# Bridging the gap in Sub-Saharan Africa: A holistic look at information poverty and the region's digital divide

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## Abstract

Equitable access to information is one of the most vital principles in the emerging global information economy, and there is perhaps no region of the world that epitomizes the conflict between the information haves and have-nots than Sub-Saharan Africa (SSA). In addition to the more traditional forms of poverty, a new concept, "information poverty," has emerged that better explains the true nature of being a have-not in a world increasingly reliant on information and communication technologies (ICT). This article will take a holistic approach in discussing possible first steps towards evaluating user needs in SAA, exploring the need for information professionals from industrialized nations to take a more active role in international collaboration to help combat information poverty in the developing world. This article will also examine efforts in developing countries to help bridge the digital divide with the industrialized world.
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## 1. Introduction

Equitable access to information is one of the most vital principles in the emerging global information economy. Librarians and other information policy advocates from Western

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nations have long realized that information and communication technologies (ICT) provide new frontiers in the areas of information exchange and intellectual freedom. Many professional organizations in both Europe and the United States have initiated formal policies regarding user access to knowledge, regardless of media type. Due to great strides in ICT development and mass cultural adaptation, technologically advanced nations have worked vigorously to keep pace with changes in information availability.

When it comes to so-called Third World nations, however, the development of a global information economy is more a dream than a reality. American and European participants in the information economy are looking to such ICT innovations as Voice-Over Internet Protocol (VOIP) technologies, compact mobile telecommunications devices, and more efficient World Wide Web connectivity. The Third World, limited by insufficient information infrastructure and government regulation, particularly Sub-Saharan Africa (SSA), can only observe these global changes as spectators.

SSA includes some of the most impoverished nations in the world. There are numerous political, economic, and social problems, in addition to the so-called "digital divide" which increasingly affects these societies. As a result, information poverty in this region of the world is part of a larger pattern of social ailments. Its root causes have been theorized by many to be tied to information illiteracy, a lack of resources, governmental censorship and control, established information policies or lack thereof, and internal information infrastructures that lag behind the industrialized West.[1]

In the last few years, both national and international efforts have been made to find the means to bridge the digital divide between more developed and less developed nations. This article examines current literature on the digital divide and offers a holistic discussion of information poverty in SSA nations. This article also discusses possible first steps towards evaluating user needs in SSA, and explores the need for a more active role by information professionals from industrialized nations in assisting the development of Third World information policies and infrastructure.

## 2. The digital divide and information poverty—an overview

Any discussion of the causes and true implications of the digital divide requires the placement of the concept into some context. No universally accepted definition of this concept exists, but many of the widely accepted definitions share a common origin.

The concept of a divide between the information-rich and information-poor emerged from discussions concerning information policy in the United States, and the need for equality of access to electronic resources. The idea of some sort of "gap" in access to electronic information technologies and products has historically been credited to former Markle Foundation president Lloyd Morrisett, who defined this phenomena as a divide between the information "haves" and the information "have-nots."[2] Dimaggio, Haggittai, Neuman, and Robinson would further define the digital divide as "inequalities in access to the Internet, extent of use, knowledge of search strategies, quality of technical connections and social support, ability to evaluate the quality of information, and diversity of uses," including a number of factors that many digital divide writers have mentioned.[3,4]

Because the discussion began in the United States, conventional thought initially reflected the social, economic, and cultural dynamics in America.[5] Parallel notions based on this Americanized understanding developed in other industrialized nations. The British Educational Communications and Technology Agency (BECTA), for example, defined the digital divide in the broadest sense as "the gap between those individuals and communities who own, access, and effectively use [ICT] and those who do not."[6]

The digital divide, when viewed holistically, is but one component of the larger problem of Information Poverty, which in turn encompasses the lack of access to emerging ICT, information infrastructure in general, skills to manipulate and use information, and basic educational and cultural barriers. While originally a concept applied to gaps between the information rich and poor in developed nations, what was once a "discrepancy" quickly became a matter of global concern. Western nations faced a manageable crisis of equitable access to ICT, while the developing world, especially SSA, faced a more serious crisis, the lack of ICT infrastructure itself. Because of the lack of ICT infrastructure, the developing world witnessed entire nations denied the possibility of economical and social growth already commonplace in the developed nations.

Norris[7] created a tiered model of the digital divide. The first of these tiers defines the international aspect of the divide as the discrepancy of equitable electronic information access between developed and developing nations; the second tier defines the divide in local, socioeconomic terms, referring to the information haves and not-haves within given country or community. The final aspect of the divide Norris refers to is the democratic divide, the gap in accessing and applying the digital venues to engage and participate in the public life (p. 1–29).

In an effort to gain consensus on the dynamics of digital divide in SSA, the world's major industrialized nations addressed the issue with the Okinawa Charter on Global Information Society[8] agreed upon as a result of the Group of Eight (G-8) 2000 Summit. The charter includes elements of democratic thought pertaining to the discussion of the digital divide in the Global Information Economy. The charter also outlines a commitment to the principle of inclusion within the emerging global information society (ibid, Article 3) and suggests that solutions to the digital divide should be linked to the development of human resources capable of meeting the demands of the information age (ibid, Article 11). While initiatives like these tackle the issue of bridging the gap, when it comes to access to technological advancements, there have always been haves and have-nots through out the ages.

Historically speaking, gaps in technology access and use between developed and developing societies have existed for much of recorded human history. The creation and adoption of innovations such as written language gave certain ancient cultures the ability to build empires while others disappeared into obscurity or were conquered and assimilated into a larger, more powerful group.

The digital divide differs from the traditional viewpoint of technology adoption and societal impact in the sense that there are no clear winners but plenty of losers. No single nation or group of nations can be seen as the "conqueror" of the digital divide. For example, while the United States serves as one of the leading markets for new software and Web-based enterprise, only 54 percent of the nation's population had Internet access (U.S. Census Bureau Statistical Abstract, 2002).

In recent years, however, it has become increasingly apparent that this divide is much more complex than a simple gap in technology. Understanding how and why one social group is able to adopt, access, and use ICT requires a greater understanding of a myriad of factors that have led such a group to adopt ICT in the first place. Those with little or no access to established ICT infrastructure, the information is poor, not only in terms of ICT skills development but also in within the context of community norms.

Grabill,[9] in an attempt to provide a basic framework for how divides, access, and concepts such as class exist within the heuristic he calls the "rhetoric of the everyday," observed that

> One of the current problems is that ICTs are too often articulated as information devices. According to this way of thinking, information is why people use computers and networks; information is by itself useful, and information is the solution to a host of economic problems. Access to information, it seems, solves the problem of the digital divide. However, information by itself isn't particularly useful; people need to be taught how to use information (in addition to learning how to assemble and make sense of massive amounts of information) . . . people need to produce content for computer networks to be meaningful spaces. Both issues create and, at the same time, are a function of the digital divide. Productivity and activity are where the divide will increasingly exist.[9]

In an attempt to cast the Divide in a more holistic light, Bertot[1] attempted to bring together several core views in order to reflect the multidimensional nature of the digital divide (for a visual interpretation of Bertot's overview, see Table 1). Produced as an overview to research presented in a symposium issue of *Government Information Quarterly*, Bertot identified five key themes that go beyond the basic definition of a divide as existing only in a world of information "haves" and "have nots."

Table 1
Dimensions of the digital divide

| | |
|---|---|
| Technology: A divide between those with access to technology and those without. | Telecommunications: A dimension that impacts the divide between those with access to more advanced ICT, such as broadband Internet service, and those with access to more basic forms of ICT, such as telephone lines. |
| Economic dimensions: A divide between those with the ability and resource availability to develop a more sophisticated information infrastructure. | Information access: The idea that there exists some kind of divide between those with the tools and societal protections required to access and exchange information and those lacking such rights. |
| Information literacy: A dimension involving the use of a minimal set of skills to use information-seeking tools, to locate appropriate sources and retrieve useful information, to evaluate and access informational relevance, and to synthesize that information into a mechanism capable of solving an information problem. | |
| Adapted from Bertot[1] | |

As understanding of the digital divide grows more complex with every identified dimension, the idea that there can exist a single, unifying definition for the divide becomes more obtuse. In summary, while there is no universal definition of what is meant by "digital divide," most currently accepted definitions share two important underlying principles: (1) there exists some gap in ICT adoption and access between developed nations, cultures, and communities and their lesser developed counterparts; and (2) each nation, culture, and community faces its own internal levels of information poverty.

## 3. Sub-Saharan Africa and information poverty: many sides to the divide

As a continent, Africa represents an estimated 14 percent of the world's total population, but accounts for less than 2 percent of the world's Internet usage (Internet World Stats, 2005). In terms of overall teledensity, A 2002 United Nations Information and Communications Task Force report cites a UNSECO figure estimating the number of radios at over 200 million sets, making the radio the most prominent mass media form available in Africa.

The Digital Divide faced in SSA, as one author describes, is as complex as it is simple, a prime example of its holistic complexities:

> "There are twin divides in broad terms, the global divide between Africa and the industrialized countries and the divide within a region. Evidently African countries need greater investment flows, since huge investments are a prerequisite to building effective communications networks. African countries have recorded improvements in literacy at the primary, secondary, and tertiary levels since independence; however, they are still far behind the rapidly industrializing developing countries. Even then, basic literacy is not enough, digital literacy is required and explicit investment will have to be made by African countries for individuals to become computer literate." [4]

Numerous types of ICT have yet to be fully exploited in the region. Only 1 in 13 households have access to television, while 5.9 million Africans have personal computers. Newer mobile technologies are being adopted at a faster rate than traditional ICT, with an estimated 24 million mobile phone users and only 20 million fixed line users.[10] A subsequent UNICTTF report expressed some concerns over the trend towards increased mobile usage, indicating that the lack of fixed-line subscribers may actually hamper Internet usage in the near future, since much of the world's Internet users still rely on fixed-line ICT technologies.[11] Other sources estimate that more than three-quarters of the Sub-Saharan population have been marginalized by advancements in ICT adoption and usage, divided along the lines of age, gender, rural and urban areas, level of education and unemployment, ignorance, illiteracy, poverty, and other forms of marginalization.[12]

Additionally, SSA countries struggle with their own internal levels of information poverty, tied primarily to gaps in information access and ICT development between the rural and urban populations. In SSA, capital cities serve as the centers of economic, political, educational, and technological activities. Thus, these cities traditionally maintain the highest concentration of ICT development and implementation, including the largest numbers of telephone lines, television sets, and radios.[13] While these cities are still less developed than many American and European cities, the adoption and development of various forms of information infrastructure have allowed urban residents of these areas to adapt to ICT changes more readily than those in rural communities.

Like many of their Western counterparts, rural populations in SSA are limited by the lack of a developed national information infrastructure systems. However, unlike rural American or European communities, teledensity in SSA ranks among the lowest in the world.[14]

Some dial-up Internet Service Providers in the U.S. bill users less than $15 USD per month for Internet access (Netzero.com, Earthlink.net, 2005). In contrast, the average dial-up Internet access cost for twenty hours a month in Africa is $68, in addition to Internet subscription fees.[15] Numerous factors contribute to the higher costs of providing these services in Africa, including the previously discussed issues of low teledensity and limitations to information infrastructure, as well as shortages of trained staff and clientele. Kasusse[12] notes one major hurdle to rural Internet access in SSA—Internet providers tend to follow the paths of good telephone lines, middle-class markets, and money, hence exasperating the rural–urban digital divide in those areas.

The relative political and socioeconomic instability, coupled with various levels of governmental control and often insufficient management of information infrastructure, further complicates information access. Government monopolies of telecommunications systems and broadcasting networks in some Sub-Saharan nations limit the possibility of outside investment by restricting ICT sustainability in the private sector. While many governments have begun the process of complete deregulation, some advocates and agencies favor a more moderate approach that allows for both maintaining some public communications facilities as well as commercial development.[16]

## 4. Bridging the divide in the developing world

Progress in bridging the gap between the information haves and have-nots is still ongoing. There is little research available to provide data in support of claims that progress is being made in the efforts combating information poverty in SSA or other parts of the developing world. The effectiveness of these endeavors, particularly in the areas of identifying user needs, examining information-seeking behavior, and ICT access analysis is ongoing. While quantitative data are available to show increases in ICT usage, teledensity, and mobile access, much work still remains in understanding progress toward bridging the digital divide, particularly from the user's prospective.

Digital technologies and related initiatives to improve these technologies are possibly still too new to the developing world to provide any concrete results. After all, it has only been five years since the Clinton administration and other global leaders called upon the private/public sector, non-profit organizations, and international organizations to work together to bridge the global divide during the G-8 Okinawa Summit of 2000.

In 2001, the G-8 Digital Opportunity Task Force (DOT Force) met in Genoa, Italy, and released its final recommendations for a plan of action regarding ICT development. The DOT Force's report emphasized the creation of national and international cooperative eStrategies to promote competition and online government, development of better, more affordable connectivity and access, enhancement of human capacity development, improving digital and traditional literacy, and knowledge creation and management. The report also included

recommendations about the development of sustainable entrepreneurship, seeking participation of both developed and developing societies, the promotion of telemedicine endeavors, and the development of local content resources.[17]

There have been numerous initiatives launched to help better the situation in developing nations, and there has been progress in determining some level of basic understanding of user needs and behavior. Projects that aimed at providing access to the poorest of societies are becoming more visible through out the Third World. For example, an initiative launched in 1998 in India's Pondicherry union territory involved conducting a survey to identify the information needs of the community as well as gathering data on the amount of financial resources available to sustain the project. Information shops were established, community members were trained in operations and maintenance of PCs and systems. The participation of women was emphasized. As a result, 18 percent of community centers reported usage by women, compared to the less than 3 percent usage by women of public reading rooms, revealing the emphasis that was given to female participation.[18]

The information provided to the population in Pondicherry through this project was community-related and therefore applicable to the day-to-day information needs of the people. Information such as grain prices, directory of hospitals and medical practitioners, and governmental announcements covering the region, was available through the centers. A later assessment of this project concluded that partnerships between local organizations and government agencies proved vital, and the liberalization of the Telecommunication sector on the part of the government would help reduce future service costs.[18]

Another example can be found in SSA, where efforts to meet practical user needs have been initiated in an attempt to improve medical services utilizing existing ICT infrastructure. The shortage of trained medical personnel and facilities, especially in rural Southern Africa, calls for a low-cost technological solution. Mbarika[19] argues that telemedicine, a health care delivery system that allows physicians to examine distant patients using telecommunications technologies, can be a first step to tackle the crisis in health care for SSA. Health care, according to Mbarika, is one of the most fundamental needs for SSA, considering the medical epidemics plaguing the region, such as AIDS and malaria.

To demonstrate the benefits of telemedicine as a practical implementation of ICT, Mbarika uses the success of programs launched in Ethiopia, Mozambique, Ghana, Gambia, Zaire (now the Democratic Republic of the Congo), Tanzania, and Uganda and collaborations with resources such as HealthNet. HealthNet is a computer-based telecommunication system sponsored by SATELLIFE, a U.S.-based charitable organization dedicated to connecting health professionals around the world (HealthNet, 2005).

Perhaps the most visible ICT trend in SSA, and much of the developing world, is the increasing number of telecenters to combat information poverty. The term telecenter is used to describe a variety of methods for providing access to ICT, ranging from cyber cafes to libraries to various service points. Hudson[20] clarifies this definition by adding two criteria; telecenters must provide both access to ICT and be accessible to the public.

The Pondicherry initiative discussed earlier in this article also represents an example of this trend. The overall purpose of Pondicherry project was to take "the benefits of emerging and frontier technologies to the rural poor."[18] This project, in essence, seeks to provide public ICT

access and support to the people of the Indian territory. These kinds of endeavors are also found throughout SSA. The Asante Akim Multipurpose Community Telecenter (AAMCT) purports to be the first solar-powered telecenter in Ghana, offering training and access to the center's 10 computers, overhead projector, and camcorder and digital camera technology to the general public (Patriensa.com).[30] Additionally, UNESCO and UNDP have worked with the British Council and Ethiopian agencies to open community multimedia centers throughout that country to provide similar services and training. The nine telecenters provide access to information via various electronic resources, community networking, and development. The community centers are part of a UNESCO effort to help fight information poverty throughout the world's poorest regions.[21,22,28]

Numerous problems remain, however. Attempts to find solutions to information poverty in the developing world are still tied to more traditional forms of poverty. Proprietary software and its associated costs hinder ICT adoption, as do the real costs associated with hardware and software upgrades and maintenance. The heterogeneous nature of language in the Sub-Saharan region makes standardization difficult. In addition, the new focus on ICT literacy training in the developed world further isolates the 35 percent of Africa's population who are without basic traditional literacy skills.[23]

## 5. A holistic, user-centered approach to Sub-Saharan Africa

With various governmental and international agencies expending funds and resources to combat the effects of information poverty, several problems still remain that cannot be addressed without input from the actual user populations. The involvement of SSA communities and governments, from planning to implementation, is vital to the success of any ICT project in the region.

By conducting both quantitative and qualitative user needs studies, information professionals could help facilitate these projects, in terms of providing complete "snapshots" of SSA user environments. A user-centered, holistic approach such as this would allow ICT development agencies to provide services with greater relevance, targeted training, and would allow for the utilization of sparse resources.

A given population's needs must be the focus of the ICT project. Assessing the needs of the various communities of SSA serves as an important first step, leading to more cost-effective implementation of technology for individual communities. In the developed world, librarians and other information professionals have played a central role in improving ICT accessibility and training for several decades; a substantial amount of professional literature has been dedicated to user needs analysis and the implementation of new services. A majority of public, academic, and other libraries have been providing computer access to their patrons for years, generally for no or limited direct cost to the user, in addition to their traditional services. Since information professionals interact with a variety of people from all backgrounds, librarians, database managers, archivists, information brokers, and other professionals in the field could provide professional policy and practice recommendations on how to best conduct a community-based needs

assessment. Kebede[24] points out that the poor state of ICT development and the skill levels of users in SSA have conditioned them to have different information expectations than users in more developed nations.

Kebede further offers a series of general observations regarding the information needs of SSA users. Users in SSA generally seek out information relevant to daily tasks, and seek out these materials utilizing the existing ICT infrastructure. Any content must be accessible via the slower and often congested networks.[24]

While several of Kebede's observations deal with the technological obstacles related to SSA's information poverty, he also offers several more holistic observations that take into account external factors related to the digital divide. These include the low levels of traditional literacy and ICT skills that dramatically influence the usability and accessibility of ICT in the region. Differences in written and spoken language, economic status, reading comprehension, and other external factors directly affect user needs, just as much as the lack of access to technology.

Oyelaran-Oyeyinka and Lal,[4] in examining cross-national data from SSA, have advocated two major policy implications for the region in regard to ICT development. On a national level, countries will need to change telecommunications and economic policies to promote private and public investment in ICT. Oyelaran-Oyeyinka and Lal also point to the need for government agencies to incorporate ICT, such as PCs, into educational and other institutional systems.

The need for ICT to promote economic development in SSA has been debated in many circles as a viable means of compensating for the lack of basic products and services in these regions. However, examples of successful ICT development projects geared at addressing real world problems in the developing world weaken the argument that ICT is a luxury in SSA.[25] Projects in Bangladesh and Brazil, for instance, have provided new ways of tackling many of the traditional plights in the Third World. In essence, projects and initiatives using ICT to address socioeconomic poverty end up addressing information poverty as an added bonus by providing training and access to ICT.

Understanding how, exactly, users in SSA seek information is another key factor that must be considered in any holistic approach to reducing information poverty. While evaluating user information needs is important, a better understanding of how users in developing countries physically, mentally, and emotionally go through the process of information retrieval is equally important. As the education of users of information systems becomes more important in the global community, the need to better understand the amounts of anxiety, uncertainty, and confusion that goes along with information seeking behavior becomes equally important.[26]

Perhaps the biggest obstacle to a holistic understanding and subsequent combating of information poverty in SSA involves the rapid advancement of ICT itself. ICT development, services, and products have traditionally been innovations from Europe, Asia, and, more importantly, the United States. Thus, the languages, customs, and other cultural dimensions of these societies are reflected in the majority of the world's ICT software, operating systems, and programming.

Kaye and Little[27] argued that three factors hamper any effort to achieve some sort of universal access to ICT. The first factor points out the flawed assumption that there exists some sort of linear chain leading to the globalization of ICT. The second factor addresses the

failure to reconcile the cultural dimensions mentioned above with the fact that all ICT is developed within a cultural context. The third factor focuses on the flaw in assuming that ICT development and access is somehow independent of economic access and development.

Kaye and Little also addressed another element to user needs and behavior, a more subtle but universal concern about the possibility of developing another type of cultural divide as a result of overemphasizing the technological aspect of the digital divide. The authors suggest the possibility of a:

> "... divided society split between the internationally mobile, technologically-supported communities and those communities disadvantaged economically and technologically but culturally rich. The failure to bridge this gap may leave society as a whole weakened through lack of access to variety."

In summary, solutions to the problems of information poverty and the digital divide must be viable solutions. Bridging the gap between the world's information haves and have-nots should not only focus on technological development and innovations, but should also holistically address matters of improving human capital of a global society. Improving SSA's ICT infrastructure should not mean that African communities give up their native arts, literature, and song in exchange for technological advancements.

## 6. Looking towards the future

Information professionals can and must play a key role in further narrowing the digital divide and combating other forms of information poverty in Sub-Saharan Africa. However, this requires more than simply relying on the West to provide technologies, or relying on the further development of ICT outside of the developing world. There must be a push towards integrating SSA into the Information Age, as opposed to simply adapting Western technologies for the developing world's needs. The possibility of Western dominance over information infrastructure and local culture and custom provides numerous opportunities for ICT access and availability, but also raises concerns about the possibility of creating a colonial environment driven by ICT.

By working towards a more international, collaborative environment where problems are addressed holistically and with an understanding of SSA's specialized information needs, the industrialized West can prove a more effective partner in bridging the divide. Efforts to bring ICT to the developing world must focus not merely on providing equipment but on developing the skills and knowledge needed to use, maintain, and further develop those technologies. For information poverty to become a thing of the past, there must be a greater focus on information literacy, in addition to traditional literacy.

To achieve the enormous task of connecting communities across the African continent, local, national, and international efforts must be further coordinated and explored to attack all facets of the digital divide equally and fairly, with the users' needs and the free exchange of knowledge being the ultimate goal. While economic factors and various levels of governmental instability have traditionally served as a hindrance to technology adoption in the region, there are several viable possibilities for providing low-cost ICT access in the short term. Greater resource sharing by the international community, in the form of electronic information resources and ICT products, could provide immediate benefits to places like

SSA. Efforts should include a mixture of public regulation and private sector development, to ensure market diversity and simultaneously protect the welfare and culture of the region.

The further development of open-source resources and services could provide local opportunities for local-language product development. Several projects may one day help create cost-effective alternatives to proprietary software made primarily in the West, helping to eliminate language, pricing, and other barriers to access. For example, OpenOffice.Org, a project dedicated towards the development of office automation software based on Sun Microsystems' Star Office suite, recently initiated the Native Language Confederation (NLC) in an effort to encourage the development of local-language adaptation (http://native-lang. openoffice.org, 2005).

In terms of promoting access to the Internet and other Web-based technologies, several "recycling programs" based in the U.S. and elsewhere are geared at providing computers deemed obsolete by Western ICT standards to the developing world, where even rudimentary dial-up connectivity represents state-of-the-art technology. The advantage of this sort of project is twofold; it provides a cost effective way for Third World countries to acquire ICT for training and use. This also provides the Western World with ways to reuse still-valuable ICT effectively and efficiently.

While short-term possibilities offer immediate relief to some regions of SSA, long-term objectives remain hazy. The region's governments range from dictatorships to fledgling democracies to evolving socialist systems. Because of this, fostering a free and open marketplace of ideas must be at the forefront of any foreign or international investment into African ICT investment. As Norris[29] and others have speculated, the digital divide and other related areas of information poverty are tied to the democratization of technologies in public life. While SSA governments have begun to liberalize government control of ICT, there is no continental, multinational standard for how far a government is to liberalize, nor are there many established "checks-and-balances" to guarantee freedom of access to information or to use ICT.

Other problems in SSA can also be assumed to play a major factor in ICT development and adoption. AIDS and Malaria have already spurned the development of telemedicine in Sub-Saharan Africa, and the trend is likely to continue as efforts to combat medical woes spread, as long as there is funding to support such projects. Similar uses related to daily survival have also developed, such as agriculture and education-related usage, and are likely to continue as well with international support.

## 7. Conclusions

ICT improvements are ongoing and will continue to develop as part of the Global Information Economy. Further research is still needed to determine how SSA user groups interact within this ever-changing environment. A combination of qualitative and quantitative research is needed to provide a user-centered framework for developing and building ICT in the region.

Bridging the digital divide in SSA and the developing world is not merely about sharing information, however. The war against information poverty is a battle for survival, as real and

tangible as the physical plights across the region. Without holistically examining all aspects of the user's life, without in-depth analysis of content, relevance, and public policy concerning ICT, there can be only partial solutions to the problem. By continuing to examine user needs and information-seeking behavior, effective ICT development and growth can be used to improve the quality of life and contribute to a greater well-being across Sub-Saharan Africa and the developing world.

## Acknowledgments

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