# Editorial: Digital libraries as sociotechnical systems

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Digital libraries (DL) are networks of sociotechnical systems that bring together information and technologies with people and practices. Sociotechnical systems are about the interaction of DLs with the wider world of institutions, individuals and communities, as well as the organisation of knowledge production. DLs are designed, used and evaluated in the context of community knowledge work and DLs interact with this context, changing and being changed by it. Effective DLs must be designed and evaluated with a sensitivity to how knowledge is created and understood, and work is done, in a context of knowledge communities, which share practices and tools. DL use is a socially embedded process and DLs as a sociotechnical system therefore need a holistic approach that integrates social, cultural, economic, political and technological perspectives and provides knowledge from a range of other disciplines. Furthermore, a sociotechnical systems perspective stimulates co-operation and an interdisciplinary approach to the problems that individuals and communities experience in creating and learning knowledge. In this approach, the DLs can be seen as the infrastructure of a complex sociotechnical system and have the potential to influence or transform individuals and communities and facilitate the creation and dissemination of knowledge distinctly from the applications of technologies.

This first issue of 2024 of *Digital library perspectives (DLP)* offers the opportunity to focus readers' attention on the social, cultural, political and economic development of DLs as sociotechnical systems in practice and on their impact on individuals and communities. We have received a number of research papers that explore different aspects of DLs and information systems in various regions, including Nigeria, Ghana, Pakistan, South Africa, the United Arab Emirates and Indonesia. This issue of *DLP* provides a space to share experiences and research or suggest theories and directions for future work among international DL researchers and practitioners. This issue covers a range of topics, including institutional repository sustainability, challenges in managing information systems in African libraries, the development of a union catalogue in Pakistani university libraries, library staff skills in Nigerian universities, perceptions of the engineering librarian and the use of augmented reality (AR) and mobile technology in library services.

Facilitating conditions (FCs) are the focus of the first paper "Facilitating conditions and institutional repository sustainability by librarians in public university libraries in Nigeria". Ugwunwa Esse and Yacob Haliso investigate the FCs for institutional repository (IR) sustainability practices in public universities in Nigeria. A survey research design was adopted and a questionnaire was used to collect data. The findings evidence that the FCs are contributing to the sustainability of IR and librarians' improved ICT skills are needed.

African libraries are adopting technology at a rapid pace and are facing many challenges. Patience Emefa Dzandza Ocloo and Lizette King from Ghana in "Proposed standard guideline for managing Information Systems (IS) in libraries in Africa" evidence that challenges in the use of information systems can be classified into four main areas: financial challenges, infrastructure challenges, human resource challenges and organisational challenges. The paper analyses all these challenges and recommends how to improve the effective use of information systems in African libraries.

Muhammad Ijaz Mairaj and Mahsham Mukaram in "Developing a Union Catalogue of Pakistani University Libraries: Status, Problems, and Prospects" examine the barriers and

opportunities for developing a single catalogue of university libraries in Lahore, Pakistan. The university libraries of Lahore are well organised, have adequate collections and IT-savvy staff, are well automated, yet do not co-operate. Vital prospects for catalogue development are indicated in Pakistan's governmental policy support for both library cooperation and librarian training. Incentives for librarians, coordination among librarians and awareness that sharing is important are also needed.

"Determination of Library Staff Skills to Enhance Visibility of Intellectual Output in Nigerian Universities" by Nkeiru Emezie, Scholastica Chukwu, Ngozi Nwaohiri, Nancy Emerole and Ijeoma Bernard focuses on librarians' skills. Library staff play a key role in promoting the intellectual production of universities in South East Nigeria through institutional repositories, but they need skills to promote the visibility of content, create a broader reach and facilitate easy access and use of these resources. A questionnaire was adopted for the study to obtain responses from the library staff. The results highlight high skills in basic IT operations; moderate skills in digital conversion, preservation and archiving; and low skills in metadata creation.

"Exploring First-year Engineering Student Perceptions of the Engineering Librarian as an Information Literacy (IL) Instructor in Multimodal Teaching and Learning Environments" by Mousin Omarsaib from South Africa explores first-year engineering students' perceptions of the librarian as a teacher. A quantitative approach was used through a questionnaire. The results demonstrated that the perception of the librarian as a teacher was appropriate. These findings can help strengthen academic librarians' teaching identity as instructors in multimodal learning environments. However, an emerging theme that continually appeared was the lack of access to technology.

DLs as social technical systems give new opportunities to innovate and promote services. Digital marketing in library and information science is the topic of the bibliometric research by Javaid Wani from India in "The Current Research Landscape in Digital Marketing Scientific Literature in Libraries: Exploration through Performance and Science Mapping". A title search in the database Web of Science was used to perform this study. The findings revealed that the productivity and impact of digital marketing research have grown considerably over time.

Are libraries ready to become sociotechnical systems? To evaluate readiness, the technology acceptance model (TAM) is often used, which postulates that acceptance of technology is predicted by users' behavioural intention, which is, in turn, determined by the perception of the usefulness of the technology in carrying out the task and finally by the perceived ease of its use. The following studies use the TAM as a theoretical framework.

"Exploring Students' perceptions towards the Use of augmented reality for digital library services" by Abdoulaye Kaba, Sawsan Taha and Marzouq Al-aqeed, from the United Arab Emirates investigates students' perceptions regarding the use of AR for DL services in the Al Ain University (AAU) libraries. The survey used a TAM-based questionnaire for data collection. AAU students have a positive perception of using augmented technology in the library and are willing to use it to access library resources and services.

Globally, mobile technology is a significant innovative factor influencing how libraries provide services to patrons. Muvhulawa Matumba and Mogiveny Rajkoomar in "Academic Librarians' Perceptions of Mobile Technology's Usefulness in Library Service Delivery at Universities of Technology in South Africa" explore academic librarians' perceptions of the usefulness of mobile technology. The research objectives were supported by the theory of technology acceptance (TAM) as a theoretical framework. Data was collected through semi-structured interviews and analysis using NVIVO for thematic analysis. The results show that, in general, academic librarians support the use of mobile technology to provide

services but that effective adoption of mobile technology involves some challenges presented in the study. Most respondents believe their libraries are not yet ready to fully embrace mobile technology.

Finally, the last paper addresses the topic of readiness to implement data curation of digital humanities (DH) in Indonesia and an interview explores the growth of AR, virtual reality (VR) and immersive technologies in DLs.

Muhammad Suhendra, Laksmi Laksmi, Shamila Shuhidan and Umanto Umanto in "The Readiness to Implement Digital Humanities Data Curation of Four Institutional Repositories in Indonesia" aim to identify the data curation services for DH of institutional repositories in Indonesia. The study uses a qualitative approach. Data collection was carried out through a focus group discussion, interviews and document analysis. The informants came from four Indonesian institutions. The findings reveal that the availability of the national research archive and the university archive is in the high-capacity phase, whereas the national archive and the other university archive are in the consolidated phase and in the initial phase of data curation, respectively.

The growth of AR, VR and other immersive technologies have brought a new dimension to the DL experience. These technologies have the potential to transform the way DLs interact with their communities, offering new and innovative services to access information and support learning. The interview with Gabriele Guidi from the USA delves into the importance of immersive technologies in libraries and 3D, their advantages and possible strategies for overcoming the challenges.

**Anna Maria Tammaro**
*Department of Information Engineering, University of Parma, Parma, Italy*