GEO-SPATIAL MAPPING OF LIBRARIES TO ENHANCE OPTIMAL ACCESS TO LIBRARIES AND GLOBAL VISIBILITY

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ABSTRACT: *This paper reflects on a project by the National Library of South Africa to utilise digital technology in the form of geo-spatial mapping to improve the exchange and dissemination of knowledge regarding public libraries in South Africa. The objectives of the project are aligned with the United Nations Sustainable Development Goals and aim to promote optimal accessibility and global visibility of libraries, enable and empower library users and potential users as well as researchers and related stakeholders to locate public libraries. The project entails a collaborative partnership between the National Library of South Africa and the Provincial Library Services in South Africa and emphasise the need and value of institutional partnerships in the library and information services sector to facilitate access and availability to library collections.*

KEYWORDS: *National Library of South Africa, geo-spatial mapping, public libraries, digital technology.*

INTRODUCTION

The application of geographic information systems (GIS) within the context of library and information services (LIS) falls primarily within two categories according to Mandel, Bishop and Orehek (2020). These two categories are an analysis of:

(a) "library service populations and related adjustments to facilities and services based on user-demographics and other variables; and
(b) an analysis of collections, in-library and other facilities-based use."

The National Library of South Africa (NLSA), by virtue of its legislative mandate as the "custodian and provider of South Africa's key knowledge resources", has identified the use of geo-spatial mapping as a mechanism to exchange knowledge regarding the accessibility of provincial library services within the country National Library of South Africa (2019). Geo-spatial mapping technology facilitates the function of the NLSA which relates to "promoting optimal access to published documents nationally and internationally". Additionally, geo-spatial mapping technology also promotes and provide impetus to several more functions of the NLSA. These includes:

- Promoting awareness and appreciation of the national, published documentary heritage; and promoting information awareness an information literacy;
- Providing leadership, guidance and advice to South African libraries and information services;
- Undertaking research and development; and
- Liaising with libraries and other institutions in and outside South Africa. National Library of South Africa (2019).

The National Library of South Africa Act, Act No. 92 of 1998, Section 3 states: "The NLSA is mandated to contribute to socio-economic, cultural, educational, scientific, and innovative development by collecting, recording, preserving and making available the national documentary heritage and promoting an awareness

and appreciation thereof, by fostering information literacy, and by facilitating access to the world's information resources" National Library of South Africa (2019).

The use of GIS in the form of geo-spatial mapping to provide access to public and community libraries by the NLSA therefore facilitated an extension of the two categories of GIS applications within LIS as indicated by Mandel, Bishop and Orehek (2020). The use of geo-spatial mapping technology by the NLSA served to promote the use of geo-spatial mapping by to support literacy and the strengthening of the reading ecosystem in South Africa. It is therefore evident that although the adoption and utilisation of geo-spatial mapping primarily facilitated knowledge sharing in respect of provincial libraries it also had secondary benefits for the NLSA since it contributed towards the realisation of various sustainable development goals (SDGs) aimed at literacy as a basic human right.

Siddiqi (2017) states that "Geospatial technology, commonly known as geomatics, refers to technology used for visualization, measurement, monitoring, and analysis of features or phenomena that occur on the earth. Siddiqi (2017) continues by confirming the relevancy of geospatial technology including mapping in respect of the realisation of SDGs and state that interconnected technologies [such as geospatial technology] leverages vital information and communication technologies to positively impact the community, preserve the environment, and improve health. Investments in human and social capital and infrastructure through the adoption of technology play a critical role in creating sustainability.

BACKGROUND AND PURPOSE

The purpose of this paper is to reflect on a collaboration between the NLSA and the Provincial Library Services to use geo-spatial mapping technology to provide access to public and community libraries. Although, the primary objective of the project was to utilise geo-spatial mapping technology in an effort to facilitate improved and enhanced access to provincial libraries it soon became evident that the project also has a substantial impact in terms of three adjacent yet related areas. These three areas are:

- Promoting literacy;
- Realisation of SDGs;
- Incorporating digital technologies.

The project contributed towards promoting a culture of reading and additionally enabled a more informed understanding of the reading ecosystem in South Africa. The NLSA together with institutional LIS stakeholders such as the Provincial Library Services are responsible for inculcating a culture of reading amongst South Africans. Mandla (2020) states that "Over the years, several role players have been working in the reading space, driving programmes and projects that are meant to convert South Africa into a reading nation, especially with regard to leisure reading. Whereas anecdotal evidence suggests that some of these programmes are beginning to bear fruits, a study by the South African Book Development Council published in 2016 has found that very small strides have been made over the last few years, and that a lot more needs to be done if South Africa is to achieve significant levels in terms of leisure reading. Some of the criticisms levelled against these initiatives are that they are not sustainable and continuous in nature and hence fail to achieve the necessary impact and value. Literacy is a human right. It is implicit in the right to education. It is recognized as a right, explicitly to both children and adult. Literacy should be understood within a rights-based approach and among principles of inclusion for human development. The rationale for recognising literacy as a right is the set of benefits it confers on individuals, families, communities and nations. It is included in key international declarations:

- 1948: Universal Declaration of Human Rights;
- 1966: International Covenant on Civil and Political Rights;

- 1966: International Covenant on Economic, Social and Cultural Rights;
- 1960: Convention Against Discrimination Education;
- 1975: Persepolis Declaration – 'Literacy is not an end in itself. It is a fundamental human right';
- 1979: Convention on the Elimination of All Forms of Discrimination Against Women;
- 1989: Convention on the Rights of the Child explicitly recognises literacy not just education;
- 1990: The World Declaration on Education for All;
- 1993: Vienna Declaration and Programme of Action emphasises the use of human rights – informed education as a means of combating illiteracy;
- 1997: Hamburg Declaration: 'Literacy, broadly conceived as the basic knowledge and skills needed by all in a rapidly changing world, is a fundamental human right' (Resolution 11, UNESCO);
- 2003: UNESCO round-table report Literacy as Freedom: literacy must be understood within a rights-based approach and among principles of inclusion for human development;
- 2005: UNESCO B@bel Initiative.

Mandla (2021) explains that "Literacy has been recognised not only as a right in itself but also as a mechanism for the pursuit of other human rights, just as human rights education is a tool for combating illiteracy. Literacy, besides being a fundamental human right, is a foundation not only for achieving Education for All but, more broadly, for achieving the overarching goal of reducing human poverty. And yet, 140 million adults in sub-Saharan Africa lack the basic learning tools to make informed decisions and participate fully in the development of their societies. In addition to being a right in itself, literacy allows the pursuit of other human rights. It confers a wide set of benefits and strengthens the capabilities of individuals, families and communities to access health, educational, economic, political and cultural opportunities. Yet, on average, less than sixty per cent of the total adult population in sub-Saharan Africa can read and write with understanding – one of the lowest adult literacy rates in the world Mandla (2021).

Although the project largely contributed towards improving access to libraries and supported a better and more informed understanding of the reading ecosystem in South Africa it also facilitated the achievement of several SDGs. Evidently and according to the United Nations (2015), access to information and knowledge is a "cross-cutting" responsibility and have an impact on all the SDGs. The United Nations (2015) further articulates the way in which libraries should contribute toward the realisation of by:

- Promoting universal literacy, including media and information literacy, and digital literacy skills;
- Closing gaps in access to information and helping government, civil society and business to better understand local information needs;
- Providing a network of delivery sites for government programmes and services;
- Advancing digital inclusion through access to Information and Communication Technology (ICT) and dedicated staff to help people develop new digital skills;
- Serving as the heart of the research and academic community;
- Preserving and providing access to the world's culture and heritage.

The United Nations (2015) concludes by stating that "libraries can support the implementation of the SDGs by providing access to information, support for literacy and ICT skills, and access to community space."

As early as in 2000 the United Nations (2000) indicated that the use of digital media in the LIS sector will improve the exchange of knowledge, optimal accessibility to libraries and global visibility. The NLSA therefore responded to the 2000 call for action by the United Nations and developed an interactive web portal that features the geo-mapping and contact details of the public and community libraries in South Africa. The project supported the SDGs through the effective collection, use and sharing of data within the library sector and promoted optimal accessibility and global visibility, enable users, potential users, researchers, and government officials to locate public libraries with ease.

METHODOLOGY

The geo-spatial mapping project was a collaboration between the NLSA and the South African Provincial Library Services as well as related stakeholders to obtain detailed data regarding the location of provincial and community libraries. The portal was developed on a web based Joomla platform that is linked to Google maps. The portal which consists of a visually enabled view of the location of libraries also highlights the library activities, and provides the contact details of public and community libraries in South Africa. Furthermore, the portal serves as the initial platform to share SDG success stories through a strong commitment to global partnership and cooperation. The portal will be enhanced by including and facilitating links to include social media platforms and multimedia blogs to upload video clips of library activities, membership of the libraries, opening and closing times, e-learning resources and library flagship collections. The afore is a critical outcome of the library portal project as it has been proven that younger readers often prefer to include social media as a mechanism to obtain information and knowledge. It is therefore critical that information about libraries are made accessible and available to younger generations by means of the inclusion of social media approaches.

Some of the challenges which have been associated with the project and which serve as critical determinants of the success and hence the sustainable and adoption of geospatial mapping projects in LIS are listed below:

- Monitoring and evaluation: The need to ensure that the contact details of libraries are accurate and updated when they change as well as the importance of regular communication with libraries to be informed of changes;
- Training: The library web portal needs to be user-friendly and content creators responsible for uploading content to the portal needs to be adequately skilled;
- Marketing and advocacy: The portal should be marketed for greater impact as well as to gauge the adoption and usage of the initiative and to identify areas for continuous adjustment and improvement;
- Planning and coordination: The complex nature of a geospatial mapping project necessitates the incorporation of a project plan and sound project management principles to ensure that the critical components relating to the project such as content management, coordination, control, monitoring and evaluation as well as continuous learning and improvement occur in a coordinated and facilitated yet measurable manner.

The implementation of the project facilitated the immediate identification of areas for consideration to enhance the library web portal. These areas for consideration and further development are listed below:

- ***Research and innovation***: Ongoing research regarding the use and application of geo-spatial mapping technology to ensure that the library web portal remains aligned to best practices information and communication technology practices including mobile devices;
- ***Centralisation***: The need for enhanced coordination and control through establishing a project management office to facilitate the various components of the project including the portal, the content management system, marketing and advocacy as well as research and development;
- ***Stakeholder inclusion and management***: The inclusion of information regarding the entire reading ecosystem and in particular stakeholders such as the LIS sector and government by means of social media applications. The afore enhances collaboration and partnerships between stakeholders and facilitate an increase in participation in the project;
- ***Sustainability***: The project can be replicated and extended to various locations in neighbouring African countries through collaboration and in liaison with LIS institutional partners such as the African Library and Information Associations and Institutions (AfLIA) and the Standing Conference of Eastern, Central and Southern African Library and Information Associations (SCECSAL).

CONCLUSION

The NLSA anticipates the utilisation of geo-spatial mapping technology by the Eastern, Central and Southern African states as a key initiative to strengthen collaboration between institutional partners in the LIS sector. The afore would contribute to the realisation of SDGs but also serve as a mechanism to ensure that literacy and the reading ecosystem is bolstered and enhanced in and across the African continent. The incorporation and adoption of digital technologies in the form of geo-spatial mapping provide evidence of the commitment of the LIS sector towards embracing cognitive technologies associated with the Fourth Industrial Revolution in an effort to exchange knowledge and experiences. The NLSA's library web portal project is part of harnessing the capacity of ICT to ensure inclusion, raising the visibility of libraries in the African continent and institutional partnership for the achievement of SDGs. Furthermore, the initiative endorsed the principles adopted at the declaration and treaty of the Southern African Development Community (SADC) in August 1992 which stated that the one of the key founding objectives of the SADC was the "forging of links to create a genuine and equitable regional integration" in and across the African continent. The sustainability of the NLSA's library web portal initiative can only be ensured through ongoing research and close collaboration between stakeholders in the LIS sector (SADC countries, Library and Information Association of South Africa (LIASA), SCECSAL), such as the continuous improvement of the library web portal with new developments and adjustments in respect of geo-spatial mapping technology.

The NLSA will pursue and embrace partnerships with the SADC countries, LIASA, AfLIA, SCECSAL, Standing Conference on African national and university librarians – Eastern, Central and Southern) to enhance access to public and community libraries by means of incorporating data created by means of geo-spatial mapping technology.

RECOMMENDATIONS

The empirical nature of the collaborative project that the NLSA has embarked on together with the Provincial Library Services resulted in the identification of several thematic areas that necessitate further research relating to the adoption and utilisation of geo-spatial mapping technology. These thematic areas are:

- The incorporation of data relating to the location and services of public and community libraries into smart city strategies in Africa;
- The incorporation of radio frequency identifier technology to facilitate geo-spatial mapping of collections in public and community libraries;
- The development of an ICT strategy to facilitate the introduction and adoption of Fourth Industrial Revolution technology in public and community libraries in Africa.

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