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POTENTIAL CHALLENGES OF DEVELOPING A NATIONAL DIGITAL RESEARCH REPOSITORY: A STUDY OF SELECTED RESEARCH STAKEHOLDERS IN KENYA

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Abstract

The need for a national digital research repository in Kenya has been articulated in many librarians' forums for years. Despite the talk, not much had been done to develop the system. It would be helpful therefore to identify potential challenges towards development of a national digital repository system in Kenya This study therefore entailed determining potential obstacles to the implementation of a Kenya National Digital Research Repository system (KNDRRS). This study used mixed methodology of collecting and analyzing data from sample of 111 Institutional repository administrators in Kenya Library and Information Services Consortium member libraries (KLISC), 9 KLISC officials 7 Kenya Information Preservation Society (KIPS) committee members and the documentalist at the National Commission for Science, Technology and Innovation (NACOSTI). The findings revealed 23 thematic grouping of challenges foreseen by librarians that may stand on the way of implementation of a KNDRRS among them finances, Infrastructural related challenges like inadequate, poor state and maintenance of information and communication technology infrastructure, unreliable internet accessibility, lack of computers, and lack of information management systems to organize digital resources. Other highlighted potential bottlenecks related to legal and engagement and participation, engagement and participation, research output content related challenges. Others were personnel related challenges, organizational challenges and administrative related challenges.

Keywords: National Repository, Research Sharing, Kenya, Challenges, Research Stakeholders, Institutional Repositories.

Introduction

Over the last one decade, there have been there have been an increase in development of digital institutional repositories by libraries in Kenya. By 2011, over 65% of research institutions in Kenya had embraced or were in the process of establishing digital repositories in their institutions (Otando, 2011). Despite the increase of institutional repositories in libraries in Kenya, researchers still face difficulties in navigating a multitude of independent repositories to find research information they need. There is need for a one-stop-shop for harvesting research generated in all research organizations. This means research stakeholders must work together to develop a comprehensive nationwide union digital research repository system that would enhance research dissemination in Kenya. The reasons why previous initiatives to develop and implement a national digital research repository have failed had not been systematically established, documented and explained. It is against this existing knowledge gap that this study was conducted.

Statement of the problem

The need for a national digital research repository in Kenya has been articulated in many librarians' forums for years. Despite the talk, not much had been done to develop the system. It would be helpful therefore to identify potential challenges towards development of a national digital repository system in Kenya. The main question has been; why has it taken that long? What has prevented librarians and other stakeholders to adopt and implement the research sharing system? The study therefore aimed at collecting and critically analyzing data on potential challenges to effective implementation of the Kenya National Digital Research Repository system (KNDRRS).

Objective of the study

The study therefore aimed at determining potential challenges of developing a Kenya National Digital Research Repository system (KNDRRS).

Literature Review

(Odero, Musakali & Mutula, 2007) in their literature based survey on Kenyan high education system observed a clear under-utilization and considerable disparities between and within the libraries in their levels of general Information and Communication Technology (ICT) deployment and use in Kenya. As a result most public university libraries still used conventional methods of service provision, suggesting that most library employees were not ready to embrace and integrate information technologies in their routine operations. If

promising ICT applications cannot be widely deployed, then the benefits resulting from such technologies are likely to be equally curtailed. This study intends to find out if the scenario has changed and especially in relation to implementation on digital repository technology against general ICTs adoption in libraries.

Kavulya (2007) reviewed some of the critical information needs in Sub-Saharan Africa and the challenges that face libraries in the region in establishing digital libraries as a way of overcoming the great information shortfall in the region. He observed that through better information gathering, processing and especially by taking advantage of today's digital transfer of knowledge, countries in the Sub-Saharan region can experience rapid economic, social and political development and underscores the need to understand the underlying factors that impede or promote individuals' response to the internet-based technology in university libraries not only in Kenya but elsewhere.

Analyzing the challenges facing the Pakistan Research Repository (PRR), (Ahsan Ullah & Muhammad Rafiq (2014) alluded to the challenge of non-compliance in depositing research items in the national repository. According to the Pakistani Higher Education Commission (HEC), the total number of public sector universities was 83 and that of private sector universities was 65. But only theses of 59 universities had been included in for having deposited over 100 dissertations in PRR. The repository also provides information about the number of theses submitted by institutions to the repository. Non-compliance is a potential challenge to look for as Kenya developed her national repository. Strategies to motivate all stakeholders to deposit their research output should be well thought in advance by developers.

Another challenge voiced unveiled by Ahsan Ullah and MuhammadRafiq (2014) relates to usage ,, growth ,and policies of PRR.. Standardized metadata policy, content policy for documents and data set held and submission policies are explicitly undefined. other policy areas whose guidelines are missing in PRR include retention period, functional specification policy, file preservation policy, withdrawal policy and closure policy. This challenge is very informative as Kenya embarks on developing a national digital research repository. It may be very critical from Pakistan, as a country that have beaten the path before her and consider developing all the policies necessary in guiding the development and use of the repository.

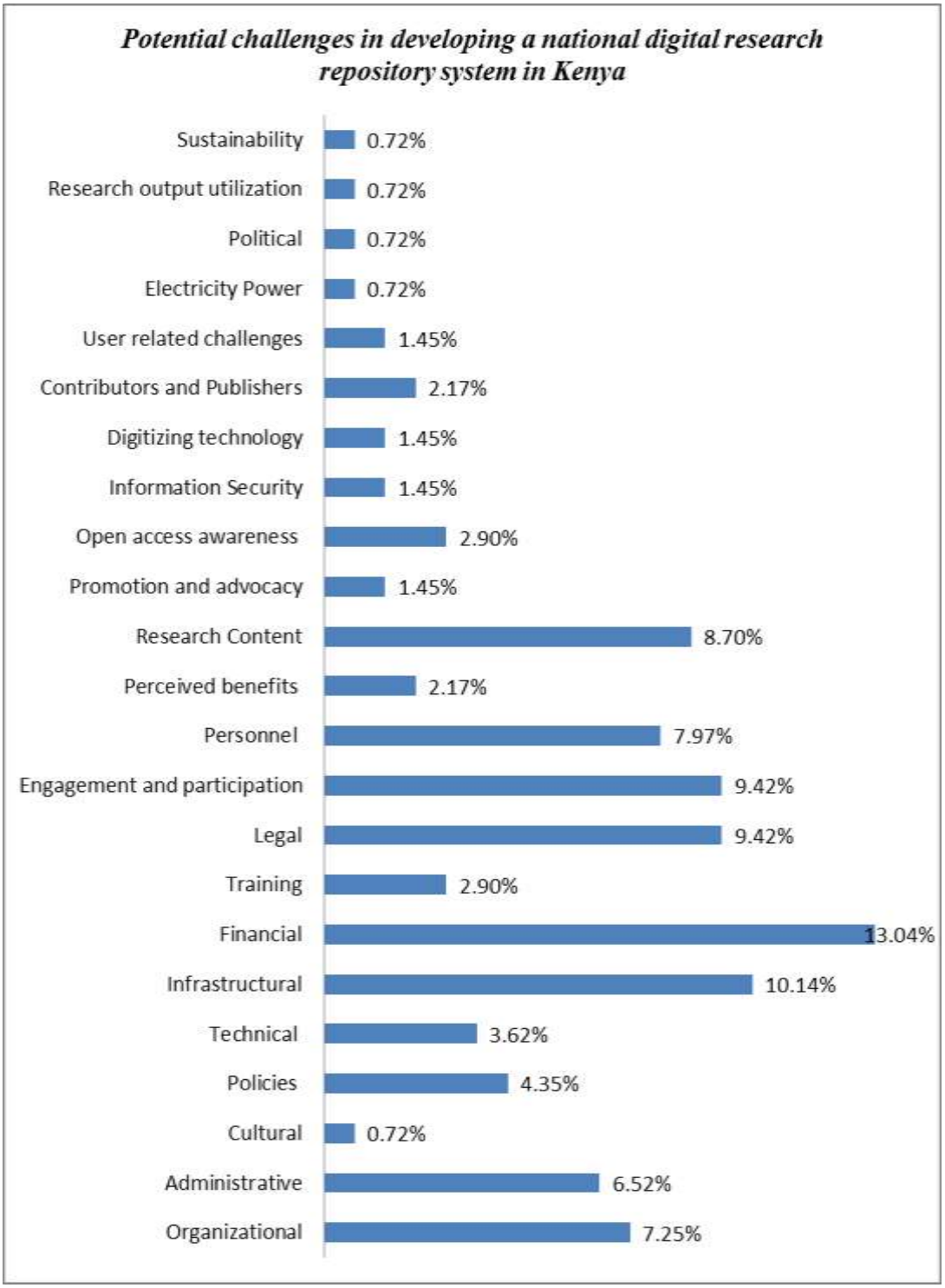
Another challenge highlighted by Ahsan Ullah and Muhammad Rafiq (2014) is lack of all types of research output deposited in PRR. They observe that the knowledge bank was envisaged to include the research output of students, staff and faculty of all the public and private sector universities and degree-awarding institutions of Pakistan. But the population of the repository showed that only 115 items including one monograph and 114 reports were available other than dissertations. So after eight years, research articles of Pakistani authors were not available in this repository except for dissertations. This observation is very relevant to the Kenyan situation in the sense that; a comprehensive national digital research repository should include all types of research output generated in a country.

Patel (2016) highlights some challenges in research data management that need to be addressed and resolved during repository development to include "copyright, data licensing, erroneous data interpretation, data security, data privacy and mindset". I relation to copyright, he advocates for clear resolving ownership of copyright in the data. In data licensing, he stresses the need different types of licenses for different types of data namely; text, numbers, sound, visual or a combination of them.

Kitsao (2011) unveils the problem of infrastructure poor enforcement and lack of a central location to collect this information. He observes that that there had been willingness by institutions to share their research Information but Poor infrastructure, none enforcement of regulations on research and lack of a central location to collect this information are major limiting factors to the access and sharing of research information in Kenya. In his paper based on his paper is based on KAINet's and KARI's experience and lessons learnt with developing digital repositories using AgriDrupal and AgriOceanDspace, (Kedemi, 2012), highlights challenges they faced during the implementation to the absence of institutional policies that support open access, low awareness of copyright and Intellectual property rights (IPR), resistance towards providing access to full-text documents, and inadequate technical infrastructure.

Results on potential challenges in developing a national digital research repository system in Kenya

Figure 1.0



This study also sought to find the potential challenges to the development of the proposed national digital research repository system from IR administrators, KLISC officials KIPS executive committee and the NACOSTI librarian. Data gathered from IR administrators in Table 1.0 above show 23 thematic grouping of challenges foreseen by librarians that may stand on the way of implementation of the proposed KNDRRS. The question attracted 138 responses. Firstly, the results show that the most challenges were finance related, a view advanced by 13.04% (n=18) of IR administrators and corroborated by interviews from KIPS, KLISC executive committee and the NACOSTI Librarian. One interviewee observed that in fighting to control project money is prevalent among library fraternity in Kenya and could derail the proposed KNDRRS if not handled properly. Giving example of the effort he had made to raise money for a national library project he advised;

> ”*but imekuwa (it's become) very difficult to continue… don't let this initiative stop when you have energy , before guys see this guy is looking for fund and is likely to benefit then utapigwa ujue hii Kenya sio yako (you will be fought hard)*”

The import of this was that funding issues had to be thoroughly addressed during the initial planning for KNDRRS project. It is such an important factor to the successful implementation of KNDRRS.

Infrastructural related challenges came second with 10.14% (n=14) of IR administrators stating so. Specific infrastructural challenges mentioned by the librarians included; Inadequate, poor state and maintenance of information and communication technology infrastructure, unreliable internet accessibility, lack of computers, and lack of information management systems to organize digital resources. 9.42% (n=13)of IR administrators highlighted potential bottlenecks related to legal and engagement and participation. Specific legal challenges were majorly related to intellectual property rights restrictions.

In terms of engagement and participation, 9.42% (n=13) of IR administrators foresaw challenges in apathy of cooperation amongst stakeholders, unwillingness to release content for universal access and the fact that not all KLISC member libraries have digital research repositories. From the interviews conducted, this challenge of engagement and participation was viewed as one of biggest challenges. As stated earlier, this study KIPS had implemented the Kenya Union List of Theses Dissertation, an initiative from which KNDRRS implementation would benefit from by copying best practices and learning navigate through

potential challenges. One senior KIPS official interviewed noted that lack of commitment by member libraries was perhaps the biggest challenge the union list implementation faced before the initiative crumbled. In her words,

> *"I think number one problem we ever had is the cooperation of the universities to meet a commitment earlier made that they would organize their own records to go to KIPS. However, somebody had to go out to convince every institution to think that way, organized the IR and pull data to give to KIPS"* .

On the same challenge, another senior KIPS official commented that; "*hiyo commitment ndio ina kuanga shida, (commitment is the problem)*". The KIPS officials confirmed that contribution by libraries to the union list had since stopped, an important lesson to be considered in the proposed KNDRRS implementation.

8.70% (n=12) of IR administrators raised research output content related challenges. They included; low quality research data in digital repositories held by KLISC member libraries, work duplication and redundancy, questionable authenticity of research content, unavailability of a lot of research content held by libraries that was still in print format and not yet digitalized. Interestingly, an interviewee alluded problem of hoarding research content because there wasn't motivation to deposit in repositories;

> *"I remember for a long time people would do their postgraduate research and they would not even disclose to the institutions because they were not promoted*"

He went further to explain that there is a possibility of so much research content that is still hoarded by researchers, especially researches that were done before post graduate studies were centralized into one office by universities. He proposed the need to mine this rare content for inclusion in the proposed KNDRRS. Institutionalization of research content submission may be a solution as opposed goodwill dependence employed by KIPS for submission of the union list content. Other content related challenges that were highlighted included; not well developed institutional repositories, delayed and lack lustre approach towards content upload and update; and lastly limited content available in full text format.

Results also indicated that 7.97% (n=11)of IR administrators enumerated personnel related challenges to include; poor leadership, possible lack of personnel to implement and manage the proposed KNDRRS, inadequate personnel to collect, upload and update the contents at the institutional level and also challenges for librarians in KLISC member libraries getting extra time to dedicate to KNDRRS beyond their normal work engagements. 7.25% (n=10) of

the respondents also stated some organizational challenges namely; Lack of support from parent institutions leading to unwillingness of the institutions to allow the library to participate in KNDRRS, institutional bureaucracies and mismanagement in KLISC member libraries. Interviewees added another organizational namely; bureaucracies in parent institutions.

Administrative related challenges raised by 6.52% (n=6) of IR administrators included; potential lack of proper coordination between the national repository and individual participating library. Interviewees added other organizational challenges namely; bureaucracies in parent institutions, poor communication and problem of stakeholders not attending important consultative meetings when invited. . 4.35% (n=6) of the librarians indicated that it would be critical to navigate through challenges inherent in policies that would guide the implementation of KNDRRS. For example, some KLISC member libraries have draft institutional repository policies has been developed but were yet to be approved by relevant parent institutions' organs. The lack of strong, clear and harmonized policies and guidelines to guide and sustain the initiative could inhibit the implementation of the proposed KNDRRS. Librarians interviewed pointed to the challenge of actual implementation of developed policies.

The other adduced challenges were related were technical, training and open access awareness related. In this regard, 3.62% (n=5) pointed to the issues lack of uniformity in content management systems used by different repositories across KLISC member libraries that would pause synchronization problems. The other main technical challenge was mentioned to be the choice of appropriate software solution to all the existing and to be established institutional repositories. 2.90% (n=4) mentioned that Kenya lacked capacity in terms of personnel capable of implementing and running KNDRRS. Poor ICT learning attitude by librarians was mentioned by an interviewed librarian stating;

> "*when it comes to installing some of these software, most librarians don't want to take initiative to learn which to me is weird*"

An equal percentage also pointed that lack of awareness of open access (OA) and acceptance of OA philosophy amongst stakeholders led to lack of knowledge and need of a national research repository system.

2.17% (n=3) of respondents mentioned perception of perceived benefits of KNDRRS among stakeholders may propel or curtail its implementation. For example, if stakeholders were not sure of the benefits their institutions stood to benefit from, the KNDRRS would not get the necessary support required to implement it. An equal percentage of respondents also indicated that contributors and publishers may also influence the implementation of KNDRRS. Lack of information on the side of the two categories of stakeholders would inhibit willingness of the intellectual property owners to submit their research in the national repository.

1.45% (n=2) of IR administrators unveiled some potential challenges related to promotion and advocacy, information security, digitalizing technology and user related challenges. Inadequate advocacy for a national research repository system would lead to apathy among stakeholders. There existed, and for a good reason the fear of malicious people especially "quack" researchers uploading their information online. Lack of technology and capability for digitizing analog materials was also highlighted as a potential impediment to KNDRRS. Users related challenges mentioned included user illiteracy and laziness to conduct research in order to generate sufficient and credible content for sharing through KNDRRS.

Further, table 1.0 above indicates that the least percentage of respondents 0.72% (n=1) pointed to a potential cultural challenges among identified stakeholders, of unwillingness to share information courtesy of bad attitude. When asked what to mention potential challenges to KNDRSS, one interviewed respondent replied *"attitude, attitude, attitude"*. Other challenges fronted by 0.72%(n=1) of IR administrators were power outages, possible of lack political and academic good will during implementation and actual running of KDDRRS, low levels of access and usage of available research information resources and long run sustainability of the KNDRRS.

Conclusion and Recommendations

A snapshot of the results showed that the most challenges were finance related. Insufficient funds to finance the implementation programmes and activities; and infighting to control project money was prevalent among library fraternity in Kenya and would derail the proposed KNDRRS implementation if not handled properly. Other dominant challenges were legal, engagement and participation. Research output content related challenges such as low

quality research data research duplication and redundancy, questionable authenticity of research content, unavailability of a lot of research content held by libraries also featured.

Based on these findings and conclusions, the study offered the following recommendations navigate through the potential challenges:

- That the Kenyan Government through NACOSTI should provide seed funding for development of KNDRRS.
- KLISC to consider charging member libraries KNDRRS fee on top of annual subscription of the INASP online electronic paid by members.
- The Kenya Education Network (KENET) be required to take a leading role provision of high bandwidth internet connectivity and guide on procurement of other hardware and software requirements for the research sharing system
- KNDRRS implementation team to work closely with KLISC member libraries, authors and publishers in safeguarding copyright and other intellectual property rights to enable them disseminate research information.
- Encouraging KLISC member institutions to avail full text articles and putting control measures on number of copies to be downloaded.
- Initiate an overarching and inclusive KNDRRS implementation taskforce to encourage stakeholders.
- Develop a prototype that would show case how an ideal national repository would look like.
- Training all stakeholders on KNDRRS and its benefits.

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