

Editorial Feature

Novel and Fundamental Advances in Digital Technologies for Managing Information and Knowledge

Stephen Mutula

*University of KwaZulu Natal
Pietermaritzburg, South Africa
mutulas@ukzn.ac.za*

The novel and fundamental advances in digital technologies since the invention of the first electronic computer, the ENIAC by John van Neumann in 1943 has been the single most important driving factor in the emergence of the information society and the resultant explosion of information generated, processed, stored and moved around the world through electronic network environments such as wide area networks (public telephone systems, satellites, microwave systems and more). The novel and more recent advances in communication technology including but not limited to the invention of Ethernet in 1973 by Xerox, PCs, Web browser, Internet/World wide web, search engines, social media and now cloud computing have ushered in a new world order, which revolves around digital solutions. These novel technological advances and the consequent information explosion have in many ways made the work of information and knowledge managers more exciting and also more complex. More than before, information experts are now required to work closely with software and hardware specialists to develop solutions that facilitate data mining from the vast amount of information and data stored in high performance computing infrastructures such as clouds, online databases, government web portals, digital archives, institutional repositories, digital libraries, publishers databases, etc. The leadership role of information and knowledge experts in such areas as information

organisation (especially Internet-based resources that are largely managed by robotic agents), indexing, abstracting, and bibliometric analyses among others has been enhanced and made easier by digital technologies.

When the concept of information society originated in the Japanese social sciences in the 1960s by one Jiro Kamishima in a publication, *sociology in information societies*, it described a newly emerging socioeconomic entity (post-industrial society) (Karvalics, 2007) and had little to do with digital technologies that have become ubiquitous in society today and revolutionised the way information is collected, processed, stored and disseminated. The concept of information society was given impetus by World Summit on Information in 2003 and describes 'a social structure based on free creation, distribution, access and use of information and knowledge ...). The information society as we understand it today is largely driven by revolution in digital and computing technologies.

With advancements in digital technologies has emerged sophisticated applications (e.g. social networking, digital scholarship, virtual research environments or laboratories, data visualisation, online searching and online public access) processes (digitisation, self-archiving, digital imaging, library automation), electronic formats of storing and managing information (online journals; e-books, digital libraries, digital archives, government web portals, institutional repositories, social media platform, etc.) and information/knowledge management tools (search engines, high performance computing).

The information and scientific communities have been on the forefront of leveraging technological innovations to their advantage in such

areas as use of computers to index words of Latin to create concordances (as early as 1949 at IBM), use of automated library systems (progressively on mainframe, mini, PCs, and now clouds platforms), formation of automated library cooperative networks in the from 1970s in Europe, North America and other parts of the world; the use of Web 2.0 technologies (dynamic internet applications) to allow users to communicate with each other by creating, editing and sharing information using tools such as Blogs, Wikis, RSS feeds, social networking, podcasts and delivering library and information science education (Aharony, 2008).

With the continuing advancement and application of digital technologies for information and knowledge management, the information environment has become more complex to manage and ensure equitable and unhindered access to information as well as meet the divergent and competing interests of users, publishers, and authors especially with regard to cost and pricing of information, copyright and licensing regimes. The need for robust legal, regulatory, infrastructural,

policy and practical framework is more imperative than before to help balance the interest of different stakeholders in the information industry including the supply chain. The information professional must remain at the forefront in advocating for equitable access to information by all in society as this is a basic human right. Advances in digital technologies must be seen as facilitating rather than as supplanting the traditional roles of library and information professionals.

References

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