensions that occur when two interacting activity systems are in conflict (Sannino & Engeström, 2018)

However, contradictions in activity systems should not be misconstrued as conflicts but rather as cumulative tensions within and between activity systems (Engeström, 2001). Activity systems continuously attempt to resolve and mitigate these tensions, and, in the process, inadvertently create new contradictions. As a result, in activity systems, equilibrium is an exception rather than a rule, whilst tensions, disturbances and local innovations are the rule as they are the basis upon which conducive environment for change are created (Cole & Engeström, 1993). It is therefore imperative to acknowledge that contradictions generally stem from the past or historicity and thus should be traced over time and back to their historical origins (Sannino & Engeström, 2018). However, according to Sannino and Engeström (2018), uncovering contradictions is not easy, as established norms and existing power structures often resist change and either deny or conceal evidence of required change. Therefore, to effectively uncover contradictions one needs to use various sources of data to get multi-voicedness within the system and employ various data collection methods (Weeger & Ulrich, 2016).

Using this principle was apt as it enabled the study to understand the role of librarians in the adoption of University IRs, thus going beyond research staff and students, filling a gap identified by authors such as Utulu and Akadri (2014) and Utulu and Ngwenyama (2019). In adoption of IRs in academic institutions, the academic staff activity system is affected by what happens in the librarian activity system (Avis, 2009). Burns (2013) also argues that librarians

have a key role to play in this new scholarly landscape and must respond to these changes with programmes and policies that match opportunities to the needs of users. Although academic staff are the ones to deposit content, librarians as part of library service provision, must create an enabling environment to assist the academic staff to adopt the IRs. This is also echoed by Garner (2006, p.1) who states that academic libraries ought to “proactively support research activities by providing relevant resources, strengthening research processes, facilitating scholarly communication and promoting research output”.

Engeström’s Third Generation Activity Theory enabled the study to get an understanding of activities that librarians engage in and the contradictions that emerge in this system that can potentially constrain or enable academic staff to contribute to the IRs.

The method of analysis provided by the Engeström framework allowed the study to establish how individual acts are located within wider sets of relationships, histories, and expectations. In addition, the theory enabled the study to get an understanding of the visible, invisible, intentional, unintentional contradictions that exist within the librarian element, between the library and academic staff elements and any other activities that either constrained or enabled academic staff to contribute to IRs. Identifying the location of these contradictions and overcoming them can inform studies on IRs adoption and transform the activity as existing assumptions and norms will be exposed, challenged, and changed. However, failure to identify and address these contradictions is detrimental to the success of the innovation (Engeström & Sannino, 2011). Furthermore, adoption of IRs calls for paradigm shifts in the professional lives of librarian and academic staff necessitating the need for studies to pay attention to the impact of IRs on the library science profession and on how librarians are trying to cope with continuing technological induced changes of their previously stable roles (Bosque & Lampert, 2009); Ogungbeni, Obiamalu, Ssemambo & Bazibu, 2018).

Lastly, using Engeström’s Third Generation Activity Theory provided a framework that enabled the study to interrogate the several layers of dialogues, perspectives and networks of interacting activity systems allowing the study to establish contradictions within the librarian activity systems in terms of a) support given to academic staff by librarians to enable them to change their publishing practices including populating IRs, b) information resource capturing and dissemination practices by librarians, c) library user support services, d) adoption of new requirements in user support and how these collide with the old requirements, and e) disturbances and misfits that exist (Barab et al., 2004; Barab & Plucker, 2002). The theory has been used by others such as Karanasios and Allen (2018) and Forsgren and Byström (2018) in Information Systems research.

4.0 Research methodology

4.1 Data collection

This multiple site case study is interpretive. Semi-structured interview questions were formulated based on the research questions which were informed by themes derived from the contradiction principle of the theoretical framework. There are 44 registered Tertiary Education Institutions (TEIs) under Botswana Qualifications Authority (BQA) in Botswana. However, according to Registry of Open Access Repositories (ROAR), (2020), only four have active IRs. These are University of Botswana (UBRISA), Botswana College of Open Learning University, Botho University and Botswana International University of Science and Technology (BIUST) (Registry of Open Access Repositories, 2020).

The selected study location was two tertiary institutions with active IRs which for purposes of anonymity are coded as LA and LB. The study population consisted of all the subject librarians who have a stake in the object of the activity system, in this case management and utilisation of IR. To conceal the identity of the participants, respondents were coded from LA1-L1 to LB2-L5. Data analysis was done iteratively and emerging patterns consistent with constraints as informed by the research questions and theoretical framework were established (Fereday & Muir-Cochrane, 2006).

4.2 Ethical considerations

Research participants were made aware that their participation in the study was voluntary and that they could withdraw at any time during study including during the interview. They could also request that the data they gave be not used. In addition, it was clarified to participants that taking part in the study posed no harm or threat to them. Participants were also informed that their identity would not be made public.

5.0 Findings and discussion

5.1 Policy on Open Content and IR adoption

In terms of staff, there was confusion amongst respondents in both libraries regarding whether the libraries had Digital Repository Managers and Metadata Specialists who are charged with overseeing the IR. Some of the respondents stated that there were whilst others said the libraries did not have the officers in question. When asked what the official stand regarding Open Access was, librarians stated that there was support for the initiative; LA-L3 stated “we support and embrace open content and believe it’s the way to go.” However, the study established that both libraries had no policies on open content. LB-L1 stated that there was “no policy just guidelines.” Librarians also acknowledged that there was no clarity regarding implementation since LA-L2 responded that their library was “at the stage of recognizing the importance of open content but how to facilitate Open Access is still lacking.”

The study also established that both universities did not use the IRs as the official source of research outputs of the universities as respondent LA-L5 stated “I don’t think so because often researchers still use own records to show research output on promotions not necessarily referring to the our IR as the authoritative source for their research output”. The study also established that none of the universities enforced submission of articles through any legal policy instrument as respondents stated, ‘universities need to redefine their research requirement for adherence’ (LA-L5).”

5. 2 Perceptions about the value of IR

Librarians responded that IRs are necessary. They stated that IRs a) enhanced exposure of the intellectual capital of the university, b) broadened dissemination of research contributions, c) increased use of content as many researchers accessed online Open Access, d) led to enhanced professional visibility of authors, e) enhanced citations of researchers, and f) increased visibility of research. Although they reported that the IR was easy to use, they also reported that they found the IR system cumbersome to use.

When it came to tasks that the Universities could do with the content uploaded in IR, librarians stated that they can distribute submissions worldwide, translate the submission to any medium or format for purposes of preservation, reproduce to print and electronic format and in any medium. However, some librarians did not know when libraries could withdraw content from the IR or what Mediated Deposit Service is. The study therefore concludes that librarians were not fully aware of the functions and conditions of use of IR.

These findings are similar to studies by Ugwuanyi et al. (2013) and Lwoga and Quetier (2015) who established that academic librarians have positive perception towards Open Access and strongly support OA issues on campus in spite of them not fully understanding the concept of Open Access.

5.3 Perception about academic staff Awareness about IR

Librarians reported that “currently the awareness of academic staff towards OA and IRs is marginal, thus the responsible department has to enhance awareness” (LA-L5). Subject librarians also stated that they did not think academic staff knew that they had the responsibility to upload book chapters, vetted conference papers, theses and dissertations, photographs, film/video clips, paintings and work that is the product of inter-institutional collaboration and ensure that the final submitted copy of the Electronic Theses/Dissertation adheres to international copyright law.

This study, therefore, concludes that librarians believe academic staff did not have adequate awareness about IR. Similarly, Okhakhu (2015) established that “Librarians have the

perception that lecturers are not fully aware of IR and are not willing to support the project by submitting their intellectual property to the university IR.”

5.4 User support to enable academic staff to adopt IR

The study established that academic staff asked for e-resource training, such as on how to upload content and apply licensing issues related to Open Access publishing (e.g. Creative Commons (CC) licenses), Use Open Access publishing software (e.g. Open Journal System (OJS) or Open Monograph Press (OMP) for journal and book publishing, utilizing and managing repository software (e.g. Dspace) and Mediated Deposit Service (MDS). However, the study established that librarians did not provide support as none of the respondents did, rather they referred academic staff members to “special collection as I am unable to help” and explained that “I can’t give academic staff technical support because I do not have the skills and the technical know-how”(LA-L1). Generally, librarians felt this was “not in my line of work” (LB-L3). Furthermore, librarians did not provide support to academic staff to help them to transfer copyright to their original scholarly works or to obtain copyright clearance. LB-L11 stated that “there is no support as authors have to obtain copyright clearance from the publisher.” They also reported they did not go out of their way to assist, rather “copies that cannot be uploaded because of copyright are left out” (LB-L11).

The study established that librarians only “provided copyright awareness training to Academic Staff” (LB-L3). They stated that in their opinion academic staff could get assistance and information from repository managers. It is vital that librarians be trained on copyright issues as understanding copyright issues is important in building a successful IR (John-Okeke, 2008).

Regarding strategies that the library staff have designed to assist staff to upload their outputs, both published and unpublished, the study established that these were “non-existent, it’s often up to a staff member to find ways to help a client” (LA-L3) as such, provision of support is intentional not standard practice. In one of the universities, librarians did, however, run workshops or provided information to academic staff on how to utilize open repository services. It should be noted that whilst librarians were not providing these services, they were providing some services just that these were not aligned to facilitating adoption of the IRs. Librarians reported that in an academic year, they conducted research to establish and confirm user requirements “once a year in the last semester (LB-L3), whilst LA-L3 stated that she did at the “beginning of every academic year to assess the information needs of the users and also to evaluate the quality of library service.”

Librarians reported that they maintain contact with the academic staff “through blackboard, email when buying or ordering books and notice boards, sending trial databases, office visits, attending departmental boards and Facebook pages and WhatsApp groups” (LA-

L1). Librarians further reported that they notified academic staff to apply for internal funding or even assisted academic staff “to apply for External Funding by identifying potential sponsors for research in their area of interest” (LB-L5). The study, therefore, concludes that there was lack of clarity on the role of librarians in enabling academic staff to utilize IR.

5.5 Perception about success and factors affecting success

The study established that the respondents felt that their university repositories had not been successful in capturing and preserving the intellectual output and data and other digital assets of both students and staff. They attributed this to several factors such as shortage of staff, non-functional digitizing machines which remain broken for a long time, lack of machinery, copyright issues, unwillingness and lack of enthusiasm to deposit among staff, lack of skills and capacity, and poor marketing and management. They proposed that success would be achieved if the following were charged with handling copyright issues, collecting, managing, and disseminating academic staff’s digital output: a) repository managers and personnel as well as subject librarians because they interact with departments, b) research department which is responsible for setting up policy and guidelines for academic research management, and c) special collection.

Librarians stated that if these were tasked with depositing content in IR and handling copyright issues, academic staff would submit their work for uploading “because there is a close interaction between subject librarians and department”(LB-L3) some were of the opinion that “Yes, they would submit their work for uploading provided the library markets this service and does it effectively”(LA-L3) and that the “library is a central learning and working area that is best suited to provide this service as it works with all faculties; it is a matter of planning, having guidelines and marketing these to staff so they do submit their work plus ensuring that importance of uploading is well understood”(LB-L2). However, some felt that “it still does not solve the problem as more awareness on IR needs to be done” (LA-L7).

The findings lead the study to conclude that academic librarians believe that success will be better if they were in control of the deposit in the IR. Similarly, Utula and Ojelanki (2019) established that academic librarians believed that IR innovation is the business of the university library.

5.6 Content collected

The study established that libraries collected and preserved all research outputs from staff whether published or not, all dissertations written in fulfilment of the requirements for MPhil and PhD degrees, and for Masters’ degree. However, they stated that not all thesis and dissertations have been digitized.

5.7 Observations

Based on these findings, the study thus concludes that there are contradictions that ought to be addressed. These are discussed below.

5.7.1 Lack of information on university IR policy and conditions of use of the IR, roles, and responsibilities to library staff

Library management teams, through relevant structures, have an obligation to cascade information on the IR policy and draw up implementation guidelines to sensitise all stakeholders on the policies, rules, and norms around IR if there is to be success (Dong Joon Lee & Besiki Stvilia, 2017). They must develop advocacy plans outlining goals and objectives, target groups functions, roles and responsibilities, time frames, expected outcomes and available and needed resources (World Health Organization, 2008). This will ensure that there is clarity regarding responsibilities by clearly articulating who is responsible for what, required resources and who is supposed to provide these and policy implementation activities and their coordination. This is important because in university libraries, IR adoption and implementation involves various stakeholders who have different interests in the IR adoption (Covey, 2011; Holley, 2013).

It is important that all stakeholders act on a common set of objectives and framework to ensure that any potential source of conflict is resolved to attain a common goal. This is necessary because at times, policy actors have different perceptions of the same problem and these must be reconciled. The advantages of coherence are that there is less discord in goal attainment, less uncertainty, more improved information exchange, high degrees of trust, common ways of resolving conflict, standardized procedure policies guidelines, enhanced efficiency in carrying out tasks, and better prioritization of tasks to be carried out. Typically, fragmentation is characterized by more discord between the actors, their goals, more uncertainty, lack of clarity as evidenced by responses such as “not in my line of work” (LB-L3) or “copies that cannot be uploaded because of copyright are left out” (LB-L11). It is important that all stakeholders are cognizant of the impact of their actions on the desired outcome.

It is also worrisome that librarians in LA1 stated that there was no policy whilst the institution has an IR policy which clearly outlines implementation and has a comprehensive set of operational guidelines which outline steps to be taken for implementing the different sections and stages of the policy. The policy also states that the University will use the IRs as the official source of research outputs of the University. The IR policy articulates what should happen at departmental level, what should be collected and how it should be vetted, with a clearly specific office mandated to carry out the tasks including the expectations from the library. It is imperative that librarians recognize that the success or failure of innovations is partly attributed to the knowledge, skills, attitudes, and behaviour of its implementers.

5.7.2 Lack of strategies to provide academic staff with information or workshops

Despite recognizing that there is need to educate academic staff on the IR, nothing is being done to address this through the provision of training or the marketing of IRs. There is need for the university libraries to develop strategies to provide academic staff with information to sensitise them about OA and IRs and their responsibilities to upload their content and students research work into the IRs. Similar sentiments were expressed by Anenene, Alegbeleye and Oyewole (2017), as well as Ratanya and Muthee (2018) who also recommended that university libraries organize conferences and capacity building workshops to educate and enlighten stakeholders in Nigerian universities on issues pertaining to IRs.

Lack of information can be divided into two major categories namely missing information which is information that is not available as and when it is needed to enable those who need it to carry out administrative or operational activities and information asymmetry which refers to instances where participants in policy implementation have different levels of information on a given issue to the disadvantage of the one that possesses less (Blandford, 2007). Academic staff members were not wrong to ask librarians for information as one seeks for information either by enquiring from formal systems or any other systems which may perform information functions in addition to other primary, non-information functions such as the people. Dong Joon Lee, Besiki Stvilia (2017) outlines the various training that needs to be undertaken as follows: research data management, how to use IR platforms and data analysis tools, how to implement data analysis tools and data management planning IR use.

5.7.3 Skills gap that affects library service delivery and customer experience

There is need for libraries to conduct skills audit to identify skills gaps amongst librarians and provide required training. This will enable libraries to provide in-service training for officers to ensure that they can assist academic staff who need help with the IR. Staff competency affects user experience (Law, Roto, Hassenzahl, Vermeeren & Kort, 2009). Furthermore, it is vital that librarians be trained on copyright issues as understanding copyright issues is important in building a successful institutional repository (John-Okeke, 2008). The establishment of IRs in libraries has introduced new roles, making it imperative that librarians in charge of IRs acquire new skill sets to be able to perform the new roles (Czerniewicz (2013). Librarians have to be able to create metadata, upload documents and general oversight of content recruitment for the IR. The fact that institutional repositories operate on open licenses such as the Creative Commons make it imperative that IR librarians acquire legal interpretive knowledge and skills on how to publish, adapt or re-use copyrighted works (Czerniewicz 2013; Jaguswewiski & Williams, 2013).

5.7.4 Lack of alignment of librarians' tasks to requisite tasks to create a conducive environment for academic staff to adopt IR

This study established that librarians are still doing what they had always done in terms of user support. This is worrisome as some researchers have argued that organizational actors passively resist technology change by maintaining their ordinary work routines (Laumer, Maier, Eckhardt & Weitzel, 2016). This study proposes that librarians ought to align their work activities to the new user needs brought by the IR. Librarians need to be educated on how new functions of library should be administered to enable them to align their user support services to the organizational goals rather than state that some of the tasks were “not in my line of work” (LB-L3).

Alignment ensures coordination of the goals and implementation plans of any project with the goals and organizational structure of the business (Prieto & de Carballo, 2018). According to Gutierrez et al. (2008), analysing alignment across different organizational levels provides a more complete picture of the organization's alignment maturity that could facilitate and improve the project alignment with business objectives. An organization's activities should be integrated and move in the same direction to achieve the corporate goals. Librarians must support academics on the adoption of Open Access by assisting them with obtaining copyright and permissions, maintaining scholarly communication websites, evaluating Open Access journals for quality, organising workshops on copyright issues and digital scholarship.

5.7.5 Maintenance of the IRs

The breakdown of information and communication technologies causes interruptions which may result in staff being discouraged from using IRs especially where there is no technical support (Buabeng-Andoh, 2012). It is important that libraries have technical assistance to deal with repair and maintenance of ICT equipment. Failure to provide this has a negative impact on implementation success as the kind of experiences librarians have with information and communication technologies affects their computer attitudes.

6.0 Conclusion

This study has shown that there are tensions within and between librarians and academic staff activity systems which disabled transformation. For implementation to succeed, change must occur in all sub-systems. Change is a process that must be managed. Informational Technology merely enables task execution and cannot not create organisational change. The failure of library senior management to acknowledge that change has a deskilling effect and their failure to identify skill gaps and provide training points to deficiencies in change management. This results in uncoordinated support which, inevitably, causes disruptions. It is only when there is no ambiguity and uncertainty that shared understanding can be reached. Furthermore, lack of clarity in roles, functions, and accountability of the different sources of authority affects policy implementation. In situations where several sectors, government or bodies are charged with

implementation of the same policy, these must be mutually dependent and cognizant of the impact of their actions on the outcome of the policy implementation process.

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