

The Digital Transformation of Libraries in the Post-COVID-19 Era: Electronic Publishing as "the Model Digital Alternative"

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Abstract:

Libraries around the world have faced difficult choices regarding the services they offer and how they operate. These choices have ranged from implementing limited restrictions to complete closures. It is evident that governments themselves have taken varying approaches—sometimes mandating full shutdowns, at other times signaling a return to regular functioning, and in some cases, leaving decisions entirely up to library directors.

This presentation aims to highlight the role of libraries during the COVID-19 pandemic and to explore the potential for transitioning to electronic publishing, which stands as a model digital alternative in times of crisis.

Keywords: Digital transformation, libraries, electronic publishing, COVID-19 pandemic

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1. INTRODUCTION

There is no doubt that the COVID-19 pandemic has been marked by both intellectual provocation and enigmatic ambiguity, especially since the onset of the lockdown period and continuing to the present day. This is due to the virus's complex and evolving nature, which has created major challenges in both medical diagnoses (as inputs) and treatment outcomes (as outputs), particularly in the development of vaccines. A global race emerged around this issue, involving key players such as European countries (notably France and Germany, along with Russia), the United States, and China... This interplay between intellectual provocation and enigmatic ambiguity reflects a deeper set of unresolved questions and shifting priorities, which this presentation aims to explore and contextualize.

All natural, human, and social sciences are involved in addressing this virus, and while these disciplines may have come together before to tackle previous viruses or events, this pandemic is unique in bringing them together in an unprecedented way. This characteristic is reflected in the focus of this presentation."

Section One: The Impact of the Pandemic on Life's Scales

The world has increasingly faced deadly diseases and epidemics for various reasons, including chemical and microbial industries, wars, and the resulting harms such as climate change and environmental violations. Among these, several viruses have



emerged over recent decades: SARS-CoV appeared in China in 2002; the avian influenza virus H5N1; the swine influenza virus H1N1, which emerged in Mexico in 2009; the Ebola virus in Guinea in 2013; poliovirus in 2014; the Zika virus in Brazil in 2015; and finally, the newly emerged coronavirus (COVID-19) in China in 2020, which quickly spread across continents worldwide.

These diseases have become a serious threat to the survival of the human race and a major obstacle to social and economic development, particularly in developing countries, which are among the hardest hit.

Scientists and experts have been working to find solutions to eliminate the pandemic—or at least to minimize its impact. However, progress has largely stalled, and despite collaborative efforts under the supervision of the World Health Organization, no definitive solution has been found. As a result, countries have adopted prevention as their primary strategy to mitigate the severity of the outbreak. Yet, preventing and controlling a pandemic of this scale has proven far from easy. It requires the activation of strict local and global lockdown measures to slow the spread of such dangerous epidemics, which threaten humanity as a whole.

On March 11, 2020, the World Health Organization (WHO) officially declared the coronavirus outbreak a global pandemic. The virus was first identified in December 2019 in the city of Wuhan, in central China, and was later formally named COVID-19 at the international level. It is a virus associated with



severe acute respiratory syndrome (SARS). As is known, coronaviruses in general can cause respiratory infections in humans, with symptoms ranging in severity from mild to severe, depending on the individual. The recently discovered coronavirus is the cause of the illness now known as Coronavirus Disease 2019 (COVID-19).

Humanity has never witnessed a deadly pandemic like this one in recorded history. As of now, the number of confirmed cases worldwide has reached 15,746,452, and the figure continues to rise at an alarming rate. This virus has set a terrifying global record, prompting countries around the world to close universities and schools in an effort to prevent or contain its spread. As such, the pandemic has transcended all borders and surpassed the expectations and predictions of scientists and specialists. Its rapid spread has been described as wildfire through dry grass. According to the latest statistics, the number of deaths caused by the pandemic has reached 639,900, and that number continues to climb.

Section Two: Electronic Publishing

The invention of printing represents one of the most significant milestones in human history. Likewise, the discovery and development of papermaking stand among the most crucial means by which humanity has expanded its channels of communication and enriched its cultural legacy in an unprecedented way (Al-Maliki, 2002). For a long time, printed traditional information sources were considered the primary medium for accessing knowledge, and the traditional publishing



industry remained the dominant mode of dissemination throughout much of that era.

After a long period of stability, the publishing industry has recently undergone rapid and significant transformation, marked by a shift from traditional printed materials to electronic information sources (Hassan, 2000). This transformation has been driven by the widespread use of information technology, particularly computers for storing, retrieving, and disseminating information—coupled with the emergence of the Internet, the advancement of telecommunication technologies, and their integration with information networks. These developments led to the rise of the concept of electronic publishing, whereby many traditional printed sources began to appear in digital format as a means of delivering accurate and timely information to users (Hamshari, 2008).

Nawaisa (2011) also highlighted several additional factors that have contributed to the rise of electronic publishing. Chief among them are the overwhelming growth of printed literature, the escalating costs associated with traditional publishing, the emergence of information banks and specialized databases, the widespread adoption of online access for information retrieval, and the development and continuous advancement of electronic library systems. Together, these elements have accelerated the shift toward digital formats, offering more efficient, accessible, and cost-effective ways to manage and disseminate information.

With the advent of technology, the traditional publishing cycle (author, printer, and publisher) has not changed; however,



the methods of storage, retrieval, and dissemination have evolved. It has become easier to use electronic media to publish various types of information resources (books, references, periodicals, etc.), which has encouraged many—especially the academic community—to venture into this field, as it is less costly compared to traditional publishing (Hassan, 2000).

The emergence and development of the concept of electronic publishing has led to the appearance of other concepts and terminologies that have significantly influenced the notion of information resources development in libraries and information centers. These include: electronic information resources, electronic libraries, digital libraries, virtual libraries, online public access catalogs (OPACs), online databases, online retrieval, and other modern concepts and terms. As a result, the strategies of these libraries have shifted from acquisition-based strategies to access-based strategies (Al-Somali, 2012).

Electronic publishing enjoys numerous advantages over print publishing, as noted by Al-Nawaisa (2011), Al-Dabbas (2011), Khalifa (2011), Alyan and Al-Samarrai (2010), and Al-Sarayrah (2008). These advantages include:

- Speed in distribution and production, reduced publishing costs, time efficiency, space saving, ease of information search and retrieval, interactivity, the ability to print only selected parts, the use of multimedia, encouragement of self-publishing, ease of editing and revising published material, environmental sustainability, among other benefits.
- However, despite the previously mentioned advantages of electronic publishing and information availability, it has raised several critical issues, the most important of which are: open



access to information, intellectual property protection, securing electronic content against alteration and forgery, and ethical rights related to the reproduction and citation of information available on the internet. Openheim (2004), Al-Jabri (2005), Bamufleh (2008), and Al-Somali (2012) have all emphasized the need to develop intellectual property laws, copyright regulations, and electronic publishing legislation within the digital environment. In this regard, Al-Hosh (2004) stressed the importance of maintaining a balance between the rights of authors and creators—ensuring they are fairly treated when their works are used online—and, on the other hand, granting users appropriate opportunities to legally access and reasonably use such works.

- We are witnessing changes in society, particularly within the information society, where information has become the most important consumable commodity of our time. It now holds economic value and is considered a crucial factor in development—forming the basis of “knowledge-intensive industries” that utilize information technology at the highest levels.

- The use of electronic publishing offers a unique advantage that cannot be achieved through traditional print media. It allows for the use of hypertext systems, which include hyperlinks that enable users to navigate from a specific word in the text to an audio file explaining the term, to an image related to it, or to a detailed explanation in an extended text. The word or phrase used for this feature typically appears in green or another color different from the main text. A simple mouse click allows the user to access the linked content, going far beyond what printed



documents can offer in terms of interactivity and speed of access to the required information.

Section Three: COVID-19 and the International Library Community (IFLA)

3.1. Libraries Around the World:

Libraries across the globe are facing difficult choices regarding the services they provide and how they operate. These choices range from implementing limited restrictions to full closures. It's important to recognize that governments themselves are adopting different approaches: in some cases, they issue orders for complete shutdowns, while in others, they signal a return to normal life. In some instances, decisions are simply left to library managers.

It is clear that any decision to limit or close library services is a difficult one and must be made after assessing the relative risks. At present, we recognize that all public library systems have been completely closed in the following countries and territories: Albania, Argentina, Armenia, Azerbaijan, Bangladesh, Bolivia, Brazil, Cayman Islands, Colombia, Costa Rica, Cuba, Ghana, Iran, Kenya, Mexico, United Arab Emirates, and the United States Virgin Islands.

Meanwhile, libraries in Åland Islands, Algeria, American Samoa, Andorra, Anguilla, Australia, Austria, Ghana, Iran, Kenya, Mexico, Greece, France... have begun reopening their doors while taking the necessary precautions to protect public health. At the same time, some countries—such as Sweden—did



not close all libraries during this period. In fact, libraries remained open in 90% of Swedish municipalities, and 85% of them even expanded the services they offer.

3.2. Adopting Different Approaches to Work Restrictions

Libraries in different parts of the world face highly varying situations, ranging from continuing to provide full services on a wide scale to complete closure. Based on the experiences gained by libraries and librarians around the world, they are encountering one of the following scenarios:

3.3. Business as Usual (in one form or another):

In many countries, virus infections have been limited, and governments have not taken specific measures. Nevertheless, standard hygiene recommendations are being followed. In this case, libraries are, for example, functioning by:

- ✓ Ensuring access to soap and warm water.
- ✓ Ensuring the availability of hand sanitizer.
- ✓ Keeping surfaces clean, including toys and computers in the library.
- ✓ Encouraging staff and users to take the necessary time to recover when feeling unwell, rather than coming to the library.
- ✓ Creating web pages with useful links to reliable information for users and promoting media literacy to counter misinformation online.

3.4. Working Under Certain Restrictions: Cases increased, and governments began acting to reduce the high number of infections and also to encourage people to adopt additional

hygiene measures and effectively protect public health. In this context, libraries, for example, have taken actions such as:

- ✓ Reevaluating programs such as storytelling sessions or workshops, especially for more vulnerable groups like older users, and making additional efforts to ensure cleanliness, including disinfecting hard surfaces and removing higher-risk items such as toys or virtual reality headsets from circulation.

- ✓ Considering the closure of study areas where visitors are likely to spend extended time in close proximity with others.

- ✓ Preparation for the Potential Imposition of Additional Restrictions: For example, by ensuring that staff are equipped with the skills and tools to work remotely (where possible), and by providing services digitally as much as possible.

3.5. Providing a Minimum Level of Service:

In many countries, stricter measures are still being applied, with tighter restrictions on public gatherings, specific warnings issued for at-risk individuals, and closures in the most affected areas. In these cases, libraries, for example, take actions such as:

- ✓ Completely closing library buildings, while allowing book borrowing or returns only via a table or designated book return drop-offs. Some countries are experimenting drive-through pick-up and return services, while others allow access only to visitors with prior reservations.

- ✓ Applying quarantine policies to returned books.



- ✓ Implementing plans to provide remote services, such as e-lending, distance learning, or remote teaching support.
- ✓ Finalizing procedures and testing full remote work capability for all staff, and allowing those who can already do so to work from home.

3.6. Full Closure

In areas where measures are more stringent, libraries have either been forced to close their doors, or have chosen to do so after assessing the risks to both users and staff. In such cases, libraries have taken actions such as:

- ✓ Ensuring that all staff work from home, unless absolutely necessary, in which case only essential staff report to work, while respecting social distancing rules.
- ✓ Reassigning librarians to other duties in different departments within their municipalities — for example, using their information management skills to support health and social services.
- ✓ Maintaining constant communication with users regarding how to access library resources or services.
- ✓ Organizing online storytelling sessions, when copyright conditions allow.
- ✓ Promoting the use of digital library services and tools, such as investing in more digital content or licenses.
- ✓ Waiving the return of physical borrowed books and increasing the number of e-books that can be loaned to users.
- ✓ Making library buildings available for other purposes, such as the production of personal protective equipment (PPE).



- ✓ Raising awareness of available digital offerings via prominent placement on library websites, and also through posters displayed on library windows.

3.7. Preparing to Reopen Libraries: A number of countries are taking steps to lift restrictions, at least partially, and this may potentially include libraries. Since the timing remains uncertain, and safety must undoubtedly come first, in this context, libraries should:

- ✓ Begin developing plans for a gradual reopening, provided that regulations, permits, library buildings, and resources allow for a safe reopening. Necessary changes should be made to library policies. A risk assessment focusing on library activities and the broader context can be a key part of this planning.

- ✓ Determine the number of people allowed in the library at one time (e.g., through advance booking, ticketed entry, or other methods of counting users), and avoid situations where situations that do not allow for physical distancing. This could include measures such as one-way systems, reducing furniture, closing reading rooms, or continuing to postpone library programs.

- ✓ Conduct regular cleaning operations (including during short-term library closures), with particular attention to surfaces where the virus is likely to persist longer (such as plastic and non-copper metals).

- ✓ Implement “click-and-collect” or drive-through book pickup services to facilitate access to library materials without direct human contact.

- ✓ Establish protocols for how to respond if a person displaying symptoms is identified within the library.



✓ Ensure that staff have the necessary tools and training to remain safe, including considering screening with scanning devices if needed, limiting contact among staff members, enabling remote work for as long as possible, and providing regular updates.

✓ Clearly state when it is not possible to open the library safely or to continue operations, and ensure that decision-makers understand the space and role the library occupies, by adopting a gradual approach to resuming services only when it is confirmed that everyone can remain safe.

✓ Continue to strengthen online services and resources to reduce the number of people needing to visit the library in person.

✓ Clearly communicate any new rules for library users, both online and within the library itself, and provide regular updates on any developments.

✓ Ensure that contingency plans are in place for a potential return to closure in case infection rates surge again.

3.8. Handling Materials

One of the main concerns for many working in the library field has been the risk of infection from contact with materials that may carry the coronavirus. It is clear that we are still in the early stages of understanding many aspects of how the virus spreads. As a result, it is not yet possible to offer specific advice beyond the global recommendations on hand hygiene and avoiding touching the face.

However, new research published in journals such as The New England Journal of Medicine and the Journal of Hospital Infection has addressed the persistence of the virus in the air and on different types of surfaces. The findings suggest that the virus appears to remain viable longer on plastic and steel, and for a shorter time on cardboard or copper — although these tests were conducted under laboratory conditions, and the risk of infection decreases over time.

An online seminar organized by the Institute of Museum and Library Services (IMLS) in the United States confirmed the view that the risk posed by paper is low, whereas services involving frequent physical contact carry a higher risk. The Dutch government also noted that the chance of infection from paper surfaces, such as mail, is low. Similarly, the Austrian Federal Institute for Risk Assessment, as well as guidelines provided to Norwegian libraries, indicated that there is no evidence so far of transmission via surfaces — a position echoed by the Chief Library Advisor in Sweden.

As part of efforts to respond as effectively as possible to the prevailing uncertainty, the Institute of Museum and Library Services (IMLS) in the United States launched the REALM (Reopening Archives, Libraries, and Museums) project, in partnership with OCLC and the Battelle Institute, to continue research into safe handling of physical materials. With the contribution of IFLA, the project evaluates the risks associated with specific materials and services, with the aim of helping libraries make informed decisions as they plan to resume operations and restore services.



The project has now published its first key findings, including a review of available literature, based on a careful examination of research conducted across various fields — both peer-reviewed studies and those not yet peer-reviewed — in search of evidence related to airborne transmission, close-contact infection, the virus's ability to survive on different surfaces, and the effectiveness of various cleaning methods. While this material will be useful for developing strategies, the authors stated that the research is still at an early stage, and that the evidence comes from a wide range of different contexts.

In light of this, it is clear that some libraries have implemented a quarantine period before handling returned books. Other libraries have stated that they do not expect anyone to return books until things return to normal. For example, Public Health England indicated that the risk from cardboard surfaces drops significantly after 24 hours, and after 72 hours for plastic — a view also adopted by the Austrian Library Association.

However, not all libraries imposed quarantine measures. For instance, Danish libraries chose not to, based on the low overall risk of infection in the community and the relatively low risk posed by books, concluding that such measures were not worth the effort.

3.9. Delivering Remote Services

Libraries of all types around the world are making significant efforts to facilitate access to library collections and deliver services remotely. They often invest time and resources



in updating their websites and computer systems to meet user demands. While many libraries already have a strong presence on digital platforms, many others have moved toward this goal to continue serving their communities — for example, the library at the Iraqi University in Iraq. A survey conducted by the Conference of Directors of National Libraries (CDNL) showed that three-quarters of national libraries are offering at least one new digital service.

All types of libraries have been promoting their digital services. For example, the National Library of France organized a virtual exhibition, while the National Library of Spain promotes its digital content that can be used to support education. The National Library of Morocco offers free e-books, and the Aarhus Public Library in Denmark features its digital content prominently on its website. Meanwhile, the Granby Library in Quebec, Canada, highlights content focused on learning new skills.

The New York Public Library runs online book clubs using their own app, SimplyE, similar to the Bibliotheca Alexandrina in Egypt. In Malaysia, as part of preparations for World Book and Copyright Day on April 23, the Read Together campaign encourages people across the country to read more online. Libraries in Johannesburg, South Africa, have intensified their social media activities, including setting regular new time slots for “Ask a Librarian” sessions, for example as part of this planned schedule.

The Kibera and Nakuru public libraries in Kenya — members of the EIFL (Electronic Information for Libraries)



innovation program at the public library — are promoting local language content about COVID-19 through social media networks, in addition to sharing book recommendations. Meanwhile, the Ghana Library Authority, another partner of EIFL and PLIP (Public Library Innovation Program), is also working to improve access to digital content alongside key health information. The Kota Public Library in India has expanded its online services by promoting bibliotherapy (therapy through reading) as a way to support users during the crisis. This initiative received good coverage in the local press.

As for Iraq, the Al-Abbas Holy Shrine Library offers a remote lending service for researchers by providing access to electronic resources. At the same time, health libraries are receiving increased attention for the valuable information they can provide — as is the case with the Health Agency Library in São Paulo, Brazil.

Many public and school libraries are promoting online storytelling sessions, where they are often able to find solutions to copyright issues. In Portugal, for example, a dedicated YouTube channel has been created — the same has been done in São Paulo, Brazil, as well as by the María Stagnero de Munar Library in Uruguay.

Meanwhile, the Chartered Institute of Library and Information Professionals (CILIP) in the United Kingdom launched the National Shelf Service, and cities like Rewood in the United States and Manoosh in Australia have dedicated time for storytelling sessions in minority languages, for example. At

the same time, a librarian from the National Library in Serbia has been reading stories online, gaining national attention and even making headlines in the news.

The Central Library in Osaka Prefecture, Japan, collaborates with the Children's Literature Institute, located in the same building (which works with publishers), to do the same. Similar efforts in Greece have enabled libraries to maintain contact with their users and even manage artistic projects. The National Autonomous University of Mexico's library organized a virtual reading session for World Children's Day.

Significant efforts were also made to improve access to e-books — for example, by increasing the number of e-books that people can borrow at any time (in Denmark), creating a new app with freely available content (in the Netherlands), and reallocating budgets to pay for digital content.

Public libraries have also developed new capacities to communicate with librarians remotely. Danish libraries launched the online reference service "**Ask a Librarian**", and Aarhus offers a service specifically for children. In Sweden, Helsingborg libraries created a website chat service for the first time, as did several libraries in Malaysia. In Johannesburg, South Africa, public libraries are organizing video competitions to encourage young users to share digital skills with their parents and grandparents, while also developing their own digital literacy. The results are shared on their Facebook page.



Similarly, significant efforts are being made in academic libraries to facilitate remote access to library resources — for example, through an **online article request service** at East West University in Bangladesh, and through digital communication initiatives at the University of Agricultural Sciences library in Colombia and at the University of Veracruz in Mexico.

3.10. Issues at Stake:

The International Federation of Library Associations recognizes that the pandemic has raised a number of broad issues and is closely monitoring them. In addition to copyright, there are concerns about the crisis's impact on culture more broadly, as well as on the education and research sectors, privacy, and the protection of democratic standards. We continue to monitor these issues closely and will share information and insights as appropriate.

IFLA also led efforts to draft a letter to the Director General of the World Intellectual Property Organization (WIPO), calling for the introduction of measures to ensure that copyright laws and practices support access. This highlighted the challenges arising from both the current situation and the risk that existing laws create rigidity, making it more difficult to respond effectively. In the case of libraries, this is the situation where non-digital uses are permitted, but digital uses are prohibited, for example. In his response, the Director General emphasized the role that exceptions and limitations can play in ensuring access to resources during times such as a pandemic.



The International Federation of Library Associations also highlighted the difficulties faced by academic libraries in accessing e-books in particular, and examined cases that may warrant investigation into competition issues. IFLA signed the ICOLC Statement on Access to Resources and COVID-19, and issued a set of principles to support library associations in negotiations with rights holders. Through blog posts, the extent to which library values have been affected or potentially endangered was explored, along with how libraries can support freedom of expression.

3.11. Due to COVID-19... Digital Libraries Gain Major Attention and Reach New Heights

During the lockdown imposed by the COVID-19 pandemic, digital libraries received significant attention, especially as a large number of new users and students became familiar with the digital services offered by these libraries. During the pandemic, massive efforts were made to promote digital libraries and their services as visible and active institutions, while traditional libraries faced the challenge of maintaining their services during this emergency situation.

Today, amid this crisis, digital libraries have reached new levels, with most of them offering more free content and organizing dedicated collections so that people can continue reading, learning remotely, and accessing information without interruption.

3.12. Key Features of the Digital Library

With the growing demand for reliable electronic resources, digital libraries have emerged as vital gateways to e-books,



journals, and high-quality educational content. In the "*Statement on Digital Libraries*", UNESCO and the International Federation of Library Associations and Institutions (IFLA) emphasized that the mission of the digital library is to provide direct access to information resources in an organized and reliable manner, thereby linking information technology, education, and culture in the service of modern libraries.

According to Ahmed Ismat, CEO of the Alexandria Media Forum and a consultant in media technology and digital transformation, a digital or digitized library is not only about searching for information, but also about making it accessible to everyone. There are people in many places who have no access to physical libraries or specific types of books and resources. Digital libraries provide this access, which leads to the democratization of knowledge—making knowledge available to the general public, not just to elite groups, and fostering a knowledge-based society.

Ismat added, in an interview with *Annahar Al-Arabi*, that there are two types of digitized libraries:

- Born-digital libraries, which were created digitally from the start and contain digital content such as research, films, or documentaries.
- Digitized libraries, which are traditional paper-based libraries that have begun to be converted into digital formats.

One of the key advantages of digital libraries is that they do not require physical presence and can be accessed from

anywhere at any time. They also offer the benefit of *multi-access*, meaning that millions of users can connect to them simultaneously. Additionally, their storage capacity is virtually unlimited, and access in and out is simple and seamless. Perhaps the most important feature of these libraries is data retrieval: users can search for information using a phrase, keyword, title, name, or specific subject across a vast collection of books and data. This makes the research process richer and more in-depth.

Conclusion:

There is no doubt that the COVID-19 crisis marked a significant turning point, highlighting the many benefits of digital libraries. The pandemic notably accelerated the shift toward digital transformation and pushed the adoption of e-learning and online education platforms. However, according to Ismat, there are currently no expectations that digital libraries will replace traditional ones—at least not in the near future.

Millions of people still prefer to visit physical libraries and engage with books directly. On the other hand, many—especially the new generation, known as Generation Z, who were born into the digital age—are becoming accustomed to digital libraries and prefer reading through electronic devices.

Looking ahead, the use of digital libraries is undoubtedly expected to continue growing significantly. This growth will be driven by immediate needs and global trends such as the widespread use of smartphones and electronic devices, increased ownership of ICT-based reading tools, and the now-established habit of searching for information online.



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