

**Utilizing Information and Communication Technologies for
Development: The Social Dimensions**

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Abstract

Literature on information and communication technologies (ICTs) is filled with rising optimism about the contribution of these technologies to economic and social development and their potential to transform developing countries into “modern” and knowledge-based societies. Very little, however, is known to date about the veracity of these claims, much less about the long-term impact that ICTs may have on a country’s social and cultural systems.

While not refuting the developmental impact of ICTs, this paper argues that it is unlikely that quantum leap reversals of marginalization and poverty will result from technology transfer to the developing world. If nothing else, the experiences show that the notion of leapfrogging stages of development because of application of new technologies is dangerously naive and unrealistic. The paper cautions that developing country governments and international agencies should undertake a more rigorous analysis of the social and cultural dimensions of ICTs in order to be able to design appropriate policies and programs which will enable countries harness ICTs for development in their own context. It concludes that the best long-term development investment that can be made using ICTs is to apply them in the training and education of the new generation, rather than to transform these technologies into short-term ends in themselves. To achieve this, there is a need to move towards strategic and better-integrated national information, communication, and education policies.

A promise for a better world?

The advent of new information and communication technologies (ICTs) is contributing to the rapid transformation of the world into a “global market place”. These technologies, although mostly a Western phenomena, are rapidly penetrating even the most remote countries in the South. Ranging from satellite dishes, to fibre optics, micro electronics, computers, telephones, e-mail, internet and the like, ICTs are revolutionizing the way in which societies interact, conduct their businesses, compete in the international market, and set their national economic and human development agendas. A wave of information travelling through the “information superhighway” (largely originated and packaged in the West), and vast amounts of hard technologies are literally invading developing country markets. These forces are ushering societies into an information era in which knowledge and its access are commodities as important as land, capital and labour.

In the current information age, the capacity of a society to effectively position itself as a consumer and producer of knowledge is crucial to its social and economic development. Today, the co-relation between knowledge and development appears to be well

established. Increasingly frequently, social, economic, and political progress are linked with the ability of countries to make informed decisions and knowledge-based choices (United Nations, 1992, Chapter 40). The potential contribution of information and communication technologies in this regard is not questionable. ICTs are increasingly playing a crucial role in most societies' capacities to produce, access, adapt, and apply information, and thus offer enormous opportunities for facilitating the transfer and acquisition of knowledge. They present -- at least theoretically -- a promising potential to lead developing countries into the "highways" of development, although, as discussed later on in this article, the outcome depends greatly upon the larger socio-cultural and political environment within which they are introduced and applied.

Given the developmental potential of ICTs, there is a growing trend among industrialized countries, governments, large transnational corporations, donor agencies and international organizations to see these technologies as a panacea to underdevelopment. In fact, the unbridled advancement of ICTs has further stimulated the hopes and expectations underlying their use and contribution and has exerted additional pressures to introduce them quickly. The urgency to "catch up" with the rapidly evolving technologies has, in many instances; overshadow the need to sufficiently assess the risks they pose to sustainable social and human development. This, and the simplistic assumptions that they result in social and economic development and thereby create a "better world" for humanity, has raised a lot of concern and scepticism in recent years.

Despite the potential role and contribution of ICTs in development, there is thus a growing voice in the development field raising serious concerns about the socio-cultural dimension of their application and use (Johnson, 1996; Nostbakken and Akhtar, 1995; Johnston and Melcher, 1994). The rapid expansion of ICTs as means for accelerating development has prompted questions about their unexpected impact in terms of the social capacity to process the growing volume of information they transmit, their implication on employment, and their impact on consumption (Shenk, 1997). Issues such as: who benefits and loses from the introduction of these technologies? How can ICTs be made useful and meaningful to the developing countries' poor majority who are struggling to meet their basic needs; what are the social and cultural opportunities and risks they present? And how can developing countries meaningfully adopt these technologies while lessening their undesirable social and cultural consequences? are some of the questions that emerge when looking at the potential development impacts of ICTs. These issues are pertinent in assessing the real contribution of ICTs to sustainable human development, and therefore merit a close examination.

Prevailing Perceptions

Much of the on going discussion on the development potential of ICTs tends to focus on the introduction of these technologies where they do not exist or on bridging the "information gap" between the North and the South (Kenney, 1995; Moyo, 1996). This is stimulated by the perception that ICTs open new opportunities for poor countries to advance rapidly to the modernization levels of the industrial societies. Those who subscribe to this mainstream perception tend to look at these technologies as ends in

themselves for bridging the development gap. Not surprisingly, they put emphasis on the need to build basic infrastructure in the form of reliable telephone systems, satellite and microwave channels, fibre optic lines, or on the introduction of soft and hardware as a way to address the development blockages and reverse the trend of marginalization (Shields and Servaes, 1989).

The perception of ICTs as fundamental development tools of the 21st Century rests on several assumptions. At the macro level, it assumes that the introduction and use of ICTs will improve the efficiency of developing countries' industrial infrastructure; enhance their overall economic performance; and strengthen their competitive capacities in the global market (Braga, 1996; Kenney, 1995). At the human development front, it assumes that ICTs will contribute to improvements in the provision of basic social services, help to disseminate valuable information on production and conservation; improve the efficiency of governments; and enhance the provision of education and health (World Bank, 1996). In other words, ICTs are promoted as windows through which greater access to outside expertise and almost unlimited access to a wealth of knowledge and information -- which otherwise will remain inaccessible -- will be obtained. Some go even further to argue that the introduction of ICTs will contribute towards strengthening democracy; increasing social participation; and removing barriers to modernization, making populations fuller agents in their development and members of the "global village" (Hadden, 1996).

There is a growing voice, albeit very small, in the current discourse on ICTs, calling the attention away from the hasty introduction of these technologies and suggesting the need to examine first and foremost the socio-economic and cultural dimensions as well as the enabling local environments that facilitate or mitigate against their successful application and use. Those who share this view contend that the most pressing development is not the introduction of these technologies from the point of view of their infrastructure and their dissemination, but rather the access, control, content, and equity factors that arise from their application and use in a given social setting (Akhtar, 1995; Nostbakken and Akhtar, 1995). On this basis, they argue that increasing telephone lines or the number of Internet providers or equipping schools and local communities with computers and modems do not necessarily address the more fundamental questions. These relate to equitable access to the technologies; relevance of the information provided; and inequalities in the distribution of a society's wealth, which are likely to affect the distribution of information. Herein lies the point of departure for this paper.

There is little doubt that applying ICTs as a means to improve social service provision (such as health care and education), to promote civil society awareness, to facilitate democratic participation or to assist in the management of resources at the micro level opens wide development opportunities. Some micro experiences have already proven this. ICTs have the potential to make available applied knowledge and information that could improve the delivery of services and the quality of life. They can also provide access to new knowledge, upgrade skills for employment, and improve the quality of essential community services to satisfy basic human needs. However, even if this occurs at the micro level and under a given set of circumstances, it is unlikely that at the macro level these types of effects will result from injections of software or hardware or from the

introduction of ICTs into development alone. Like any other good with a market value, the transaction of knowledge and information are subject to a variety of factors that determine accessibility of the information and the associated technology, quality and relevance of content, and equity in the benefits obtained from them (Lipsey, 1995). These factors will significantly affect the expectations and long-term development benefits associated with these technologies.

The Issue of Access

The potential impact of ICTs rests on the factors facilitating or impeding their accessibility and use. Accordingly, a pertinent question to ask in this regard is who is likely to benefit from the introduction of these technologies?

Studies in the industrialized world show that access to Internet and to other computer-based technologies is open only to a small fraction of the population. In Canada for example, only 7.4 per cent of households have Internet connection (The Citizen, 27 October 1996). This phenomenon is not so much a function of availability of the technologies in the market but of income and education variables. Studies conducted in the U.S.A and in Canada show that Internet users tend to have higher education and above average income (The Globe and Mail, 24 October 1996; The Citizen, 27 October 1996). The situation is even more dramatic in developing countries where the income gap is exorbitant; where literacy rates are remarkably lower; and where the users of telecommunication technologies are likely to belong to the "modern elite". A study conducted by the University of Lima in Peru, shows that the average Internet user is male, less than twenty-five years old, well educated, and resides in the high-income district of Lima (Belejack, 1996).

These trends indicate that issues surrounding access to ICTs are by and large a function of the broader equity and wealth distribution practices that determine the state of social exclusion within a given social formation (Rodgers et al., 1995). Under these conditions, ICTs risk benefiting only a fraction of the population in the higher income strata, with higher levels of education, and with attitudes that favour modern societal options over traditional practices. If the macro elements that create social inequalities are not taken into consideration in the introduction and use of ICTs as tools for development, new gaps between the haves and the have not of information are likely to emerge within societies.

Making ICTs available is not by itself a reliable developmental approach, however noble its intentions may be. This is particularly the case in countries where income, education, and the benefits of infrastructure services are highly concentrated at the top of an often-urban social pyramid. If the villages which house the poor are currently excluded from the benefits of knowledge and information, it is not only because they are removed from modern urban centres where progress takes place nor simply because they lack the tools to be connected to the modern world of information. The issue is by far more profound. The fact that the "global village" is not global for the majority of the world's poor is not simply because technologies are not available to them. With or without these technologies, the poor are likely to remain marginal to the benefits of society if they are excluded from the benefits of development overall. A point in case is the widespread existence of television

in the shanty towns of cities like Mexico City, Bangkok or Rio de Janeiro, where the inhabitants are otherwise living in abject poverty.

Thus, issues determining access to the ICTs and to their benefits need to be examined carefully if these technologies are to be meaningful to the poor and the marginalized -- as popular claim contends -- and if making the world's poor part of the "global village" is to become a reality. Access, as noted above, is more than having a TV or a computer at home, in rural community centres, or in schools where teachers are poorly trained and underpaid, and where students lack basic books. The issue has to be viewed within the broader socio-economic context.

The Issue of Cost and Wealth Distribution

Cost raises similar concerns. For the majority of the poor in developing countries living with less than \$30 US per month, affording the most basic of these technologies is a distant dream.¹ Studies have shown that the cost of telephone, computers and fax is between five to ten times higher in developing countries than in the industrial world (World Bank, 1996). This, without counting the service provision costs that allows many of these technologies to work.

A similar case can be made of developing country governments. In many countries in the South, after allocating monies for basic education and health care alone and for servicing their debt --which in Sub-Saharan Africa, for example, amounted to 210 billion in 1994 (George, 1996; 1992) -- little is left to invest in ICTs or in other technologies for that matter.² This presents a challenge for governments requiring hard decisions in allocating scarce financial resources between areas like health, education and other social services and ICTs. There are several concerns associated with investing in these new technologies. Among them is the possibility that doing so will not only draw essential capital away from the satisfaction of basic needs, but such investments can contribute to increase the external debt or transform developing countries into new profitable markets for large transnational corporations at the service of local elites, creating thus new forms of dependency (George and Sabelli, 1994).

The gravity of these constraints is further compounded by inadequate information infrastructure in many of these countries. Statistics reveal that over 80 % of the world's population lacks minimally efficient telecommunication facilities, the majority of whom are in Africa and South and East Asia. Over 40 of the poorest countries in the world -- 35 of them in Africa -- have less than one telephone per 100 inhabitants, and in some, having one means waiting for over ten years (Holderness, 1995).

Placing these figures in a broader context portrays an even more striking picture. In 1989, developing countries had 75% of the world's population but shared only 16% of the world

¹ In Africa for example, Internet providers charge on average \$ 30 US per month for Internet dialup access.

² The exception to this case is the investment in military technology.

products including 12 % of the main telephone lines (World Bank, 1996). These figures portray a glimpse of the magnitude of financial investments that would be required in developing countries to lay the basic infrastructure necessary for allowing societies to benefit from the application and use of ICTs. Even if these are in place, the issue of cost and affordability need to be put into the broader perspective of wealth distribution. Referring to access to Internet, Holderness argues that "for a number of reasons -- primarily cost, but also the need for literacy and technological know-how, and the dominance of English as the internet language of choice -- internet access is likely to remain the domain of a privileged elite, in developing countries much more so than in the North" (1995, p. 9). The issue of cost and wealth distribution therefore pose a serious challenge not only to the sustainability of investments in ICTs but also to their accessibility by those who are intended to benefit from its use.

The Issue of Ownership and Control

One of the assumptions in promoting ICTs for development is their potential contribution to democratisation in societies where there is high political exclusion (Hadden, 1996). The argument in this favour points out that ICTs will bring an increase in the dissemination and access to knowledge that, if appropriated by the population, would lead to better informed political decisions at the micro and macro levels. This rests on two premises: first, that ICTs provide means for access to relevant information, and second, that the information provided is assimilated, understood and used as intended. If these premises prove to be true, ICTs will raise political awareness of citizens; facilitate participation in election processes through electronic pooling; spread democratic ideas across the globe, thereby raising global awareness and expectations of citizens from their governments; and enhance dialogue between policy makers and the public, leading to greater accountability of those in power (Kedzie, 1995).

Although ICTs present immense opportunities in this regard, current practices and use of these technologies challenge the extent of this claim. Perhaps the major obstacles emanate from issues of ownership and control. Control over access to information and over its quality and relevance constitutes basic development concerns underlying the "magic" of ICTs.

Information and the means for its dissemination represent power. Accordingly, political structures where governments still see knowledge as a threat are unlikely to relinquish their control over basic means of communication. In the recent past, military regimes in Latin America and Africa and the apartheid system in South Africa saw the free flow of information through traditional telecommunication technologies as one of the major menaces to their stability. In those countries where democratic states are weak or have collapsed, the democratic potential of these technologies is even less clear. Today, countries like China, Vietnam and Singapore are already taking steps to control through legislation the unbridled expansion of ICTs in their societies. These and other similar measures undermine the democratic potential of ICTs.

The Issue of Culture

Culturally, ICTs also pose major challenges. Technology is not simply an artefact. It is developed within a specific social, cultural and economic context, which it carries with when transferred into a new setting. The experience with the introduction of television in developing countries, for example, offers valuable lessons on the cultural impact of telecommunication technologies. For developing countries, particularly the poorest, the information "media", as witnessed in the case of television, does not "carry their messages" because the poor are often at the receiving end of these technologies and lack the means or the capacities to shape its content (Nostbakken and Akhtar, 1995).

In more recent years, the rapid development of the Internet has shed new light on the gravity of the cultural challenges of ICTs. Although it contains over 7 million documents in the world- wide- web -- doubling in size every year since 1989 -- its content is predominantly shaped by Western countries that are at the forefront of the technologies and will remain so in the near future. Over 70% of the entire host-computers, which currently form the foundations of Internet, are in the U.S.A. (Holderness, 1995). Thus, the plurality of users that one can witness today does not necessarily reflect traditional definitions of 'cultural pluralism' (Goodenow, 1996, p. 200).

This implies that the larger proportion of the 168 countries that in 1995 had access to Internet is likely to be primary recipients of made in U.S.A. information, products, values and attitudes. As Ashok Khosla, Chairman of Development Alternatives, India pointed out to the 1994 International Institute of Communications (IIC) Conference held in Tampere, Finland, "Information technology brings many good things, but it also brings American soap operas and commercials that encourage the formation of habits that are not sustainable" (Ashok Khosla quoted in Akhtar and Nostbakken, 1995, p. 12). This is but one of the repercussions of ICTs that if not carefully managed, poses serious threats to cultural identity in developing countries.

Language adds to the complexity of the matter. For developing countries, the issue is not only that the content of these technologies will respond to and be crafted by the dominant Western culture, but also that the language of dissemination is other than those of the intended users. The issue of language is not a small technical factor that can be addressed simply by producing software in local languages (Kress, 1996). Language is one of the pillars of culture; it reflects not only the ways in which reality is captured and communicated but also the ways in which its meaning is understood and appropriated.

A report of the Unesco World Commission on Culture and Development affirms this cultural concern and states that "control of some of the most powerful new media tools is still concentrated in the hands of a few, whether nationally or internationally, in private or public ownership or under governmental monopoly. Such dominance raises the spectre of cultural hegemony; a fear of 'homogenisation' is widespread and widely expressed. A linked apprehension is the raising of unrealisable expectations among people now widely exposed to the lifestyles and languages of the affluent, while the pace of material progress in their own environment is painfully slow" (UNESCO, 1995, p. 106). These and other

factors, as Hamelink (1994) argues, are likely to bring about a “des-empowering effect” on communities.

Lessons to Learn

Post World War II development efforts made several assumptions. A major hypothesis was that following linear stages of development by those trailing behind would ensure economic growth (Rostow, 1960). To facilitate the transition along this line, infrastructure was built, technical know-how was introduced, and means to become modern were generated. The history of development, however, is littered with projects that over the medium-term damaged the environment, with technologies that created dependencies on foreign producers and expanded markets only for local consumer elites, and with changes in the expectations and values of societies that greatly undermined local cultures and traditions (George and Sabelli, 1994). Today, the problems of poverty and underdevelopment remain with us.

The experiences of the past, warn us that it is prudent to avoid that fifty years down the road a still developing world be littered with computers and satellite dishes for which there is little or no local support. With socio-economic systems that still serve a small elite and depend heavily upon large transnational corporations for their functioning, and with societies struggling to retain their traditional culture against the tide of Western values and attitudes introduced by these technologies. These risks are part of the unprecedented economic, cultural, social and political impacts ICTs could have.

To date, neither the potential developmental opportunities nor the risks of ICTs are sufficiently understood or acknowledged. Little attempt, if any, is made by those promoting ICTs for development to assess their impact on the cultural identity, the values, and the state of social equity of the less developed economies. Also lacking are analyses of the social and cultural factors that determine the effective application and use of ICTs. Like with the highways, dams, irrigation projects, and the modern factories of the forties and fifties, it is all too comforting to believe that computers, satellite receivers, and fibre optic installations will benefit the millions of farmers who eke out a living on subsistence farms or the urban poor working in the informal sector. The good intentions of development may risk blinding us from the hard realities within which these technologies will be introduced.

Social exclusion in the developing world (Rodgers, et. al., 1995) cannot simply be resolved by technology, if the consideration of the factors that can ensure respect for cultural values, justice, equity and equality in the distribution of wealth -- including information -- is absent. As with development factors in general, the potential of ICTs for development is not so much an issue of technology as it is an issue of access, quality, equality, control, content and values, and ultimately social justice. By definition, the nature of these elements imposes certain limitations on how ICTs can be appropriated for development. Even if the introduction of ICTs is feasible over a relatively short period as some predict, a dialogue between those promoting the technologies and the potential beneficiaries must be the foundation of any development action.

This cautionary call should provide valuable lessons for development agencies and international organizations. It is not enough to argue that the world is driven by a new development paradigm requiring radical shifts in looking at the future (Nieuwenhuijze, 1995). Even if this is the case, there is little evidence to believe that this new paradigm will be more humane, more respectful of local cultures, or more sensitive to local needs than the paradigm that invented international development as a profession in the first place. If anything, experiences reveal that injecting capital in the form of money, information or technologies on its own will not lead to sustainable development if the social, political and economic factors causing poverty remain unchanged.

This, however, should not lead to a conclusion that because of the social and cultural risks, the best option is to dismiss the developmental role of ICTs. Quite the contrary, there is a need to understand their potentials and limitations from the perspective of the less developed regions of the South. In order to make effective use of these technologies, simplistic assumptions about the wonders they can do for the development of the world's poor must be questioned. The questions that need to be answered and around which lessons could be learned are wide ranging: what are, for example, the most appropriate technologies for the socio-economic and cultural conditions of developing countries? Who has control over the introduction, operation and long-term sustainability of these technologies in a given social setting? Through what means and with what degree of success do the transfer and adoption processes take place? Who have access to these technologies and how are issues of equity, equality and quality of access managed? Who determines the relevance and quality of content and how? How does the role of these technologies balance out in the broader context of economic, human and social development priorities of the recipient societies? Where are the limits for blending developmental, business and political agendas in the transfer of these technologies? These are but some of the issues that need to be carefully considered in order to harness ICTs for development.

Options

Seeking developmental impact through ICTs is a long-term enterprise. It requires building human resource capacities not only to use but also to manage the technologies within the framework of national development strategies. It also requires immense and carefully targeted financial investments that often reach beyond those available in most developing countries. This calls for the need to determine where investments in ICTs should be made, how, and to what end. The options, largely, boil down to the choices that those promoting the technologies need to make between their interest in the short-term and the long-term impact, as well as the decisions that national policy-makers need to make in terms of their social and human development priorities.

A fundamental step in the direction of ensuring the long-term benefits from the application and use of ICTs in developing countries is to use them as instruments for preparing the new generations for the type of society these countries seek. This implies to design information and communication policies closely linked with the education and training

strategies needed to allow countries to compete in the global world. Only then, can the developmental role of ICTs be effectively targeted and geared towards the development of human resource capacities of those who will contribute to the productive capacity and assume leadership roles over the next decades.

This is more than introducing computers and modems in schools, databases into the current government bureaucracies, or fax machines or Internet in communities. In most poor countries where there is shortage of minimum means required for teaching and learning and where government structures and administration are inefficient and still driven by colonial models of public management, the introduction of ICTs without assessing the social dimension risks creating false expectations based on short-term pockets of progress and signs of “modernization”. The introduction of technologies in education settings has to go hand in hand with broader issues of relevance and appropriateness of content, access, and availability of qualified teachers. Similarly, in health, there is a need to evaluate the gains of providing local community clinics with access to specialized knowledge and new information on drugs, when there are no trained doctors or health care providers, and no drugs or funds to import them. Pursuing the application of ICTs without addressing the broader socio-economic and cultural context within which they are introduced risks creating new forms of financial and technological dependencies. The long-term development objectives should therefore determine the extent, type, scale and level of technologies introduced and the measurable anticipated impact.

This requires a concerted effort at the national and international levels, placing the issue within the context of the broader social and human development objectives and education policies of the countries involved. At the national level, an integrated information and communication strategy, which guides meaningful application and use of the technologies for achieving greater human development goals, is paramount. Identifying key entry points and appropriate technologies that respond to local needs and capacities is pivotal to ensure greater impact. Policies that promote indigenous technologies should be pursued in order to promote local content, ownership, and sustainability. The integration of ICTs into national education policies should be carefully designed to achieve significant gains from the application of the technologies in accelerating the teaching-learning process within the framework of local cultures (Byron and Gagliardi, 1997).

If carefully planned and targeted, the utilization of ICTs can make significant contribution in facilitating the development and building of the human resource capacities of nations to take development into their own hands. However, the critical development issue when it comes to bringing developing countries into the information age is not how quickly or effectively countries can be wired to means like Internet in a reliable and low cost manner. Installing a computer in every rural school or connecting every community health clinic to Internet will not necessarily lend itself to long-term development. The economic, political and social dimensions in most developing countries are not likely to be changed dramatically because of new technologies. The disenfranchised groups in most countries “are not in need of faster access to bottomless wells of information but rather better education -high quality teachers, classroom materials, and buildings” (Shenk, 1997, p.26). What must be kept in perspective is that technical solutions, including those offered by

ICTs, could become a valuable development means, but they should never be pursued as ends in themselves.

Conclusion

ICTs present a wide array of opportunities for facilitating development processes. They also pose enormous challenges. For developing countries, to be true participants and beneficiaries of the information revolution does not simply mean that they hasten to jump into the information train. It implies that they assess the social, economic, and cultural dimensions of the technologies and their impact on sustainable human development. It also implies that they contribute to the content, management, and dissemination of the information the technologies carry with them. Most of all, it requires that they have the capacity to control the growth of the information highway so that it serves the needs of the majority of their populations and not just be lured into it by the “tide of the first world marketing”(Song and Akhtar, 1995, p.58). To become real partners and beneficiaries of the ICT revolution, developing countries need not only be able to make meaningful application of the technologies but also contribute to its form and content, something not many of them are currently in a position to do given their weak tele-communication infrastructure and lack of human and financial resources. These -- and not the introduction of the technologies per se -- are the challenges whose response determines the future shape of their societies.

There is little doubt that the information era is here to stay. Developing countries cannot afford to be left by the roadside and watch the rest of the world enter into a new development paradigm dominated by information and knowledge. Nonetheless, the question to ask should not simply be what will happen to a developing country that neglects to catch up with the tide and fails to put sufficient emphasis on becoming part of the global information system. A more profound question is what will happen to a developing country that boards the information highway without carefully assessing the social and cultural dimensions and repercussions and without having a comprehensive national policy to guide its meaningful application and use? It is quite likely that the same technologies which have promised development and progress may not only fail to live up to their promises, but may lead to social exclusion, loss of cultural identity, and polarization of societies.

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