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Digital Transformation: Revitalizing Public Libraries as Inclusive Hubs for National Development

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Digital Transformation: Revitalizing Public Libraries as Inclusive Hubs for National Development.

Abstract

Public libraries play a vital role in providing equitable access to information, resources, and digital skills development to advance socioeconomic goals. However, declining usage and widening digital divides pose adaptability challenges. This paper examines strategies for public libraries to leverage technologies and transform services to remain relevant, inclusive hubs supporting national development priorities. It analyzes the impacts of existing services like public computing and e-books while exploring barriers around funding constraints, infrastructure limitations, staffing shortages, and digital literacy gaps. These inhibit technology adoption, particularly across underserved rural communities.

Recommendations center on policies and partnerships to improve access, combined with investments in infrastructure, resources, and librarian training to modernize capacities. In terms of access, governments should expand e-rate subsidies, broadband connectivity programs and multilingual collection development policies. Libraries can partner with civil society groups and educational institutions on digital literacy initiatives targeting vulnerable groups. Sustainable technology funding models encompass increased budget allocations, public-private partnerships with tech companies, and community-based bonds and levies. Modernizing tools should include accessible e-resources, assistive technologies for disabilities, makerspaces and media production studios. Staff skills development is critical - both building technical expertise through expanded LIS curriculums and continual professional development.

This paper provides a practical roadmap for the digital transformation of public libraries to effectively leverage emerging advances in service of access and inclusion goals. Powered by strategic technology capacity building, public libraries can reclaim their role as indispensable engines empowering citizens educationally, economically and civically - thereby accelerating progress towards national development.

Keywords: Public libraries, Digital transformation, Technology access, Digital literacy, National development

Public libraries have served as vital community hubs providing free and equitable access to information and resources for decades. However, the advent of the digital age has disrupted traditional library services. As more information and services have moved online, public libraries must digitally transform to remain relevant, especially given their critical role in supporting national development goals.

Recent statistics paint a concerning picture of declining library usage, with visits down 30% over the past decade (McGuigan, 2012). Additionally, libraries are still working to bridge digital divides, as nearly 25% of the population lacks home broadband access (Perrin, 2019). As stewards of information access, public libraries have a responsibility to leverage technology to advance their mission rather than be left behind by the digital revolution.

This paper examines strategies for public libraries to undergo digital transformation to provide more accessible and inclusive information services that cultivate knowledge and skills for national growth. With smarter investments in infrastructure, technologies, and staff training, public libraries can effectively meet community needs in the digital age. Revitalizing libraries as innovative hubs for digitally-accessible resources and services will empower citizens educationally, economically, and civically. Doing so will enable libraries to become indispensable partners in building an inclusive national information society and serving development priorities.

The objective of this paper is to examine strategies for public libraries to leverage digital technologies and provide more accessible information resources and services that support national development goals. Specific technologies, partnership models, infrastructure improvements, and service initiatives will be explored to determine pragmatic approaches to digitally transform public libraries. The aim is to revitalize libraries to empower citizens educationally, economically, and civically by improving inclusive access to the modern tools and technologies that enable individual growth and community progress.

The proliferation of digital technologies has profoundly impacted public libraries and transformed how they provide information services. Here are some key impacts:

1. **Internet Access and Public Computing** Internet access: This has become a fundamental service provided by public libraries. It has enabled libraries to expand beyond their physical boundaries, providing patrons with access to a vast array of online resources. Public computing facilities in libraries have also democratized access to digital tools and resources. Internet access enables libraries to offer the limitless resources of the web to the public. Investments in public computing, from desktop stations to laptop lending programs, make technology access more equitable. Providing free public internet access has become a core service for public libraries in the digital age. Library internet access helps bridge the digital divide by making the internet available to those without home broadband access, which still includes around 25% of the population (Perrin, 2019).

This enables access to online education, employment, government services, and more that would otherwise be out of reach.

A study on the impact of public library internet access showed that it increased the probability of gaining employment by 1.4% and increased household income by over \$800 annually (Gould et al., 2021). Public access technology programs in libraries have also been found to boost digital literacy and skills (Bertot et al., 2020). Libraries often provide vital support through digital literacy classes and one-on-one guidance for using the internet.

However, libraries face challenges around infrastructure, bandwidth, and staff skills to effectively maintain free public internet access. Many rural libraries in particular lack sufficient connectivity and speed (Real et al., 2022). But libraries aim to provide this core service, which transforms lives and opportunities for the most vulnerable populations. As colleges, governments, and businesses move online, free public internet access at libraries is crucial for serving communities equitably in the digital age.

2. E-books: The advent of e-books has revolutionized the concept of borrowing books. Libraries now offer digital lending services, allowing patrons to borrow e-books from the comfort of their homes. This has increased accessibility, particularly for those who may find it difficult to visit the library in person. E-books have dramatically changed public library collections and reading practices. Traditionally, library holdings were limited by physical space. But e-books enable libraries to offer vast digital collections that patrons can access remotely at any time (Vasileiou et al., 2012). For example, OverDrive, a leading e-book lending platform for libraries, provides access to over 2 million e-book titles (OverDrive, 2023). The convenience and expanded offerings presented by e-books have led to rapid adoption - e-book circulation at public libraries grew over 17,000% between 2003 and 2015 (Falcone, 2016).

However, the shift to digital has also introduced challenges. Many publishers impose limits on e-book lending due to copyright concerns. Libraries have also struggled with effectively managing digital rights management systems for e-books (Vasileiou et al., 2012). Training staff and patrons on using e-book platforms poses an added barrier. But by leveraging consortium models and advocating for more flexible licensing terms, libraries continue adapting to provide robust e-book collections that serve community needs (Falcone, 2016).

3. Public computing: This in the form of desktop workstations and laptop lending programs has become a vital service for libraries to provide free technology access. A national survey found 61% of libraries report public computers are the only free Internet access in their communities (ALA, 2022). This enables access for patrons without home computers or mobile devices.

During the COVID-19 pandemic when many depended on digital services, libraries expanded public computing services. One study found libraries increased workstations by 53%, boosted WiFi access, and purchased more laptops and hotspots to meet surging needs (Real et al., 2021).

Public libraries also provide printing, scanning, and other services via public computers that support digital literacy and workforce needs.

However, libraries often face challenges around maintaining, updating, and staffing enough public computers to meet demand. Rural and lower-income libraries especially lack technology budgets (ALA, 2022). Creative solutions like community partnerships, grants, and refurbished devices help supplement public technology services (Bertot et al., 2020). Despite constraints, public computing remains a core priority, allowing libraries to fulfill their mission as inclusive hubs promoting digital equity and

4. **Digital Databases/Repositories:** Digital databases and repositories have transformed how libraries manage and provide access to their collections. These technologies enable libraries to preserve and mine their collections online, improving and redefining access for researchers. They also result in more accurate subject search results and citations. Digital repositories facilitate open access to special collections, community histories, and local resources. Digital databases and repositories have vastly expanded the information resources available through public libraries. Online databases provide access to full-text journals, e-books, streaming media, and more that patrons can remotely search and access. This allows libraries to offer far more reference materials than they could physically house. For example, a market survey found U.S. public libraries subscribe to an average of 10 paid databases spanning topics like news, business, health, and education (Rosa & Rushton, 2019).

Digital repositories also enable libraries to showcase and provide access to digitized collections of local artifacts, government documents, community histories, and other specialized materials (Jantz & Wilson, 2008). The Digital Public Library of America aggregates items from over 2,500 libraries, archives, and museums for open access (DPLA, 2023). Such repositories preserve and share local heritage globally. However, curating quality repositories requires resources for digitization and technology management that many libraries lack (Jantz & Wilson, 2008). But the access to expansive materials made possible by digital repositories provides public libraries with exciting opportunities to serve information needs in the digital age.

5. **Other Technologies:** Emerging technologies like blockchain and cloud computing are being recognized for their potential in managing library records. However, their adoption is slow due to challenges such as lack of IT infrastructure and technical support.

These technological advancements have not only improved the way patrons discover content, making it more accessible and relevant to them, but also changed the role of library professionals. Librarians are now challenged to learn new skills to implement these technologies for learning, research, and information for their patrons. This could lead to an increased focus on learning and development within libraries.

The proliferation of digital technologies has led to revolutionary changes in how public libraries provide services and facilitate information access. Traditional physical constraints around materials, space, and operating hours have been lifted through digital capabilities. Internet access enables remote, 24/7 availability of the library's online catalogs and digital resources. E-books allow for limitless expansion of collections unbounded by physical shelving and storage. Public computers provide technology access for patrons without home devices or connectivity. And digital literacy programs empower users with skills to effectively navigate and utilize new tech-enabled services.

Libraries have adapted in-person offerings as well, complementing book browsing with technology training classes, providing tech support guidance for accessing online resources, and equipping physical spaces with tools like makerspaces and media production studios. The service role of librarians has expanded from information retrieval to encompass technology instruction, digital resource orientation, and skills development. In essence, libraries have been transformed from passive repositories of materials to active empowerment centers for community access to digital information and 21st century skills.

Though disruption from rapid technological change presents ongoing challenges, public libraries continue adapting to utilize new advances in service of their mission. By embracing digital transformations, they are able to provide more personalized, interactive, and engaging information services tailored to evolving community needs and expectations in the digital age. The possibilities for access and enrichment through emerging technologies remain boundless.

Challenges and Barriers

There are several challenges and barriers to providing digitally accessible resources in libraries:

1. Budget Constraints

The high cost of e-resources subscription can be a significant barrier. Libraries often operate on tight budgets, and the cost of acquiring, maintaining, and updating digital resources can be prohibitive. Inadequate funding severely limits technology adoption and digital services in Nigerian public libraries. The average annual budget for a state library in Nigeria is only around 3.5 million Naira (\$8,300 USD), allocated primarily for staff salaries rather than facilities, resources, or programs (Osuchukwu et al., 2022). Many libraries lack separate technology budgets and cannot afford sufficient computers, software licenses, or broadband internet capabilities (Baro et al., 2019).

A survey of Nigerian libraries found 72% identified inadequate ICT infrastructure as a major barrier, while 87% said lack of qualified ICT staff hampered technology use (Baro et al., 2014). Attempts to implement e-library projects or computerize catalog systems frequently fail due to

underfunding and inability to maintain technologies (Emiri, 2015). Partnerships and corporate sponsorships provide some relief, but adequate public funding is critical for transformative digital services.

While libraries globally face under-resourcing, the problem is particularly pronounced in Nigeria. Without sufficient budget allocation, Nigerian public libraries struggle to fulfill their mission and bridge digital divides. This underscores the need for greater government and societal prioritization of libraries as equitable community access points to information and technology.

2. Digital Literacy Gaps

Not all library users have the same level of comfort or expertise with digital technologies. This digital literacy gap can make it difficult for some patrons to access and use digital resources effectively. Here is an expanded discussion of the digital divide in Nigeria and how it impacts public libraries:

Nigeria faces a significant digital divide with only around 36% of the population having internet access, predominantly in urban areas (GSMA, 2020). This reflects inequalities in digital literacy and technology adoption across income, education, geographic, and other demographic factors.

Rural communities disproportionately lack digital access and skills due to factors like limited broadband connectivity, lack of electricity infrastructure, and lower income levels (Salman et al., 2017). A survey found only 27% of rural Nigerians used the internet compared to 58% of urban residents (NOIPolls, 2019). Disparities also exist across age, as younger generations tend to have greater digital proficiency than older generations (Emeka & Nyeche, 2016).

These digital divides limit the ability of many Nigerians to access online education, employment, government programs, and other services through public library technology channels. Without sufficient literacy training and inclusive access, under-connected groups remain excluded from the benefits of the digital economy (Rsons & Mutula, 2018). Bridging these divides is an imperative, but challenging goal for under-resourced Nigerian libraries.

3. Lack of Infrastructure/Broadband Access

In some areas, particularly rural or underserved communities, there may be a lack of necessary infrastructure or broadband access. This can limit the ability of libraries to provide digital services and of patrons to access these resources. Inadequate technology infrastructure and broadband connectivity severely constrain Nigerian public libraries. Only about 35% of the libraries have Internet access, with most relying on slow, unreliable connections (Baro et al., 2013). Frequent power outages disrupt connectivity due to lack of power generators or unstable electricity grids, especially in rural areas (Emiri, 2015).

Outdated computer equipment also hampers libraries' ability to provide robust digital services. A survey of university libraries found over 80% were operating computers older than 5 years (Nkanu & Okon, 2010). Lack of IT support staff for maintenance exacerbates problems with aging equipment. Bandwidth costs are prohibitive for many libraries, limiting speed and accessibility of Internet connections (Mutula, 2013). The national backbone infrastructure inadequately serves rural communities' connectivity needs (Salman et al., 2017). Weak technology infrastructure prevents Nigerian libraries from effectively leveraging digital resources.

Sustained investments and policy improvements are imperative to upgrade broadband access and modernize technology capacities of public libraries. This would help libraries fulfill their purpose as inclusive community hubs providing equitable digital access and services.

4. Access Control and Workload

Managing access to digital resources can be complex and time-consuming. Libraries need to ensure that only authorized users can access certain resources, which can add to the workload of library staff. Inadequate staffing severely impacts many Nigerian public libraries, posing challenges around access control and workload. Most libraries are understaffed, with librarian to patron ratios as high as 1:15,000 at some facilities (Opeke et al., 2021). This makes it difficult to monitor and control access to library resources. Materials theft and mutilation are common problems without sufficient staff to observe patrons (Baro et al., 2013).

Heavy workloads on the few available staff also hinders service quality. Most Nigerian libraries have no more than 1-2 professional librarians who manage all services while assisted by clerical staff (Emojorho, 2011). Librarians are overburdened by responsibilities ranging from cataloging to technology support to programs, limiting time for user assistance. Tasks like digitization require teams which most libraries cannot staff (Emiri, 2015).

Though passionate about their roles, librarians' effectiveness is challenged by staff shortages amidst rising enrollment and community demand. For libraries to fulfill access and service goals, greater funding for adequate staff-patron ratios, workload balancing, and role specialization is critical (Opeke et al., 2021). Investing in librarians maximizes libraries' value for communities.

5. Overlapping Coverage

Sometimes, different providers may offer access to the same titles, leading to confusion and inefficiency. The uncoordinated development of public library services in Nigeria has resulted in overlapping coverage and duplication of efforts. Most states have established their own library boards and networks without adequate national coordination (Abdulkarim, 2010). This leads to inefficient concentration of libraries in state capitals while rural areas remain underserved (Opara, 2008). State and federal libraries frequently undertake similar projects on digitization, IT

infrastructure, or collection development without resource sharing (Baro et al., 2013). Duplication also occurs between public, academic, and special libraries within states due to lack of cooperation frameworks (Okoye, 2005). Weak interlibrary loan systems inhibit coordinated collection building.

This overlapping coverage waste scarce resources and fragments development efforts. A national policy framework and cooperative mechanisms are needed to systematically expand access points and services to underserved populations (Opara, 2008). Networking models like regional hubs and mobile libraries may improve coordinated and needs-based provision of library services across states.

6. Technical Challenges

Inadequate technical support and untrained librarians can hinder the implementation and use of digital resources. Additionally, the complexity of virtual libraries can pose challenges.

7. Legal and Policy Issues

Libraries must navigate a complex landscape of legal and policy issues related to digital resources, including copyright laws and accessibility regulations.

Addressing these challenges requires a multifaceted approach, including investing in infrastructure, training staff, educating patrons, and advocating for supportive policies and adequate funding

How Improved Digital Access can support National Development

Modernizing public library technology significantly advances major socioeconomic goals. Equitable access to digital resources and literacy skills enables self-directed lifelong learning that uplifts education outcomes. Digital access to information resources improves the quality of education by enabling distance learning and online learning platforms. This empowers individuals, particularly the youth, with knowledge and skills that are essential for personal and professional development (Sinclair-Palm, 2022). Workforce readiness improves as job seekers utilize libraries for digital skills training, career development, and employment search assistance (IMLS, 2021). Families benefit economically through technology access for needs like e-government, finances, healthcare, education, and entrepreneurship (Bennewitz, 2020). Libraries provide inclusive civic participation by serving as community centers for digital civic engagement (Santiago, 2020). Digitally democratized access to diverse resources preserves and shares local cultures (Chowdhury, 2022). In essence, libraries' role as digital on-ramps offers community-wide socioeconomic mobility across intergenerational populations. Libraries serve as de facto community centers or social services hubs, connecting people in need with resources. They also play a vital role in preserving and promoting cultural heritage. (Horrigan, 2022). Access to information is critical for empowering the public to make decisions, holding governments

accountable, evaluating public officials in implementing and monitoring the Sustainable Development Goals (SDGs), and facilitating effective public participation. Sustained investment in equitable library technology access is thus imperative for furthering national development.

Recommendations

Reviving public libraries as digitally inclusive spaces and information centers to better serve national development needs can be achieved through the following recommendations:

1. **Policies:** Governments should enact policies that promote digital inclusion in public libraries. This includes policies that ensure equitable access to digital resources, protect user privacy and data, and promote digital literacy. Enact a policy on realistic budgetary allocation for library from education budget applicable in federal and state level. Implement national public library technology standards and infrastructure targets to reduce disparities. Pass legislation to increase e-rate subsidies and broadband connectivity for rural/low-income libraries. Develop inclusive collection development policies prioritizing multilingual, accessible, and diverse resources.

2. **Partnerships:** Libraries should form partnerships with tech companies, non-profits, and educational institutions. These partnerships can help libraries access the latest digital tools and resources, and provide training for library staff. Collaborate with schools and community organizations on digital literacy and STEM education initiatives. Partner with telecom companies to provide affordable high-speed broadband to underserved libraries. Work with civil society groups on programs for vulnerable populations like seniors, veterans, persons with disabilities.

3. **Funding Models:** Libraries need sustainable funding models to support their digital initiatives. This could include government funding, grants from foundations, donations from individuals and businesses, and revenue-generating services. Increase library budget allocation from local, state, and federal government sources. Develop public-private partnerships with corporate foundations and tech companies. Use levies, bonds, and ballot measures to fund technology investments sustainable over time.

4. **Training Programs:** Libraries should offer training programs for both staff and patrons. For staff, this could include training on how to use and troubleshoot digital tools. For patrons, libraries could offer classes on digital literacy, coding, and other tech-related topics. Expand library school curriculums to build new librarians' technical expertise. Offer regular staff training workshops on emerging technologies and digital services. Recruit digital navigator volunteers to assist community members with tech skills development.

5. **Technology Tools:** Libraries should invest in the latest technology tools. This includes not only computers and internet access, but also digital content creation tools, virtual reality equipment, and maker spaces. Upgrade public computing resources and Wi-Fi/broadband capabilities. Curate accessible e-resources and digital collections for online access. Implement assistive technologies for patrons with disabilities. Use tech to create engaging and interactive library spaces.

6. **Service Initiatives:** Libraries should launch service initiatives that leverage their digital resources. This could include online tutoring programs, virtual book clubs, and digital storytelling projects. Develop targeted digital literacy programs for underserved and non-connected populations. Offer tech mentorship services and device lending for digital skills building. Digitize archives and local historical resources for wider access. Hosting virtual programming using social media and teleconferencing tools.

By implementing these recommendations, public libraries can become vibrant, digitally inclusive spaces that play a crucial role in national development.

Conclusion

Public libraries are at a crossroads today. While their mission remains providing equitable access to information, declining usage and digital divides pose challenges. However, libraries also have immense potential to leverage technology to re-engage communities and further development goals.

This paper has examined practical strategies for the digital transformation of public libraries. Investments in infrastructure, resources, and staff can help libraries equitably provide the modern tools communities require. Partnerships and innovative funding models can supplement public support. Prioritizing inclusivity and accessibility will enable libraries to reach vulnerable populations.

In summary, public libraries, powered by strategic digital advancements, can build an inclusive national information society where all citizens have access to the resources to learn, create, connect, and thrive. No other institution is as well-positioned to democratize access to technology and build digital skills across socioeconomic strata. Revitalized as digitally-enabled hubs, libraries can empower individuals educationally, economically, and civically. This is vital for cultivating the informed, engaged citizenry necessary for progress.

The challenges facing libraries are surmountable with coordinated efforts. By embracing technology thoughtfully, public libraries can reclaim their role as indispensable engines of opportunity, community, and national development. The future remains bright for these venerable institutions.

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