

ICT: An Effective Tool in Human Development

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Abstract

The impact of Information and Communication Technology (ICT) has been felt in almost all sectors that are particularly important in human development. It enhances learning and fills a large gap by encouraging distant learning; it is a suitable means of distributing and accessing learning resources which in turn have great learning potential in rural areas where resources such as books and libraries are scarce but ICT infrastructure is present. ICTs offer new possibilities for improved health system, new ways of citizens' empowerment and active participation in their societies at both social and political levels. This article aims at briefing the roles of ICT in significant areas of human development such as health, education and citizen empowerment, taking into consideration the unequally distribution of ICT infrastructure (the digital divide) both across geographic areas and within communities ICT.

Keywords: digital divide, ICT, distant learning, empowerment.

1.0 Introduction

Today, we are living in a world where Information Communication Technology (ICT) is being diffused into almost all spheres of human activity at an unprecedented rate. Alongside this development, is an intense debate on the contribution of this technology towards productivity and growth on the one hand; and human welfare on the other in both developed and developing countries. Internationally, the spread and appropriation of ICTs has been a key dimension of globalization, urging societies to build communications systems, manage them well; develop infrastructure and capacity to use it; and implement good policy and regulation.

The World Economic Forum acknowledges the role of Information and Communications Technologies (ICTs) as a critical enabler to sustainable socio-economic growth and also a vital ingredient for effective regional co-ordination in the creation of larger markets. Efforts to build infrastructure in the developing world, both by governments and development agencies, have predominantly focused on providing computer hardware, satellite connections and fibre-optic cabling, the Forum writes in its report on the Southern African Development Community's e-Readiness. (World Bank, 2002)

The development of ICTs brought about a major shift in the world. The Information Age is a contemporary meta-narrative that guides many studies in all fields. As a theoretical space within which to conduct contemporary research, the Information Age suggests we are moving beyond the Industrial Age into an era where the sharing of knowledge and ideas is the new driver of power and the world economy. Whether one discusses the emergence of global financial systems or growing citizen solidarity networks, one thing remains common and is at the core of the new society, the solicitation and exchange of the world's most valuable resource: information. Defined as the new social morphology of our society, ICT is both a structure and a process that enables the exchange, the redirection, and the reception of information, on a global scale, without restraints of space or time. Distance is rendered irrelevant, allowing direct, simultaneous, decentralized, and expanding relations of collaboration, advocacy, trade, production, and innovation, generating new forms of power constellation and distribution. (Castells, 2000).

As tools that allow immense exchanges of information, ICTs impact many realms. The use of Internet in the quest to promote and defend human rights, international law, and democratic governance, is well documented and is perhaps the strongest asset for civil society struggles around the world today and one of the most positive examples of the space of flows.

Expressed both locally and internationally through ICTs, people's sense of self are increasingly generating a shared sense of experience, beyond the confines of geographic space. Through ICTs, we are experiencing increased exposure to external influences which have deep impacts on culture and identity (Greig, 2002).

We can now experience 'timeless time' -the capacity to function in real-time across the world without delay and at our convenience, with blurred distinction between physical and digital experiences (Castells, 2000). The Information Age also affects us through its media and images, which alter our lives, communities, nations and states, and have tremendous impacts on our identities and our imagination (Appadurai, 1996). Cultural flows are travelling in all directions, to and from both developed and developing countries. Because of the digital divide, the use and benefits of ICTs are a reality and a strategy that still remain out of the reach of many people in the world (Shields, 2003), but we can imagine that few are truly sheltered from the impacts of ICTs. The communications that occur through these channels do spread beyond their initial medium through other means and therefore tend to reach much wider audiences. The contents of online communications have the ability of travelling between the physical and virtual worlds, and back again, both in developed and developing countries. (Lim, 2003)

This article identifies the roles of ICTs in human developments. Section 2.0 presents ICT, human development and the digital divide. The remaining part of this article will be arranged as follows section 3.0 highlights the ICT empowerment and participation, section 4.0 describes the role in health, section 5.0 describes ICT in education and section 6.0 gives the conclusion and future works.

2.0 Ict, Human Development and the Digital Divide

Two of the most powerful forces in the world today are the spread of Information and communication technologies (ICT) and the global effort to achieve more widespread social and economic development according to Digital Opportunity Initiative (DOI). ICT could bring broad and in-depth information to those who have been hitherto denied such knowledge and thus opportunities for social and economic mobility. It could open up new possibilities for more transparent and inclusive public administration/governance everywhere by opening up direct channels to the arenas of decision making, and by engendering a proliferation of public spheres and stronger civil-society networks brought together by the "death of distance". It could become the engine of redistribution of knowledge and expertise in the areas of education and public health. It could pave the way for an inclusive economic sphere by lowering entry barriers for e-commerce and provide two-way flow of good knowledge and ideas to any and all.

Historically, a lack of access to ICT was defined as a 'digital divide', a separation of society, based upon who has or not effective access to digital technology. Studies of the digital divide keep us aware that access and use of ICTs are unequally distributed both across geographic areas and within communities. The digital divide is the disparity that exists in access to ICTs between countries or regions, communities, ethnicities, the sexes, or age groups. It can manifest itself internationally and within communities and is shaped by the economic, political, and sociological context in which it occurs (Guillén and Suárez, 2005). The digital divide is especially relevant to those who value and advocate the fundamental role of ICTs today. When considering the impact of ICTs on human development, one need to be very cognizant with the disparities and inequalities on access and use that exist between groups and amongst countries because these have serious implications on human development. ICTs entail a set of capabilities that can be harnessed and fostered to further human development through access to information and increased potentials for communication. The basic purpose of development is to enlarge people's choices, which also includes access to information that leads to knowledge (Haq, 1995).

The link between access to information and development is embedded in the fact that the first step in overcoming challenges in human life consists of evaluating the predicament and identifying the alternatives that would make life better (Drèze and Sen, 1989). The knowledge of those alternatives is central to the outcome of such a reflection. Knowledge can therefore be liberating and as such it has the potential of changing traditional understandings and ways of doing things (Hill, 2007). ICTs and access to the wealth of knowledge available through the Internet can be powerful sources of such information and in this sense; such information can be highly beneficial and influential for human development. The application of ICT technologies requires human capabilities to handle such technologies (Lee, 2001).

3.0 Ict, Empowerment and Participation

Empowerment can be defined as a process of enhancing an individual's or group's capacity to make effective choices and translate these choices into desired actions and outcomes. Together with participation, which entails having the opportunity to be involved in decision making processes, empowerment is an important dimension of human development.

Access to ICTs can have tremendous effects on peoples' sense of empowerment and ability to be active participants in their societies at both social and political levels. ICTs enhance the empowerment of civil society by increasing their capacity to work as organized networks both within and beyond borders. For instance, the Internet can give a rise to political activism through online networks that can compliment physical networks. ICTs have positive and negative implications on the choices and freedoms available to users based on individual, cultural, social and political realities (such as gender, ethnicity, age, income and liberty). Overcoming these barriers, ICTs can fully enhance civil society's ability to promote change by the creation of communication channels that brings about collaboration on common goals. In a sense, they can be significant amplifiers of voices for change.

ICTs are most effective when they are used as means of engagement and enhancers of participation, which are indispensable for human development. The availability of useful content online gives the government opportunity to positively influence the adoption of ICTs by using it actively themselves. ICTs can help improve empowerment and participation in policy debates by creating linkages to government processes to maintain government transparency in turn developing of the citizens and promoting the use of ICT.

4.0 Ict and Health

The development of man must start from a common ground which can be disease and illnesses. From the clinical understanding of illness, its successful diagnosis or the practice of medicine itself, technology has become omnipresent in the field. In the practice of development, the intersection of ICTs and health is commonly called e-health. It is essentially the use of ICTs in medicine for knowledge management and service delivery, a combination which can improve the delivery of medical services and can by consequence improve health outcomes. The World Health Organization (WHO, 2007) determined that there are five essential components to e-health which are: (1) Structural enhancement in the delivery of health services, (2) Engagement with stakeholders and the private sector in improving the availability and appropriateness of technologies, (3) Learning how to use the technological tools, (4) Creation of standardized norms and practices and (5) Evaluation and monitoring of the application and impact of ICTs to health.

E-health is essentially a collaborative model that functions as a network of experts and resources that are able to be mobilized at a distance and beyond borders. The use of ICTs in medicine has been common in developed countries for several decades now. The impact of ICTs to the practice of medicine and the management of health services cannot be overstated. Although many would point out obvious obstacles to such systems in developing countries, such as the lack of standardized street addresses, the creation of digital records, databases for tracking the spread of disease, online resources on treatment and diagnosis of illness, management tools, support for clinical care, publishing of research findings and alerts, collaborative approaches to dealing with pandemics, and recent advances in telemedicine make ICTs an essential part of the practice of medicine today in all corners of the world. Surveillance and information gathering systems that allow the recording and analysis of data on spreadable diseases is an example of ICTs in this field and is essential in managing the safety of populations.

Accessibility of research findings and publications, especially access to medical journals, is an important dimension of the role of ICTs in healthcare. There is already a large body of medical knowledge that exists in the world and is accessible on the World Wide Web through electronic subscriptions and medical associations. Extending access to these resources can become an effective dimension of aid in the development of medical practice in developing countries. With the recent advent of the Internet, techniques and information that was once the domain of national and even local networks of health practitioners now have the potential to be shared across much larger geographies.

The key is the establishment of shared standards that allow for the posting and sharing of medical information by multiple users in diverse contexts. Once these are put in place and agreed upon by stakeholders, the potential of e-health can greatly impact the practice of medicine, especially in remote areas. E-health systems exist in various degrees of complexity and address myriad needs and objectives.

Many are already familiar with health help lines, where medical advice is readily available only phone calls away. More complex systems, such as the Heartbeat Jordan programme and an equivalent initiative in Ethiopia, allow medical experts to give advice to doctors in remote areas where either no specialist is present or travel by the patient to visit a specialist is impossible. What is inevitably at play in the use of ICTs for health is essentially the creation of shared knowledge management systems that are accompanied by infrastructure and access to equipment. Essential to their success is also the need for stakeholder participation in the design and implementation of development solutions. Consensus has been established that this is true of all ICT driven initiatives, in all fields of intervention.

Despite the great potential of e-health, many countries, especially in the developing world, are unable to derive benefit from it because they lack the capacity systematically to evaluate developments in ICT and make informed decisions about potential applications, country readiness for their adoption and adaptation to country-specific needs, circumstances and resources.

This observation also applies to the design of electronic health systems. Research on the development of electronic health information systems in India illustrates the need to consider the expected results of creating new systems. It is not enough to define the form that data must have when it is entered into a system; stakeholders need to be clear on the desired outcomes of electronic health systems and the means to make the data actionable so that the richness of information that is accumulated can be used by health practitioners in the field. Considering the importance of access, sharing and distribution of information in healthcare and the practice of medicine, such obstacles as those noted above desperately need to be overcome in the developing world. This is necessary based on the idea that the intersection of ICT into health may be one of the greatest means to positively enhance development.

The important element to this success is that the use of ICTs always be combined to broader efforts at reform of health care delivery and strategies to increase outcomes in this dimension of human development. Information can save lives and ICTs are designed specifically to facilitate the sharing and retrieval of knowledge that in the case of health and medicine can mean life or death.

5.0 Ict and Education

The benefits of online information are a source of great optimism and offer immense potentials for ICTs to fill a large learning resource gap in the developing world. This is a primary reason for many in the field of education to advocate that the biggest role of ICTs in education is their use as means to enhance learning. Interestingly, the creation of new learning materials coupled with a push for increased technology in the classroom is not new.

As far back as the 1920s, motion pictures were seen as a major improvement to pedagogical materials in the United States. In the 1950s, “teaching machines” were imagined that would make learning dramatically more efficient and allow the emergence of an education system that would increasingly be home-based. Such devices are available through the combination of home computers, online courses and distance education which allows students’ who have access to such technologies to be enrolled in school programs that are perhaps on the other side of the globe and otherwise unavailable to them in their community or even in their country. No one would argue against the potential added benefits that distance education can bring to the learning opportunities of people around the world.

It is generally believed that ICTs can empower teachers and learners, promote change and foster the development of the 21st century skills, but data to support these beliefs are still limited. On the other hand, ICTs are also believed to be able to contribute to the enhancement of learning in the world since these tools can play a role in reforming education systems, increasing access to pedagogical resources, improving the management of education and enhancing pedagogical techniques.

ICTs are seen as well suited means to distribute and access learning resources which in turn have great potential for impact in rural areas where resources such as books and libraries are scarce and ICT infrastructure is present. ICT can be a catalyst by providing tools which teachers use to improve teaching and by giving learners access to electronic media that make concepts clearer and more accessible. A large segment of the world’s population does not make use of ICTs in their day to day life, though we can hardly say the same thing of the impacts of ICTs to people’s lives worldwide. The ubiquitous impact of ICTs can be demonstrated through the interconnected financial markets of the world and the trade of goods across all continents.

Information and purchases that exist within global markets powered by ICTs can furthermore impact supply and demand of products on such large scales that shifting prices, such as that of food staples, can be felt by people in the least wired villages of the developing world. ICTs and their networks have become the channels of power and financial resources of the world and marginalization from these networks is perhaps the most damaging form of exclusion for any individual or community today. Connecting people to these processes and opportunities can turn ICTs into powerful enhancers of capabilities for human development. Applied improperly, they can also deepen inequality. The difference between the two is up to us, governments, the private sector and all development stakeholders. Whether the ICT-potential will be successfully exploited in support of human development depends much more on the institutional organization of the technology than on its technical features. National ICT strategies are essential in meeting these challenges. Governments must regulate investments and policies applied to telecommunication service providers through collaboration between the private and public sectors, since each country's resources, capabilities, and development priorities differ. National ICT strategies need to be tailored to specific technological strengths and social and economic development priorities. National strategies should also promote collaboration and involvement of stakeholders and they should contain clear development objectives and targets. Participation should be at the centre of the process. Such an approach increases the likelihood that development outcomes will be sustainable over time since there is a sense of local ownership of both the process and the objectives of development.

From a technical perspective, the deployment of ICTs and their infrastructure emphasized the importance of being able to answer a set of questions that seek to map the terrain and the resources needed to meet development objectives. The environment in which these technologies will be used, the required distance of transmission, the level of security that must be guaranteed, the potential future needs and requirements of the system, and the regulations that are in place all determine the options available in any given context and are all important questions whose answers will have fundamental impacts on the potential level of access and diffusion of ICTs. These challenges get increasingly difficult in many rural areas of developing countries that are also struggling with low literacy rates, lack of basic rights, gender imbalances, and severe financial and resource restrictions.

6.0 Conclusion

There is an increasing realization of the potential that ICT offers for human development, despite the international digital divide. In the future, newer, as-of-yet unknown varieties of ICTs may come along and offer currently inconceivable possibilities for the developing world. In turn, successive generations of these technologies may carry with them the ability to bridge the existing digital, development divide.

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