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JSTOR DIGITIZATION PROJECT IN NIGERIAN UNIVERSITY LIBRARIES: POLICY ISSUES IN BUILDING AND SUSTAINING DIGITAL COLLECTIONS

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Abstract: With funding from the MacArthur Foundation, ITHAKA (JSTOR) has collaborated with two Nigerian university libraries – Bayero University, Kano and University of Ibadan, Ibadan – to develop digital collections. "The purpose of this digitization project is to build capacity within the academic library at two major Nigerian academic institutions, to enable the digitization and dissemination of a modest number of historically significant collections and documents archived at these institutions, and to further expand awareness of these important primary source collections to scholars and students in Nigeria as well as those across Africa and beyond" [(Masinde & Rajan, (2011)].This paper attempts to examine the objectives and terms of collaboration as articulated in the signed memorandum of understanding (MoU) between ITHAKA and the institutions, the management of the collaboration, the Decapod technology system deployed for the digital labs to execute the digitization project, policy issues and institutional capacity building, and the implications for the future of digital collections, archiving/preservation in Nigerian universities.

Key Words: Digitization Project - Nigeria, Digitization – Bayero University, Kano, Digitization – University of Ibadan, ITHAKA Project – Nigeria, JSTOR Project – Nigeria

Introduction

One of the significant outcomes of the ITHAKA (JSTOR) collaboration on digitization project in two Nigerian Universities, Bayero University Kano (BUK) and University of Ibadan (UI), was the establishment of a digital laboratory in each of these Universities. The digital laboratories were set up not only for a one-time scheduled digitization, just targeting "selected historically significant materials," based on carefully drafted agreement, but also for the unlimited post-project use by the Universities. The sequence of work for the project commenced with planning phase comprising a series of strategic meetings and signing of the Memoranda of Understanding (MOU), then proceeded with the second phase, comprising selection and assessment of materials (JSTOR), assessment of infrastructure by Decapod, provision of equipment and hardware, and generation of metadata. The final phase comprises follow-up trip by Decapod team, publishing digital output at the institutions, evaluation of project, writing preliminary report, and writing and submission of final report. December, 2011 or before was the date all these stages were expected to have been completed. The costs (not exceeding $4,050) of the entire project were to be borne by ITHAKA.

The selection of the materials for digitization was based on individual Universities' definition of what constitutes historically significant material, as well as their needs and preferences. Having selected the materials, the two institutions commenced digitization and progressed at different rates. However, both are well behind the schedule. While BUK was to commence the generation of metadata targeting February end, 2013 for completion, the University of Ibadan set a completion target at June 2013.

What follows after both have completed the entire project would be guided by the Memoranda of Understanding which were signed separately between ITHAKA and the two institutions.

The aim of this paper, therefore, is to examine the objectives of this project as articulated by the MOU, the generation and management of "the selected materials," the technology system deployed to execute the project, the policy issues and the institutional capacity building potential of the project.

The Objective and Key Elements of the Project

The general objective of the ITHAKA digitization project captures its essence and defines its direction in terms of short and long term goals. In the short term, it sets out to achieve the digitization of specifically selected, historically significant materials from each of the institutions which JSTOR (ITHAKA'S Online Library) would upload for scholarly and cultural use of scholarly communities in Africa and the world. According to ITHAKA (2011) :

> The objective of this project is to conduct a pilot digitization project at BUK (and UI) and to make these materials available online for the scholarly community in Africa and worldwide, enabling BUK (and UI) to digitize and provide metadata for the … objects (the "selected materials").

The project was to be carried out in stages from the commencement to the expected date of completion, which was before, or on December 1, 2011, with project evaluation and report as the final action. So far, neither of the institutions has achieved the completion target.

The terms of the MOU based on the understanding and agreed to, by the parties undertaking the project, constitute the key elements of the project. They define the essence of the project, its purpose, rights and obligations of the parties

involved and the methods of its accomplishment. The terms of the MOU include issues relating to the following:

1. Selection of materials for digitization by the institutions and assessment of the selected materials by JSTOR.
2. Creating basic metadata on spreadsheet by the institutions for document batches and metadata in Dublin Core Standard for each of the objects digitized following ITHAKA and Decapod guidelines for quality and fidelity.
3. Establishment of the Decapod digital laboratory in safe and clean environment with access to electricity.
4. Costs - ITHAKA set limit to what it was willing to take responsibility for i.e., contribute to salaries of staff that assist in the project.
5. Custody of the "Digital Materials." The institutions would keep copies of the Digital Materials and may reproduce, distribute and freely make use of them.
6. Use, reproduction and distribution of materials by ITHAKA, and appropriate attribution and identification of the institution as repository and/or copyright holder of the materials.
7. Ownership of copyright interest in the selected materials and in the Digital Materials, by the institutions or any third parties having such interest in portions of the materials.
8. Conditions/terms of use of such materials with copyrights, stipulating no obligation for the parties to make an accounting or pay royalties to the other for the use of the Digital Materials.
9. Grant of a non-exclusive, worldwide, perpetual, royalty-free license to ITHAKA:

   (a) To create, archive, distribute and make publicly available the Digital Materials to authorized users of JSTOR for non-profit educational, scholarly and other cultural purposes (which may include allowing users

to print, save and distribute copies of the Digital Materials for research and teaching purposes such as handouts and distance learning.

(b) To make copies of the Selected Materials or the Digital Materials (e.g. to protect against loss of data).

(c) Only as necessary for translation, preservation or delivery technologies to modify or adapt the Digital Materials (but only without changing the substantive content or context). However, the license granted above is not exclusive, and does not transfer ownership or give ITHAKA any rights in the selected Materials and Digital materials that are not expressly described in the agreement.

After careful study and clarifications, the parties agreed to and accepted these issues as constituting the MOU that would govern the constitution and operations of the collaboration. Based on this, the MOU was signed by ITHAKA and counter-signed by the institutions.

There are two implicit assumptions in the MOU (apparently arising from the established convention in signing MOUs) that seem to reject or, at best ignore, the future challenges to, and the development and dynamics of, the project. The first was the assumption that there would be no violation to, or non-compliance with, any of the terms of the MOU by any of the parties, and therefore no explicit provision was made in the MOU to address such violations or non-compliance.

The second was the assumption that nothing would warrant any need for change in the MOU, modification or amendment of any sort in its provisions or complete removal from the MOU. Therefore, no provision for a review, or for conditions/circumstances that could warrant a review and the procedure for such a review of the MOU. For instance, how any of the parties can initiate a review process, or on what grounds.

If anything, the first assumption seems to define the relationship between the parties. A relationship, which, even though formal, is based on mutual trust and respect for one another and a high degree of investment in each other's sense of responsibility, which rules out the possibility of violation. This expectation of absolute compliance by each party finds expression in the absence of any suggestion of, or reference to, violation or consequent sanction against violation, in the MOU.

Again, the MOU seems to be content with the adequacy of its scope and coverage, assuming that it doesn't need to address itself in relation to its future. The inevitability of change ought to warrant some foresight and, consideration for the possibility of review or amendment of the MOU, at least in the long term, especially given the hopefully long lasting nature of the relationship between the parties. If only for flexibility in the fast – changing world, provision for possible review is a desirable foresight. The future challenges, in terms of the dynamics in socio-economic, political and cultural landscapes, transforming institutions, the rapid development in ICT, Intellectual Property Right (IPR) versus the growing Open Access movement and Institutional Repositories (IR), greater development of and access to, software and cyber resources, and increasing user sophistication – are factors to provide necessary insights into the future.

The Generation and Management of Selected Materials

Each institution, according to the agreement, was allowed to select the materials to be digitized and create basic metadata in a spreadsheet for

each batch of documents. The two institutions decided to select and generate different sets of materials based on their historical and cultural circumstances.

BUK decided to select works mostly written as a result of the Sokoto (Fulani) Jihad (1804 – 1810). The works were written by key actors of the Jihad, their descendants, relations and associates. These include Usman bin Fodio (the leader of the Jihad), Abdullahi bin Fodio (his brother), Muhammad Bello (his son), Asmau bint Fodio, Maryam bint Fodio (daughters) and many others. The works were written in Arabic on various subjects including religious sciences, jurisprudence, politics,economics, philosophy, history, poetry, and so on.

Majority of these materials are hand written Arabic manuscripts on loose pages. The few typed ones include such documents as Native Assembly papers.

BUK acquired these materials from various sources including individual Islamic scholars, heirs/families/descendants of the Sokoto Jihadists or of their associates, and from institutions.

Given the apparently poor conditions under which they were kept, age of some of them and the low quality of the paper, many of the materials were extremely fragile and degraded (brittle and dog-eared, with holes in some pages). For many of these materials, metadata was unknown.

All the acquired materials were housed in a large, spacious and air-conditioned room in the Library. The room was to serve both as digitization work room and as storage space for the materials, with access restrictions to unauthorized persons.

The selection of materials in the University of Ibadan (UI) was based largely on influential individuals, who were prominent historical figures in the nationalist movement in Nigeria, mostly from the South-Western Nigeria. Such materials from Herbert Macaulay, Henry Carr, Funmilayo Ransome Kuti, etc were considered worthy of digitization. The materials were a mixture of typed and hand generated, including letters, books, typed pages, journals published in the UI, some dating back to the 1950s. The generation of materials for digitization, in any case, could hardly be problematic to UI given its former status as the official national archive up until the 1960s. It still receives duplicates of content submitted to the National Archive. Many of these materials were fragile and brittle, having been exposed, in some cases, for a long period, to the vagaries of weather – moisture from rain and high humidity. Most of these materials were kept in boxes.

Each of these Libraries designated staff for the project, including a project manager and content expert in each case. In BUK, translators (Arabic to English) had to be involved. Most of these staff were either system Librarians or systems staff.

The Digital Laboratory Technology System

The wisdom in establishing the digital laboratory in each of these University Libraries is to cater for the diverse needs of Nigeria. BUK was meant to serve the needs of Northern Nigeria, while UI was to serve the needs of southern Nigeria.

The basic requirements for establishing the digital laboratory was a space that was safe and clean with access to electricity. Having ensured all this in Libraries, ITHAKA and decapod deployed Decapod technology for the Laboratory. Decapod (2008) describes this technology system as extremely cost effective and capable for producing "a paper-to-digital document solution that is highly effective, highly automated and low operator interaction (apart from page turning)". It specifies the problem areas the solution addresses as follows:

1) Allows the camera based capture of bound materials by using computer vision techniques to produce flat, clean page images equivalent to those produced from a flat bed scanner.
2) Removes the need for extensive operator interaction in the capture process.
3) Reduces user intervention in the conversion process.
4) Its PDF/A outputs are visually faithful to the original, searchable, and widely usable.
5) Allows viewable output on mobile devices that support PDF reflow.
6) Removes the need for deep software, hardware or digitization skills by integrating all software components into a turnkey end-to-end solution.
7) Removes capital cost barriers by using consumer grade cameras.
8) Reduces operational cost barriers by staff/volunteers to operate the system with minimal training or commitment.

While there was no existing digitization project in BUK, the UI had one, funded by McArthur, with 100,000 pages already scanned over a period of two months. The scanned pages, saved as JPEGS at up scaled 600dpi (scan not truly 600 dpi), are compiled in Acrobat pro for a PDF, a DVD burned of the output PDF, metadata generated and images uploaded to DSpace for hosting. Therefore, while BUK was starting afresh, the UI was building on this experience.

Both of them, however, had to make the same provision with regards to power for the start up of the Decapod laboratory. Both had to run off the national power grid to avoid disruptions from intermittent power outages. Arrangements had to be made for alternative power supply systems to ensure stability in supply. Such provision made include all the possible available power sources, ranging from power inverters with deep cycle batteries, UPS, diesel generators and solar panel arrays for appliance, computers, peripherals, and server room.

Ithaca and Decapod already ensured the delivery and setting up of all the equipment required for the establishment of the digital laboratory in the two libraries, which have since commenced the digitization process of the selected materials. The hardware components include a portable scanning rig, consisting of standard tripod, consumer digital cameras, a laptop computer and two one-terabyte external hard disks for back up. The camera is a modern "prosumer" grade camera with 12 megapixels capable of digitizing images up to A4/letter in size and achieves targeted quality levels of 300 dpi grayscale or 600 dpi bi-level via resolution enhancement (Decapod 2009).

The application interface, driven by the workflow software, guides the users through a three-step workflow that comprises capturing, software

editing, and generating PDF. The interface is user-centred with features, such as auto-save, undo, etc that prevent mistakes and accidental loss of data; contextual tools; and easy-to-understand options. It is aimed to be clear, flexible and easily usable by anyone with little training. It thus guides the users through each of these 3 steps with such ease and flexibility that the operation is seamlessly carried out. With this equipment both libraries have made significant progress in digitizing the selected materials and generating metadata, even though the project could not achieve the set completion deadlines.

Policy Issues and Institutional Capacity Building

It is obvious that the current concerns from the inception of the project to this stage have been about the immediate and short-term digitization needs of thee libraries. While the project sets its vision and defined its scope beyond the immediate and short term needs, it has not articulated the logistics of going beyond the immediate. This is, presumably, left to the institutional discretion of the libraries after the experience gained from the implementation of this first stage.

Whatever the case, going beyond the first stages necessarily requires a new policy direction based on a new vision, new, and indeed, broader, scope and rearticulated objectives. Arising from all these are the areas the new policy issues should address. These areas can be defined in terms of the broad dimensions the policy thrust will take. These dimensions can be categorized as follows:

a) Internal; and
b) External

The internal dimensions involve decisions about the project's new management challenges regarding continuity or sustainability. These include funding; availability and selection of digitizable materials for internal purposes; personnel matters (training, recruitment and retention); equipment maintenance and replacement; and service delivery. In each of these, there are wide-ranging issues the policy will have to address - issues that naturally spring from the dynamics internal to the institutions.

The transition from the external funding situation to self-funding situation can be a difficult one. It may lead to the collapse of the project if careful planning is not made. The first challenge, therefore, is the question of project continuity and sustainability. The desire to sustain the project by the libraries/universities raises the questions: why, how and for how long? The answers to these questions include justifications for the decision to sustain the project, from which emerge the new objectives of the project.

They include the logistical issues (plans, strategies, modalities) and all the necessary elements required to execute the project. It is here that sources of funding, budgeting for the specifics, personnel and equipment requirements and service delivery techniques - the needs of potential clienteles, selection of materials and terms and conditions of access - are clearly articulated. They also include the timeframe within which to review or even terminate the project. Each of these should be articulated as a policy issue and put together to constitute a coherent portion of policy document that serves as an instrument for the management and control of the internally generated resources that will be digitized and exclusively owned by the two libraries.

The external dimensions of the policy thrust refer to the instrument that guides the extended capabilities of the digital laboratories to serve other

institutions and organizations that need digitization services. The key objective for setting up the digital laboratories is to deploy their combined capabilities and serve Nigeria's digitization needs. The broad scope of this assignment alone underscores the need for articulated policy instrument. What will be the starting point? How do they identify and generate relevant materials for digitization? What will be the relationship between these libraries and the institutions/organizations (public and private)?

The large number of such institutions and organizations and their wide-ranging nature and volume of their activities, and the documents generated there from constitute the basis of any policy instrument that is aimed at addressing the external dimensions. In addition to libraries of all types, institutions and organizations that may depend on these digital laboratories for their digitization needs include the following:

1) History and culture bureaus
2) Archives and museums
3) Hospitals
4) Research institutes
5) Universities and other learning institutions (Federal, state and private)
6) Government ministries, departments and agencies
7) Non-governmental organizations (NGOs)
8) Organized private sector
9) Entertainment industry (film, video and music producing bodies, etc)
10) Publishing industry (book, journal, magazines, etc.)
11) Electronic media (television and radio houses)

The list may not be exhaustive, but each laboratory had to set its limits based on its capacity in terms of staff strengths, facilities and time available at their disposal. All these issues relating to determining the prospective patrons of the laboratories and how to relate with them on

short- or long-term basis are necessarily policy matters, which constitute the starting point. The details and specifics on the relationship are articulated bilaterally on a-case-by-case basis, within the context of the general policy frameworks developed by the laboratories. In other words, the laboratories, following "action instruments" (information gathering information analysis, and consultation) must have developed basic frame-works which animate the process of situating the specifics within a context for implementation (Corkery, Land and Bossuyt, 1995).

The practical question is how BUK and UI address all these issues and take the initiatives to put in place the appropriate mechanisms that will set clear goals/objectives based on JSTOR's initial objectives, and how to draw up strategies for achieving the objectives. Addressing this practical question involves a necessary intervention of a committee in each of the libraries with a clear set of terms of reference that should consist of the following:

1) Identification of key issues/problems in the policy environments, including the identification of all the prospective institutions/organizations, their digitization needs and possible areas of collaboration. It is important to note that this stage involves intensive data gathering work for accurate decisions.
2) Policy formulation with clear vision, goals and objectives, strategies for achieving them (implementation), methods of policy analysis, monitoring and review. All these will be done vis-à-vis the quantum of resources (human, infrastructural and financial) at the disposal of the two libraries. Consideration must be given to public relations, sensitization and awareness activities as integral components of the policy content.
3) Policy Implementation: This stage involves visit to and interaction with identified collaborating institutions and organization signing memorandum of understanding (MOU) (where applicable), selection of materials to be

digitized and the actual digitization work, all based on the terms and conditions of service enshrined in the policy document or agreed upon in the MOU.

4) Policy Analysis, Monitoring and Review: This policy, like any other, must periodically be analyzed; implementation monitored and reviewed when circumstances dictate. A regular review clause may be inserted in the policy document, but the dynamics of contemporary realities - the fast-changing, and often unstable, world, may tamper with strict adherence to the provisions of this clause. In any case, the review period and, indeed,the whole policy provisions should be flexible enough to accommodate the unforeseen.

Articulated policy instrument, faithfully implemented, is one of the most effective ways of ensuring the consolidation and sustenance of the institutional digital capacity, and expanding it not only to all Nigerian Universities but also to other institutions and organizations.

Conclusion

JSTOR'S initiatives, supported by the McArthur Foundation to set up digital laboratories in BUK and UI, had a vision, which was clearly reflected in the MOUs signed between the two parties. The digital labs were to serve the two institutions and ultimately the entire country, Nigeria - BUK to cater for the northern part and UL for the southern part.

Having achieved the initial objectives which were sponsored by JSTR through funding from MacArthur Foundation, the two institutions were left to use the labs to serve others in their respective domains. How they do it

is entirely their own decision. This paper attempts to analyze the situation and suggest the way forward.

One of the best ways proposed is an articulated policy that will ensure consolidation and sustenance of the institutional digital capacity for the two institutions. The policy will also guide, in systematic fashion, the extension of this capacity to other institutions and organizations in Nigeria.

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