

LEAP From Pilot to Scale: Embedding Digital Reading within the Kenya National Library Service

Rachel Heavner

Global Insights, Worldreader, San Francisco, USA

Zev Lowe

Global Insights, Worldreader, San Francisco, USA

Joan Mwachi-Amolo

Infrastructure, Worldreader East Africa



Copyright © 2018 by Worldreader. This work is made available under the terms of the Creative Commons Attribution 4.0 International License: <http://creativecommons.org/licenses/by/4.0>

Abstract:

Mobile technologies have become more normalized for data collection, education for displaced communities and interventions at a distance. Yet, questions remain around how to effectively bring these technology interventions from pilot efforts to broad scale adoption. Worldreader is demonstrating operational success in its digital reading programs in Kenya. In 2014, Worldreader, in partnership with the Kenyan National Library Service (knls), launched its digital reading program, called LEAP (Libraries E-reading Activities Partnership) in eight libraries. By December 2017, LEAP had successfully scaled to all 61 public libraries in the country. This paper outlines five key insights for moving from pilot to country-level scale:

- 1. Start slow, start smart*
- 2. Leverage economies of scale*
- 3. Step by step: Implement in phases*
- 4. Manage change: Creating a unified vision of success*
- 5. Implement sustainability from the start.*

These learnings can inform others leveraging technology to improve education around the world and contribute to strengthening an effective, responsible and efficient ecosystem of technology-enriched educational programs.

Keywords: Project scaling, digital books, technology, library innovation

Introduction

We live in a digital world. Internet penetration in Africa is growing exponentially¹, and with it has come a plethora of digital goods and services that characterize the world we live in today. In 2016, the number of mobile money accounts in Sub-Saharan Africa overtook the number of conventional bank accounts in the region². In recognition of this rapidly-changing world, the Kenya National ICT (Information and Communication Technology) Masterplan 2014 - 2017 sought to “provide the integrated infrastructure backbone required to enable cost-effective delivery of ICT products and services to Kenyans.” This focus was echoed in Kenya National Library Services’ (knls) strategic plan for 2012-2017, which put forth the vision of “becoming the hub for information and knowledge for empowerment.”

Digital media can be distributed without incurring costs for warehousing, shipping, and physical distribution. These cost savings are further amplified when compared against books that serve minority language populations³, as paper books are more expensive to produce in small print runs. Despite technology enjoying economies of scale, technology-based interventions have often struggled to scale. In an area that has seen many “flashy, one-off pilots,” as well as hackathons and contests that have “undermined the potential for sustainable and scalable digital solutions,” it is not uncommon to have multiple programs test at the same time without being meaningfully linked (Cheng, 2017).

With the development world recognizing mobile technology as a powerful lever to reach previously-underserved communities, our collective learnings should be leveraged to inform effective and responsible scaling of technology-enabled programs. With this goal in mind, this paper highlights five key insights that led to success in scaling LEAP, a digital reading program implemented throughout Kenya’s public libraries.

LEAP Pilot

In 2014, Worldreader deployed 200 e-readers, each with 225 book titles, to 8 public and community libraries in Kenya (25 devices per library). Worldreader distributed a total of 44,000 books, curated equally from African publishers and US and European publishers. To ensure content was meeting community demands, librarians directly selected a number of these titles themselves.

The primary successes of the program included an almost threefold increase in library visits - from 10,442 to 29,023 patrons per month, 254 library-initiated community events, and 20,000+ patrons reached through e-reader training. 84% of patrons reported reading more. E-reader breakage and loss was low, at 2.5% over the course of the pilot.

In addition, librarians found that the portability of the e-readers made them a natural fit for outreach activities in nearby schools and community centers. An unexpected benefit of the popularity and portability of the devices, these outreach activities increased the profile of the libraries and encouraged people who might not have known about the libraries to come and visit.

¹ See Gyori, 2018.

² See Gupta, 2018 “Going Digital in Africa”

³ See Heavner & Lowe, 2017, *Reading Programs in the Digital Age: The case for print/digital format neutrality*.

For all the successes of the LEAP pilot, it was not without its challenges. Librarians saw the pilot as “extra” work, and it was difficult to find time to manage the project. Amplifying the burden on librarians, the LEAP pilot required completion of monthly monitoring forms, and the use of other monitoring and evaluation (M&E) tools that were separate from knls-wide monitoring. As a result, librarians regarded the pilot as being “off to one side.” Since knls had not built digital reading program management into librarian job descriptions and work plans, there was a lack of accountability, ownership, and rewards, which meant there was little incentive for librarians to embrace digital reading technology.

In addition, the libraries reached in the pilot were quite diverse. Given the wide range of libraries that the pilot reached, it was challenging to come up with a prescriptive list of library activities and other programmatic guidelines that could be applied uniformly, across the board. As a result, both Worldreader and knls decided to allow libraries to come up with their own outreach activities independently, choosing instead to invest in growing the capacity of knls staff; and on better integrating the project into knls’ structures, policies, and systems. The library outreach activities both in the pilot and at scale were incredibly varied based on surrounding community resources and many would not have taken place if Worldreader or knls had been more prescriptive about librarian outreach activities.

Why Scale?

In 2013, when Worldreader was designing the LEAP pilot, Kenya National Library Service (knls) had identified the following concerns regarding technology in libraries in its *2013-2017 Strategic Plan*:

- Obsolescence due to rapidly changing technologies
- Increased demand for automation and virtual access
- Increased shift towards e-commerce and telecommunication technologies
- Increasing need to build, preserve and provide digital content

During this period, knls was only able to expand its collection by one new book per registered member each year⁴. There was therefore quite an appetite within knls for a new way of working, and the LEAP pilot was seen as a potential answer to all four of these concerns. However, in order for the pilot to be successful, knls and Worldreader would have to answer the following questions, which were identified before the pilot was kicked off:

- What is required to deploy and integrate e-readers in libraries?
- Does access to e-readers increase a library’s usage by increasing the number of patrons who visit?
- Do e-readers encourage library patrons to read more?
- What is the cost-effectiveness of using e-readers in libraries?
- What is required to scale this pilot nationwide and beyond?

The final question shows a joint interest in identifying the resources required to scale -- if the LEAP pilot proved to be successful -- if e-readers were successfully deployed and integrated in libraries, if more visitors frequented libraries, if library patrons read more, and if the program proved cost-effective -- then both Worldreader and knls had eyes set on taking advantage of the lower cost and complexity of digital reading at scale. All these conditions

⁴ See Kinya, 2011, *Public Libraries in Kenya: Collection Development*.

for success were met, and as such, the LEAP pilot had the potential to address multiple challenges that knls faced. LEAP was an experiment that was designed for scale, right from the beginning.

Key Insights from Scaling

Jumping quickly from the pilot in eight libraries to scaling through all 61 public libraries in Kenya meant learning continued throughout the scaling process. In hopes of replicating the LEAP project in other library systems, Worldreader was deliberate in designing an adaptable and iterative model and taking time early on to start slow and design for sustainability. The process led to five key insights: Start slow, start smart; leverage economies of scale; implement in phases; manage change through a unified vision of success; and implement sustainability from the start.

Start Slow, Start Smart

Throughout the process of scaling, Worldreader found that designing for the end user and keeping ICT programs relevant is key to success at scale⁵. Indeed, as research has shown, “designing interoperability into systems at the outset, rather than assuming that this can be achieved at some point in the future, may prove far easier in the longer term”. (Huang, Blaschke and Lucas, 2017). It was therefore crucial to take extra time at the planning stage to properly design for the scaling and sustainability of the program. The strength of Worldreader’s partnership with knls, an active local authority, and the time spent early on to negotiate and solidify logistical roles and responsibilities of the two partners laid the foundation for scaling the LEAP project. When asked for the key takeaways from the LEAP project, Richard Atuti, the Director of knls emphasized that, “Partnership is the game changer.” This sentiment ran both ways. Sustainability and full adoption of any technology-enabled reading program relies on the partnership of a local authority who is able to navigate government processes and take responsibility for carrying the program forward through their existing systems.

With a focus on collaboration from day one, Worldreader and knls were able to build a Memorandum of Understanding (MOU) and scope of work that clearly outlined roles focusing on the strengths of each organization and plan for sustainability at the outset. In a reflection of one of the realities of nationwide scaling, negotiations over these terms delayed the project start by six months, but ultimately led to a much stronger partnership and programmatic design. Knls took full responsibility for incorporating the program into its long-term strategic plan, investing in capacity-building and training of its current and future staff and allocating funding to sustain the program after the initial two year project implementation period. Combined with Worldreader’s commitment to the provision of low-cost e-readers loaded with e-books in Kiswahili and English for all 61 libraries and comprehensive capacity building for librarians, the two organizations supported each other’s efforts, and played to their known strengths.

Taking a collaborative approach to local partnership leads to sustainability when it involves building capacity among all levels of management and enhances existing systems, rather than reinventing the wheel. For example, Worldreader and knls were jointly responsible for

⁵ See Oskouipour & Cotrel-Gibbons, 2017, “4 Ways We Overcame ICT4D Pilotitis in Vietnam,” and School to School International, 2017, *E-books 4 Khmer* end of project report for further examples.

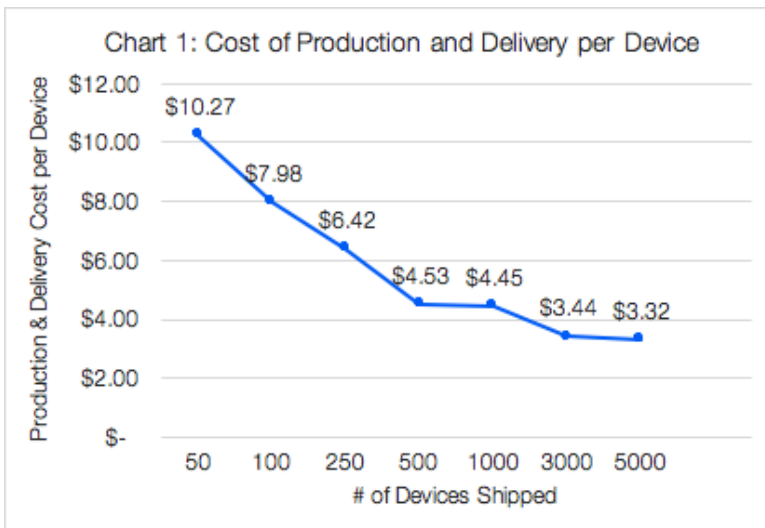
designing and implementing a training model, raising public awareness about the program, and monitoring and evaluation (M&E). Shared M&E responsibilities included defining indicators and targets for the digital reading program and designing an M&E plan that integrated with knls’ existing monitoring and evaluation process to add less strain to the librarians workload and avoid the implementation of additional reporting requirements at the libraries. This approach to M&E unfortunately led to some challenges since Worldreader and knls didn’t collaborate closely enough on some of the specifics of data collection in the early phases, and instead re-focused their M&E efforts part way through the project.

Neglecting to ‘start slow’ with M&E led to some language inconsistencies on integrated M&E questions that became challenging to analyze and missed opportunities to quality check data upon monthly collection in order to provide more immediate feedback and follow up on discrepancies with project managers and librarians. While digital data collection tools would help this process, Worldreader would have been better served by fully engaging with knls’ existing monitoring systems prior to implementation, and making sure knls’ monitoring process was clear and a glossary of terms was provided to Worldreader so that they could better align their monitoring questions.

Leverage Economies of Scale

“An e-reader is a library on its own”
 - Junior Student, knls Meru

One of the biggest advantages to scaling a digital reading program is the argument for cost-savings at scale. For knls this took the form of cost savings on content, as well as the appeal of space saving techniques that come with digital books. According to the World Bank



(2015), the average annualized cost to deliver four paper books in Sub-Saharan Africa per Child is \$4.14.⁶ By comparison, Worldreader calculated the average annualized cost to deliver 100 digital books in Sub-Saharan Africa per Child at \$3.54.⁷ With scale, these price points are even more beneficial. In the original LEAP pilot, the cost per book delivered was \$4.55. This came down to \$1.80 per book delivered when the project was expanded nationally.

When asked for his primary motivations in pursuing a digital reading program, the Director of knls responded that knls embraced the project because there was a trend in the world to go digital in order to avail content faster and more easily and to help with space management. When asked to clarify this point he responded that libraries have a challenge with constrained space and that digital devices are helpful tools for space saving (Worldreader personal communication, February

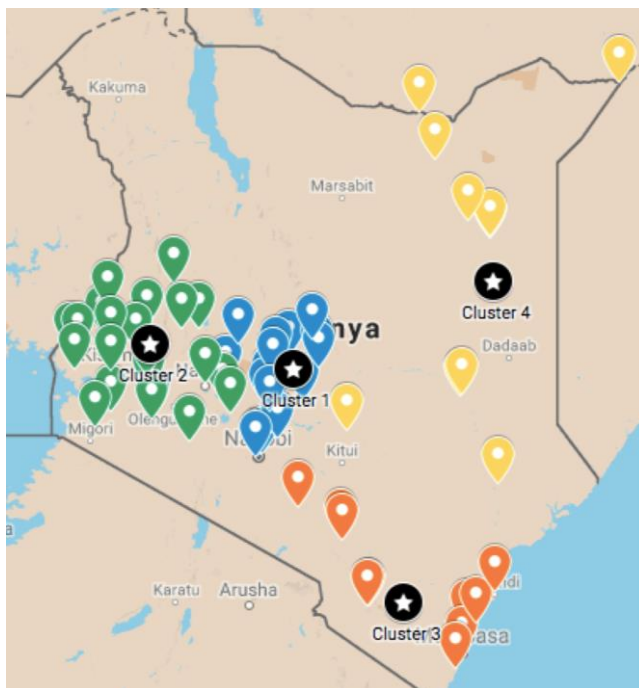
⁶ See Fredriksen, B., Brar, S. & Trucano, M. (2015). *Getting Textbooks to Every Child in Sub-Saharan Africa*.

⁷ Based on all inclusive cost of 10 large-scale Worldreader programs in Sub-Saharan Africa.

1st, 2018). To illustrate this point, knls has been operating since 1969; **through the digital books distributed during LEAP 2.0 knls doubled their collection in one year with the e-books now accounting for 57% of the library collection, yet they fit on one shelf.**

Knls also emphasized their motivations to go digital due to the pricing model for digital books that ultimately allowed them to reallocate funding to other activities. Taking into account the entire cost of the project at scale, including indirect costs, each book delivered cost USD\$1.80. When taking into account the average lifespan of at least five years for each device⁸, this cost goes down to USD\$0.36 per book. Compared to print book prices of roughly \$1 (Fredriksen, Brar and Trucano, 2015) and an estimated average lifespan of 2 years for a paperback library book⁹, digital books can lead to significant cost savings. Furthermore, the cost of each device is reduced when purchased in bulk due to money saved on bulk shipping and reduced production costs as a result of bulk device processing. Based on current delivery and production costs, Chart 1 shows the cost of production and delivery per device decreasing by 68% as the number of devices being processed increases from 50 to 5000.

Step by Step: Implement in Phases



In order to successfully implement this technology-enabled reading program at scale, it was necessary to structure a phased roll-out to leave room for learning and iteration as the project progressed. Knls designated four clusters at the beginning of the project in order to effectively deliver devices, train staff and manage implementation at such a large number of institutions. Since the pilot only comprised eight libraries and each of the first two clusters held at least double that many library sites, it was necessary to stagger the roll-outs to leave room for learning and process improvements for future clusters.

Delivery of devices was thus done in four phases, three to six months apart, to four regional clusters that were selected based on convenience for knls and Worldreader. The selection of the clusters took into proximity as well as regional safety and security of staff. Phasing roll-out allowed Worldreader and knls to better plan for costs associated with implementation, update materials according to feedback from Clusters 1 and 2, and adjust book lists according to the demographics of the clusters and local librarian requests. The digital tools facilitated the process when knls decided to adjust the booklist for Cluster 4 in order to provide content that was more relevant to the library patrons in the Northeast Region. If the books had been acquired in print, this process would have taken much longer and been

⁸ See Worldreader, 2017, *Device Durability Report* retrieved at: <https://www.worldreader.org/learnings>

⁹ Knls, personal communication, 2015; supported by Library Thing discussion on average shelf-life (note a difference in weather and library conditions for these statistics that average 30-50 circulations as a book's lifespan) see <http://www.librarything.com/topic/135024>

more costly to adjust due to additional shipping costs and added delivery time. Instead, with a few clicks of a button, Worldreader was able to assign a different set of books to the Cluster 4 devices that were easily downloaded with a secure Wi-Fi connection.

Worldreader designated one project assistant for each of the first three clusters, and remote support through phone and WhatsApp for Cluster 4 librarians. The project assistants were in constant contact with the cluster librarians to help resolve technical issues and resolve any issues with the e-reader program implementation at their libraries. On average, the project assistants visited Cluster 1 and 2 libraries once per month. Cluster 3 had fewer libraries so they were visited about two times per month.

Worldreader led trainings for librarians from each of the clusters separately at the beginning of the cluster implementation period. Worldreader and knls made adjustments to each formal cluster training based on lessons learned from the prior training and deployment. For example, feedback from the pilot phase on knls involvement in the trainings prompted Worldreader to increase knls' facilitation and leadership throughout the project. Worldreader fully facilitated the Cluster 1 training, but knls took on a greater leadership role for Clusters 2 and 3, leading sessions and working groups. As part of this initiative, Worldreader worked with knls to select a group of librarian e-reader champions to act as future trainer of trainers (ToT). The ToT trainings were part of a sustainability measure in order to embed digital reading program trainings within knls and phase-out Worldreader's training role. Due to the phased roll out and cascaded trainings, knls and Worldreader enlisted a few of the ToT trainers to train the Cluster 3 librarians as early as January of 2017, with a more comprehensive ToT sustainability training held in October 2017, in order to solidify knls' full ownership of the project by 2018. Worldreader and knls chose to adjust trainings for Cluster 4 librarians from one to two days, since this last group would not be receiving continued site visits and support from Worldreader staff and thus had to be better prepared to implement the program on their own. Due to the nature of the training, both knls and Worldreader took active roles in training the Cluster 4 librarians.

Finally, the phased roll out allowed knls to invest in and hire ICT officers who are now designated to fulfill Worldreader's supporting role in the digital reading program. The knls ICT officers are responsible for managing future e-reader trainings and now act as regional contacts for the librarians to address e-reader and ICT technical challenges, and advocate for knls ICT programming.

Manage Change: Creating a unified vision of success

When it comes to technology-enabled programming, there are often concerns that there will be resistance to the technology and its associated process changes. With a scaled roll out of a digital reading intervention, this was certainly a concern and a challenge faced by both knls and Worldreader throughout both the LEAP pilot and scale. In their study, *Beyond pilotitis: taking digital health interventions to the national level in China and Uganda* Huang, Blascke and Lucas (2017) stress, "the importance of recognizing the political, social and historical context within which information systems have to function," suggesting that a focus on the "perceptions, attitudes and needs of stakeholders" is just as vital as emphasis on the technology itself. Engagement should be sought both at an institutional level and from individual stakeholders. The LEAP project emphasized this point. Since the project had the advantage of knls institutional management support at project outset, LEAP placed more emphasis on the support needs of individual librarians. This approach proved ever more

critical when working across districts of varying levels of connectivity and exposure to technology within their communities.

Through the pilot, both organizations learned that there was not enough support given to librarians to encourage their behavior change and support device uptake. In order to address this challenge at scale, knls and Worldreader worked to build out key targets and incorporate digital reading job requirements into the librarian job descriptions. This approach helped to emphasize the role of the librarians in supporting the digital reading program, so that management of the e-readers was squarely structured as a librarian responsibility. Coupled with improved Worldreader staff support through regular check ins from regional project managers, librarians responded much more positively to uptake of the program.

The knls technical team spoke of librarians who tried to avoid responsibility of the e-readers by passing them off as a job for IT staff. Knls addressed this by implementing monthly reporting that included targets for e-reader outreach and borrowing. By meeting these targets the libraries are entitled to further funding to support new programs. This structure has established incentive for the librarians to succeed in their digital reading program and utilize the digital resources at their disposal. It also required the visionary leadership of knls and Worldreader in emphasizing the advantages of the digital reading program for the libraries and the opportunity the devices now provide for outreach and resource mobilization.

Implement sustainability from the start

One of the most crucial parts of this partnership and the successful scale of the digital reading intervention was knls' willingness to invest in the future of the digital reading program. Only with continued investment from knls would there be a sustained future for digital reading within public libraries in Kenya. For LEAP 2.0 this meant supporting the program with existing knls funding streams to build for sustainability at the project planning phase. To this end, knls and Worldreader built sustainability into their MOU by provisioning that knls would invest in training its headquarters and branch library staff with skills to lead e-reader programs and have fully assumed responsibility and cost of sustaining and growing the digital reading program by 2018.

During the pilot project Worldreader covered all costs associated with implementation. Both parties agreed that in order to ensure sustainability from the start of LEAP 2.0, knls would need to cover additional project costs from day one and build these costs into future knls budgets. This included covering customs fees at port for the e-readers, paying for librarian training, and paying for community launch events. By staggering the deployment across four clusters the partners ensured that costs could be spread out and predictable, so that knls could properly build the program into their budget.

As a further measure for sustainability, trainings started early on and were repeated often. By passing on trainings to knls staff and acting in more of a support role by the end of the project, Worldreader built capacity within the knls technical team and through the ToT trainings of champion librarians to further advocate for the digital reading program. Furthermore, trainings encouraged librarians to use the e-reading devices to mobilize resources from their communities and procure additional funding for their libraries. The portability of the devices makes them a good tool for the promotion of library resources and they are known to garner excitement from community stakeholders. Resource mobilization trainings encouraged librarians to approach local government, politicians, and entrepreneurs

to secure further funding for their libraries, and use reporting data to support their library stories.

Finally, knls has fully planned for the sustainability of resources such as the devices and acquisition for future e-books and ICT officers to continue project oversight. In addition to the support of the ICT officers, Worldreader produced a suite of short training videos highlighting three main e-reader modules: device navigation, user experience, and troubleshooting that will complement existing training resources provided to knls. All these indicators point to the promise of project sustainability and effective program implementation at scale.

With a projected breakage rate of roughly 2% year to year, Worldreader anticipates the devices provided to knls to last for a minimum of five years each during which time knls has provisioned for replacement devices in their budget and Worldreader has provided proposed budgeting guidelines for additional content and additional devices. Knls sees digital as a way of keeping the library relevant and motivating librarians to conduct outreach. There is little further motivation needed to sustain the project.

Conclusions and Recommendations

As the development world turns towards the promise of digital through mobile technologies, these five insights can inform future technology-enabled interventions to responsibly and effectively take their programs to scale. While technology has the potential to open many doors, any future interventions will do well to remember that it is not an end in itself. In the case of LEAP 2.0 success at scale lies in the capacity building of local actors to carry forward the project. While digital tools facilitated access to quality books through the course of this project, it was the motivation of local librarians to strengthen their communities through reading outreach, the provision of relevant books to fill a need among library patrons and a hunger for access to information that drove the LEAP pilot to scale.

While implementation is complete, there is still work to be done to carry the project into the future. This will involve responsible management of devices as they age, and a sustainable budget to continue the growth of the knls digital collection. At the end of a project, it is natural to wonder about its long-term viability. With a common vision of success, both knls and Worldreader are optimistic that by working together, their shared investments have built a sustainable public good for the community. Worldreader would be happy to continue partnering with knls in the future; however, after the two organizations collaborated very closely on this project, knls has demonstrated that they are now equipped with the tools they need to drive their digital reading program forward and continue on their path to being a hub of information and knowledge for empowerment. May some of the lessons learned through LEAP help other edtech practitioners end their projects with similar measures of confidence.

Acknowledgments

We would like to thank knls' many librarians and technical team, and particularly the Director, Richard Atuti, for their continued partnership and aid in gathering information for this paper. At Worldreader we would like to thank Joan Mwachi-Amolo for her continued leadership in Kenya, Jeremy Simon, Laura Ross-Perry, Heather O'Neil, Rebecca Leege, Austin Okoth, and Martine James for their contributions to this report.

For more information on the LEAP Pilot and Scale project visit Worldreader's Learnings page at <https://www.worldreader.org/learnings/>

References

- Cheng, A.M. (December 6, 2017). Fewer Pilots, More Scale: Making Digital Development Work. *Huffington Post*. Retrieved from https://www.huffingtonpost.com/ann-mei-chang/fewer-pilots-more-scale-m_b_9345068.html
- Digital Impact Alliance. (May 23, 2016). Fending Off 'Pilotitis' in Global Tech. DIAL Digital Impact Alliance. Retrieved from <https://digitalimpactalliance.org/2732-2/>
- Fredriksen, B. and Brar, S. with Trucano, M. (2015). *Getting Textbooks to Every Child in Sub-Saharan Africa: Strategies for Addressing the High Cost and Low Availability Problem*. Worldbank Group: Washington D.C. Retrieved from <https://openknowledge.worldbank.org/bitstream/handle/10986/21876/9781464805400.pdf>
- Garmer, A. (October, 2014). *Rising to the Challenge: Re-Envisioning Public Libraries*. The Aspen Institute. Retrieved from <http://d3n8a8pro7vhm.cloudfront.net/themes/5660b272ebad645c44000001/attachments/original/1452193779/AspenLibrariesReport.pdf?1452193779>
- Gupta, J. (March 25, 2018) *Gulf News*. Going Digital in Africa. Retrieved from <http://gulfnews.com/business/sectors/banking/going-digital-in-africa-1.2193922>
- Gyori, D. (February 23, 2018). *The Asian Banker*. Africa's ten key advantages in digital transition. Retrieved from <http://www.theasianbanker.com/updates-and-articles/africas-ten-key-advantages-in-digital-transition>
- Heavner, R. & Lowe, Z. (2017). *Reading Programs in the Digital Age: The case for print/digital format neutrality*. Worldreader: San Francisco, USA. Retrieved from https://comms.worldreader.org/wp-content/uploads/2017/01/The-Case-for-Format-Neutrality_Final.pdf?x33111
- Huang, F., Blaschke, S. and Lucas, H. (July 31, 2017). *Beyond pilotitis: taking digital health interventions to the national level in China and Uganda*. Retrieved from: <https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-017-0275-z#Sec3>
- Kinya, Dr. H.D.S. (July, 2011). Public Libraries in Kenya: Collection Development. *International Journal of Humanities and Social Science* 1(9), 275-277. Retrieved from <http://www.ijhssnet.com/journals/Vol. 1 No. 9 Special Issue July 2011/31.pdf>
- Library Thing. (2012). Average shelf-life, or circulations. Web discussion posted to <http://www.librarything.com/topic/135024>
- Oskouipour, P. & Cotrel-Gibbons, L. (September 20, 2017). 4 Ways We Overcame ICT4D Pilotitis in Vietnam. *ICTWorks*. Retrieved from <https://www.ictworks.org/4-ways-we-overcame-ict4d-pilotitis-in-vietnam/#.WyvcTxJKib8>
- School to School International. (November, 2017). *E-books 4 Khmer*. All Children Reading. Retrieved from <https://bit.ly/2yuUiRo>