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Innovative Technologies for Effective Library and Information Services in a Post Covid-19 Era

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ABSTRACT

As aptly captured in one of the laws of librarianship, Ranganathan, who is considered the father of the library profession averred that the library is a growing organism. Ever since Ranganathan's postulation in 1931, his statement has stood the test of time as a theory that can never be contested, despite the immersion of various technologies that have continued to sprout and becloud the information landscape; leading to a massive information overflow in our respective societies. The application of Information and Communication Technologies (ICT's) into library practice has aided in justifying Ranganathan's postulation. Hence, this chapter attempts to highlight some innovative technologies for effective library and information services in the post-COVID-19 era.

Keywords : Library services, Innovative technology, COVID-19 era, Information and Communication Technologies.

INTRODUCTION

Libraries are critical community hubs that are designed to provide factual, accurate and timely information resources and services to society. They are organised and fertile spaces that are meant for knowledge enhancement by allowing people to comfortably walk in, in order to make consultations

or some other researches that are likely to quench their intellectual curiosity. Libraries serve as centers of information, learning and knowledge acquisition for the purpose of advancing both the personal and professional development of the human species in all facets of the human struggle. To achieve the aforementioned, libraries have to abide by the guiding philosophy of openness as that has led many libraries of the 21st century society to become centers for the movement that support women, immigrants, people of color, the LGBTQ community, and those facing religious persecution amongst others without any form of discrimination. As such, libraries are critical elements of high relevance that must be in place for the purpose of shaping our thoughts for a better society.

The first recorded libraries date to as far back as 2600 BC in Mesopotamia, containing clay tablets of cuneiform script, the earliest form of writing (Corrao, 2012). Those libraries could be said to have established the starting point of our world's history because as civilizations evolved, they kept playing some critical roles by serving as central repository for artworks, laws, census data, genealogy, historical accounts and academia. That has aided in making many disciplines and communities to prosper. Quite essentially, libraries of all kinds have always served and would continue to serve critical roles in the advancement and preservation of our cultural heritage for civilization purposes.

Libraries were physically designed to serve as physical repositories where books, journals, manuscripts, newspapers, magazines, maps, films, artworks and a host of other information materials are organised in order to serve as a central point for access by interested persons. As time passed by, advancement brought about library collections to include cassettes, microfilm, microfiche, CDs, VHS, DVDs and to a more recent medium that lends credence to the internet, courtesy of ICT's. The development has gradually absorbed many functions being performed by libraries that exceeds mere

lending out books. Though the application of ICT's in libraries is still in the ascent stage, especially in developing nations like Nigeria, many libraries, especially academic libraries are struggling to achieve the best technological transformation. Therefore, offering effective library and information services in such dynamic environments requires libraries to jump unto the bandwagon of development by embedding relevant innovative tools that are capable of bringing about an increasing demand for their services, so as to respond to the new demands of the present day reality. Hence, the need for this chapter.

THE CONCEPT OF INNOVATION

The term "innovation" has been a buzzword in many oranisations and industries. Though, definitions of the concept varies widely, below are some paraphrased selections on the concept of innovation as cited by Dwyer (n.d.) from an article by Nick Skillicorn, based on interviews with 15 innovators:

- Application of ideas that are novel and useful
- It's about staying relevant
- Great idea, executed brilliantly, and communicated well
- Feasible, relevant offering with a viable business model perceived as new and adopted by customers
- Introduction of new products and services that add value to an organization
- As long as it includes "new" and addresses customer needs, any variation goes
- Fundamental way companies bring constant value to their customers
- Work that delivers new goodness to customers in new markets and radically improves the profitability equation
- Implementation of something new

- Implementation of creative ideas to generate value

- Anything new, useful, and surprising, and so on.

More so, Skinner (2017) conceptualizes innovation as an internally motivated and proactive approach to change while the innovation management framework defines and measures innovation in terms of the exploitation of inputs, knowledge management, strategy, organizational culture, portfolio management, project management, and commercialization for implementing new ideas (Potnis, 2010).

From the definitions above, it is clear that despite an agreement to the fact that the concept of innovation is very important in our daily engagements, especially within organisational settings, the term is actually a complex or confusing buzzword that lacks agreement among scholars in terms of meaning and scope. As such, Dwyer (n.d.) argued that none of the above definitions seem to strike the right balance of clarity, utility, and brevity. Hence, the need to look elsewhere for a better definition of the concept. Therefore, Dwyer (n.d.) proposed a definition of the term innovation as "the process of creating value by applying novel solutions to meaningful problems". As stated by Dwyer, "the reason we believe it has utility is in the three explicit tests for "innovative-ness" we can apply:

Is it novel? The notion of novelty is baked right into the word "innovation." If it's not new, it's probably more optimization than innovation.

Does it solve a meaningful problem? If not, maybe it's art instead of   innovation. That's not to say art isn't valuable, but it's generally not designed to solve a problem. To us, innovation is.

Does it create value? If not, maybe it's an invention rather than innovation. Inventions can lead to value creation, but usually not until someone applies them through innovation".

Nonetheless, a published study by Bledow et al. (2009)

analyzed over 150 research studies on innovation and suggested that several factors can contribute to the degree of innovation in organizations. Based on the above stated research, their insights on the characteristics of innovative workplaces include the following:

- Regular idea-generation meetings that focus on idea generation, not idea evaluation.
- Idea-exploration meetings to uncover benefits and risks without managerial involvement.
- Encouraging small, incremental innovation rather than radical innovation.
- Hiring people, particularly managers, who will encourage improvements and innovation, and be comfortable with the ambiguity, unknowns and challenges.
- Making innovation valued enough that it's part of an employee's performance criteria and is discussed at review time.
- Supporting an innovative culture by minimizing strict and restrictive rules, guidelines, policies or norms that get in the way of creativity.
- Rewarding new and successful ideas.
- Encouraging diversity in thinking, which is likely to lead to greater innovations.
- Practicing "proactive creativity," whereby a worker identifies a work-related problem and then identifies new ways to solve the problem. This has been successful with production workers and manufacturers and with nurses in health care.

Based on the above characteristics of innovation from various organizations, some unique and interesting perspectives can be drawn. For instance, all organizations benefit from small or gradual innovations as opposed to some

radically new inventions. Again, regardless of the size or type of organisation, all organizations have some unique things to start doing in order to be seen as innovative. Hence, innovation is a critical organisational-wide requirement for effective service delivery in libraries.

INNOVATION IN LIBRARIES

There is no gainsaying the fact that many libraries have been engaging themselves on a variety of innovative activities. That is because innovation is a careful approach that is targeted at enhancing an organisation wide output. In other words, innovation by libraries is a system wide approach that plays a significant role in boosting the image and maintaining the relevance of library practice to the society. As a matter of fact, many organisations are paying so much attention to the benefits of encouraging innovation than ever before. For instance, *63% of companies* now have chief innovation officers to help drive new ideas and systems (Livescault, n.d.) because organisations that invest their money, time and effort to find better ways of doing things have a greater advantage over their competitors.

While dealing with the issue of innovative initiatives in libraries, Mathews (2012) stated that a large number of public libraries primarily focus on providing access to information, technology, and expert guidance on different topics, and helping patrons build skills for using information, technology, and expert guidance offered by the libraries. Similarly, an article on the "perceived outcomes of public libraries in the United States" by Sin and Vakkari (2015) stated that in the era of scarce resources and budget cuts, innovations are critical for the relevance of over 9,000 public libraries with over 17,000 branches across the United States. For Skinner (2017), innovations can help public libraries challenge the status quo and therefore increase their value for local communities. King (2018) offered a specific guidance to library administrators for

developing a systematic plan to implement innovations, which includes:

- Scanning the environment for becoming aware of the current trends in innovations implemented by peers;

- Making sense of the contemporary innovations implemented by early adopters, and;

- Assessing if contemporary innovations are applicable and have the potential to advance the mission and goals of a specific library.

Nonetheless, innovation in libraries serves as a means for addressing the needs and challenges related to quality education, health improvement, economic development, poverty reduction, transportation, and environment, which are faced by library patrons in their environments.

COVID-19 AND THE POST COVID-19 ERA

The outbreak of a novel virus (corona virus) also referred to as COVID-19 which was first reported in December, 2019 in Wuhan, the Hubei Province in China was a public health emergency of serious international concern that was declared a pandemic on the 12th of March, 2020. The pandemic decimated jobs, brought about a devastating loss of human life and presented an unprecedented challenge to almost all sectors of the economy by threatening the existence of a multitude of enterprises, organisations and corporations. Libraries were not left out from the above threat as the pandemic brought about a serious change that was a challenge for many libraries across the globe.

On the nature of the virus, the World Health Organisation (WHO) (2020) and the International Association for Medical Assistance to Travelers (IAMAT), (2020) averred that - "Corona virus is a large family of respiratory viruses that can cause illness in people and animals". It is a respiratory virus which spreads primarily through droplets generated when an infected person coughs or sneezes, or through droplets of

saliva or discharge from the nose (Ameh, *et al.,* 2021). Further, they stated that "the most common symptoms of the disease include flu-like symptoms such as fever, dry cough, and shortness of breath or difficulty in breathing. Symptoms can also include chills and repeated shaking, muscle pain, headache, sore throat, and loss of sense of taste or smell, which typically appear within two to fourteen days after exposure (IAMAT, 2020).

However, the post COVID-19 era refers to the period after the lockdown imposed on people and their businesses have been relaxed by government (Baporikar, 2021). By implication, post COVID-19 era connotes the period in which lock-downs were lifted by various governments around the world, resulting to people engaging in their daily routines the usual way or through some enhanced or unique ways. Some of such unique ways are often characterised with the application of technological tools in order to enhance efficiency, which was tagged "new-normal".

INNOVATIVE TECHNOLOGIES FOR EFFECTIVE LIBRARY AND INFORMATION SERVICES IN A POST COVID - 19 ERA

Prior to the corona pandemic, there were uncertainties about the future of libraries as a result of the competition that was been brought by some tech giants like Amazon, Google, Wikipedia, etc., that facilitate the acquisition of valuable information. Such uncertainties were apparent especially in the developing countries as a result of the changing users' behaviour and financial constraints amongst others. However, there is no gainsaying the fact that the coronavirus compelled many libraries to start utilising some of the technological and wireless networking innovations that abound, being a sequel to the advances in technology that have positively changed things on a global scale.

It is on record that the proliferation and utilisation of

Information Communication Technology (ICT) tools brought about positive changes to library and information services. For instance, Simisaye et al. (2018) stated that: "as a response to the adoption and application to the new technology, libraries are shifting from the old traditional role as a social agency for information generation, storage, retrieval and dissemination to the modern electronic information systems". According to Etebu and Zacchaeus (2020), one of the innovations in libraries overseas is embedded librarianship, which is a distinctive innovation that moves the librarian out of libraries and creates a new model of library and information work. It emphasizes the importance of forming a strong working relationship between the librarian and a group or team of people who need the librarian's information expertise (Shumaker, 2009). Similarly, Shaw and Spink (2013) reported another innovative service being provided by university libraries as the Virtual Reference (VR) services that relates to chat and email service, collaborative service provision, services staffing, and staff training. They went further to state that email are increasingly supported by a Frequently Asked Questions (FAQ) and database are preferred cost-effective means for providing university VRA.

According to Ugwu and Ezeani (2012), technological innovations and new ideas are borne out of information sourcing, processing and dissemination; thereby empowering and creating opportunities for libraries and information centres. By implication, library services would be assuming some different dimensions in philosophy, model and information delivery because the global trend in library practice has proved that information provision and delivery has advanced from the traditional models to the electronic and web-based formats. As such, expectations on libraries at the post COVID-19 era are for them to take some strategic roles in supporting their users via various avenues that are within a technologically-rich and constantly evolving context; since

ICT has remodeled the LIS profession around the world by expanding the roles of information professionals in diverse ways. However, Guruaj and Kumar (n.d.) highlighted some innovation technologies that are applied in libraries as:

- OPAC and Web OPAC searching facilities
- Virtual Reference Desk (VRD) or Virtual Reference Services (VRS) using E-resources on net and CD-ROM, gateways, portals and online database.
- FAQ, Ask Librarian etc. provide advanced services.
- Database searching for complication of bibliographies and searching topical information provided unique search features and variety of display formats.
- CAS based on electronic publications and internet resources.

In addition to the technological applications outlined above, the following are other innovative technologies that are utilised in some libraries of the 21st ecntury era:

Robots : In recent times, many libraries have implemented certain levels of automation to an extent that Robots are now being utilised in such libraries to complement the efforts of librarians. Such Robots could either be scrambling, rolling, flying or climbing. Nagy (2015) explained that robots can autonomously scan shelves and self-navigate through libraries at night, scan RFID tags in books and produces reports on books that are missing or mis-shelved. An example is the Connecticut's Westport library in the United States that acquired two robots (Vincent and nancy) to enable the library staff teach coding and computer programming skills. The development would go a long way in facilitating social interaction by getting people's attention and raising their interest in technology and most importantly about the library.

Library Mobile Applications : A new trend that is being used in libraries is the utilisation of designated mobile apps for information provision and access. Such applications appear to

be more user friendly and easy to navigate than mobile browsers. They portray the library services outside the physical borders of a given library setting. According to Patil and Rupesh (2018), mobile apps offer functions like interactive library guides a library virtual tour, a library catalogue, an interactive calendar with all the library's events, the possibility to loan and read electronic books and articles and facilitate other library activities.

Library Bookmark Applications: Locating a book in the library may be a standstill effort for some users. Therefore, utilising a bookmark application is a cutting-edge method that can assist a library user in getting the particular book that he/she may require with ease.

Virtual Reality Applications : Virtual reality is a new technology that is used in a variety of domains. In libraries for instance, users may use such applications to search for books with the virtual reality dialogue. The technology can be used tom enhance educational programs via immersive graphics

3D Technology : The term 3D imply 3 dimensional. It is an emerging technology that has been embraced by libraries especially in the developed societies, for the purpose of improving user experience as well as simplifying the working process in libraries. Applications of 3D technologies include 3D modeling, 3D printing, 3D visualization, 3D display, etc.

Drones : Drones are vehicles that are used for a variety of aerial purposes. In some libraries for instance, drones are used for the purpose of facilitating book delivery. An interesting thing about drones is that they can be used to locate an individual through his/her smartphone.One of the advantages of drone technology is that: it reduces the cost of postal service and limits the issue of missed delivery. This is because it tracks a recipient's mobile phone's location.

Book Readers: These are portable electronic devices that are used for the purpose of reading digital/ e-books and

periodicals. Such devices help their users to read their favorite books anywhere with the help of a smartphone or a tablet. Amazon's Kindle and Barnes & Noble's Nook are good examples of such readers. They can be used in an ambience with available Wi-Fi. E- Reader applications are available for MAC and PC Computers as well as for Android, Blackberry, IPad, iphone and windows phone devices (Patil and Rupesh (2018).

Quick Response (QR) Codes : These are codes that can be scanned by smart phones that are embedded with cameras. Such codes are used to provide fast and convenient access to certain URL's SMS messages, V-cards, phone numbers etc. Such codes can hold higher amount of information than bar-codes. By using ones phone to scan the QR code, an information seeker can easily save the Author, Title and Class mark of of a particular book that he/she sees on the catalogue. That would make it easier for the information seeker to find the material that he/she is looking for on the shelve among other benefits.

Nonetheless, the issue of innovation in libraries is said to be principally as a result of scholarly communication, database development, the internet and allied web-based tools that are seriously shifting away the print media to a digital and networked information architecture in libraries. It is as a result of all these that we have social media applications, mobile devices, E-readers, MP3 players, tablets, personal computers, QR scanners, drones, bookmark apps, digital interfaces for printed books, user-focused interfaces and applications etc. and many other devices that are likely to be invented and utilised in the contemporary library environment.

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