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Integrating ICTs into the Globalization of the Poor Developing Countries

While information and communication technologies can help to give every community a role in the globalizing world, communities need to appropriate the benefits according to their own levels of development.

Williams Ezinwa Nwagwu

INTRODUCTION

Globalization and advances in information and communication technologies (ICTs) are intertwined. The Internet, mobile phones, fax machines, email services and other ICT facilities have accelerated the expectation that the boundaries which separate and stratify the countries of the world according to their relative social, political, cultural, economic and other strengths will collapse; a concept known as globalization. But the digital divide, whose emphasized manifestation concerns the disparity between the developed and the developing countries, shows very sharp disparities in the deployment of information and its technologies. With the multinational corporations' insertion of foreign direct investment into international trade in less developed and emerging economies (Simon and Stephen, 2004), a new form of digital divide seems to be emerging. The *Human Development Report* of the United Nations Development Programme (UNDP) (1999) has observed that ICTs are exacerbating parallel worlds, in which the rich countries are using ICTs to achieve rapid growth, whereas poor countries are not. The UNDP report further observed that the rich countries usually have cheaper and instantaneous access to information, whereas other countries are left with uncertain, slow and costly access. When the peoples of these two worlds live and compete side by side, the advantages of being information-rich will overpower the marginal and impoverished countries, cutting off their voices and concerns from global conversation. Based on this observation, this paper aims to address the issues of the integration of ICTs in the globalization of the poor developing countries, specifying how the poor countries could utilize ICTs to benefit from and contribute to the globalization

process. Although this paper is not intended to show the impact of ICTs on the developing countries, it does indicate the mechanisms through which such outcomes could best be promoted.

The *World Development Report* (World Bank, 2003) has observed that acquiring knowledge is as important as its absorption and communication and that the current patterns of knowledge acquisition and use show wide disparities among different countries with respect to the development and application of ICTs. The poor developing countries face an uphill task to develop and deploy large-scale ICTs applications in education, research, administration and other areas of need. Let us first examine the fact that ICTs, development and globalization now move hand in hand.

ICTs, DEVELOPMENT AND GLOBALIZATION

Development today is partly determined by the ability to establish a synergistic interaction between technological innovation and human values. The rapid rate at which ICTs have evolved since the middle of the 20th century, the convergence phenomenon in which all existing technologies have been homogenized by ICTs, in addition to their pervasiveness and intrusiveness in all areas of human activity, gives ICT a leading edge in development and globalization. This new development has led to the emergence of new types of organizations and institutions that create positive feedback loops between productivity, flexibility, solidarity, safety, participation and accountability, in a new model of development that could be socially and environmentally sustainable. Since the 1990s the entire planet has been organized around telecommunication networks of computers at the heart of information systems and communication processes. The entire realm of human activity seems to depend on the power of information, in a sequence of technological innovation that accelerates its pace by the second. Although technology *per se* does not solve social problems, the availability and use of information and communication technologies are presently a prerequisite for

economic and social development. They are the functional equivalent of electricity in the industrial era. Econometric studies show the close statistical relationship between diffusion of information technology, productivity and competitiveness for countries, regions, industries and firms (Dosi, 1988). They also show that an adequate level of education in general, and of technical education in particular, is essential for the design and productive use of the new technologies (Foray and Freeman, 1992). But neither the sheer number of scientists and engineers nor the acquisition of advanced technology can be a factor of development by itself (Castells and Kiselyova, 1995) without an appropriate organizational environment.

There are two dimensions to the crucial role of ICTs in stimulating development. On the one hand, they are believed to enable countries to leapfrog stages of economic growth by being able to modernize their production systems and increase their competitiveness faster than in the past. The most striking example is that of the Asian Pacific economies, particularly Hong Kong, Malaysia, Singapore, South Korea and Taiwan. This is so despite the financial crisis of the 1990s, which was related to competitive performance and the attractiveness of the booming Asian economies to global capital flows. On the other hand, for those economies that are unable to adapt to the new technological systems, their retardation becomes cumulative. Sub-Saharan Africa and much of South Asia are at the bottom of the list of world regions in terms of digital prosperity and opportunity as well as in other aspects of development. These less ICT-developed countries are not able to participate effectively in the accelerated process of globalization and the acceleration of growth and transformation of work and factors of production, which are now occurring as a result of ICTs. But it is also true that the ICT-developed countries cannot effectively and efficiently globalize their capitalist expansion into new and emerging markets without a minimum presence of the requisite ICT tools in developing countries (UNCTAD, 1996).

On a global scale, there is a need for policies that will demonstrate a conscious effort to make the entire world enjoy the benefits of globalization through ICT strategies. Presently, the approach to globalization seems to observe the principle of 'the survival of the fittest', in which the contributions and strategies adopted by different countries seem to reflect their present strengths and weaknesses in the global scheme of affairs. The implication is that the richer – and therefore stronger – countries seem to be making more

input to, and commanding greater roles in, the globalizing economy than the weaker and poorer ones. Hence, stratification of the countries of the world as rich and poor acquires a new reinforcing factor, namely ICTs. But a crucial requirement of a balanced globalized economy will necessarily be a conscious consideration of what the weaker countries of the world can contribute to the rest of the world. In this regard, therefore, policies would be required to establish, first, which really are the poor countries of this world, focusing on all variables that could be used to measure poverty, including income, occupation and gender, among others. There is also a need for policies that address the modes in which individuals and corporate bodies and organizations are adopting ICTs for their integration into the global community. We also need to know who the users of the ICTs facilities are and who are the producers, importers and exporters. What are the patterns of use and adoption of these technologies by different communities and what factors affect these patterns? A look at the structure of poverty in the developing countries will be insightful in providing answers to these questions.

THE GLOBAL STRUCTURE OF POVERTY IN DEVELOPING COUNTRIES

Poverty has always been assessed using criteria set by world bodies such as UNDP or the World Bank. The assessments often begin with an awareness of the multidimensionality of the phenomenon, although priority has always been given to income, consumption, and expenditure, a definitional approach, which has been described by Razevi (1998) as a 'money-metric'. Gosh (1998) observed that most definitions of poverty in developing countries establish the poverty line in terms of the material consumption and expenditure necessary to fulfil the nutritional requirements of a certain calorific intake. But it has been observed that, apart from income, consumption, and expenditure, there are other factors that affect the quality of life, such that the issue of poverty in the developing countries is far more of a comprehensive state of being, encompassing not only material want, but also matters that relate to powerlessness and marginalization. As a result, estimates based on income poverty alone will tend to underestimate, not only the quality of life of the really poor, but also the multifaceted nature of effective poverty among groups of people who may be living above a poverty line based simply on food consumption.

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Whatever yardsticks are used, it is obvious that the pattern of poverty is not the same for all developing countries. This is reflected in Table 1, which relates to ten African countries and three of the five regions of the world. For example, while more than 70 percent of Nigerians live on less than USD 1.00 a day, and more than 90 percent on less than USD 2.00 a day, the proportions in Morocco are very different; less than 2 percent of the population live on less than USD 1.00 a day and only 7.5 percent on less than USD 2.00 per day. This sharp variation is noticeable in all the indices. In many developing countries, it will not suffice to measure poverty by the indices we have enumerated here. In many cases, for example in some poor developing countries in East Asia, it is the self-employed that most suffer poverty, whereas in other cases this group is excluded. In some countries, the

unemployed or the under-employed constitute the larger proportion of persons living below the poverty line. Many countries in Africa present a complex situation in which the self-employed and the unemployed together constitute the mass of persons living below poverty line.

There is another aspect to the structure of poverty in poor developing countries. For instance, generally, over 60 percent of the developing countries' population live in rural areas, while the pattern of agricultural growth and developmental measures tend to leave behind those in rural communities. Rural areas tend to be inhabited by people who are poor. Rural poverty accounts for nearly 63 percent of poverty worldwide, reaching 90 percent in China and Bangladesh and between 65 and 90 percent in sub-Saharan Africa. In almost all countries, the conditions

| | Total Population (millions) | Urban population (% of total) | Annual population growth % | | GDP per capita (PPP) USD | Below poverty line % | |
|---------------------------|-----------------------------|-------------------------------|----------------------------|-----------|--------------------------|----------------------|--------------|
| | 2000 | 2002 | 1975–2000 | 2000–2015 | 2000 | (1983–2000) | |
| Country | | | | | | USD 1.00/day | USD 2.00/day |
| Botswana | 1.6 | 49.0 | 1.8 | 1.0 | 7,184 | 33.3 | 61.4 |
| Cape Verde | 0.4 | 62.2 | 1.7 | 1.9 | 4,863 | | |
| Cameroun | 14.9 | 48.9 | 2.7 | 2.0 | 1,703 | 33.4 | 64.4 |
| Congo DR | 50.9 | 30.3 | 3.2 | 3.3 | 765 | | |
| Egypt | 67.9 | 42.7 | 2.2 | 1.5 | 3,635 | 3.1 | 52.7 |
| Kenya | 30.7 | 33.4 | 3.3 | 1.8 | 1,022 | 26.5 | 62.3 |
| Morocco | 29.9 | 55.5 | 2.2 | 1.5 | 3,546 | <2 | 7.5 |
| Mozambique | 18.3 | 32.1 | 2.3 | 1.7 | 854 | 37.8 | 78.4 |
| Nigeria | 113.9 | 44.1 | 2.9 | 2.5 | 896 | 70.2 | 90.8 |
| South Africa | 43.3 | 56.6 | 2.1 | 0.2 | 9,401 | 11.5 | 35.8 |
| Region | | | | | | | |
| Sub-Saharan | 606T | 33.9 | 2.8 | 2.4 | 1,690 | NA | NA |
| Africa | 4,695T | 40.0 | 1.9 | 1.4 | 3,783 | NA | NA |
| Developing countries OECD | 1,129T | 76.9 | 0.8 | 0.5 | 23,569 | NA | NA |

Table 1. Socioeconomic indicators of selected African countries and world regions.

Source: Compiled from data obtained from Association for the Development of Education in Africa (2003).

faced by the rural poor, in terms of personal consumption and access to education, health care, potable water and sanitation, housing, transport, and communications, are far worse than those faced by the urban poor. Persistently high levels of rural poverty, with or without overall economic growth, have contributed to rapid population growth in, and migration to, urban areas. In fact, much urban poverty is created by the efforts of the rural poor to get out of poverty by moving to cities. Distorted government policies, such as undue attention to the agricultural sector and neglect of the social and physical rural infrastructure, have been major contributors to both rural and urban poverty. The differences among the rural poor are more clearly reflected in their poor links to the economy, which determine how they use their assets to participate in production. All of the rural poor are engaged in the production of both tradable and non-tradable goods and services. Artisans and unskilled workers provide many non-tradable services and some non-tradable products (such as staple foods) that small cultivators also produce.

In addition to the above indices, the World Bank has also promoted the use of access to education as an index of poverty in developing countries. This is because education has the tendency to equip persons with skills that can enable them either to seek for higher income employment or to be better self-employed. Uneducated persons tend to be disadvantaged in most social and economic terms. In most countries of Africa, those who are poorest never received any education at all. Generally, women are the poorest group of persons in most developing countries; they receive less education, are engaged in the lowest paying jobs and face social and other forms of exclusion that place them at disadvantaged positions in society.

This brief overview has great consequences for the integration of ICTs in the globalization of the developing countries. Access to and use of ICTs are presently considered as developmental factors, such that the ability to acquire and use these resources are also based on income, expenditure, consumption, education, gender and so on. Individuals who are educated may have access to finance, may consider the need for ICTs skills for personal development, or work in places where ICTs skills may be required, whereas those who engage in menial activities as a result of poor education or other factors may not be disposed to seek access to ICTs skills.

THE GLOBAL ECONOMY

A global economy is an economy whose core activities work as a unit in real time on a global scale. According to Oyejide (1998) globalization embraces the increasing flows of trade in goods and services between countries as well as the international migration, not only of physical and technological capital, but also of human capital. Pushed to its extreme, this process of deepening and widening cross border flows of trade, capital, labour and technology, which is facilitated by rapid transportation and communication mechanisms, should generate a single, fully integrated global economy and market. Thus capital markets are interconnected worldwide, so that in all countries savings and investment, even if not all globally invested, depend for their performance on the evolution and behaviour of global financial markets. Therefore multinational corporations, in manufacturing, services, and finance, with their ancillary networks of small and medium businesses, constitute the core of the world economy. Furthermore, the highest tier of science and technology, which shapes and commands overall technological development, is concentrated in a few dozen research centres and centres of innovation around the globe. At the same time, the overwhelming proportion of jobs, and thus of people, are not global. In fact, they are local and regional. But their fate, their jobs, their living standards ultimately depend on the globalized sector of the national economy, or on the direct connection of their economic units to global networks of capital, production and trade. Historically, this global economy is not so new, but only in the last two decades has there been produced the technological infrastructure required for it to function as a unit on a planetary scale: telecommunications, information systems, microelectronic-based manufacturing and processing, information-based air transportation, container cargo transport, high speed trains, and international business services located around the world. However, even if the new global economy reaches out to encompass the entire planet and if all people and all territories are affected by its workings, this does not imply that every place or every person is directly included in it. In fact, most people and most lands will be excluded or disconnected, either as producers or consumers, or both. The flexibility of this global economy allows the overall system to link up everything that is valuable according to dominant values and interests, while disconnecting everything that is not valuable, or that

becomes devalued. It is this simultaneous capacity to include and exclude people, territories and activities that characterizes the new global economy as constituted in the information age. In all its ramifications, although with particular respect to foreign trade and investment flows, the integrative roles played by ICTs apply. How then do we consider that ICTs act as a driver of globalization, if ICTs are differently integrated in different countries in a way that tends to perpetuate the differential poverty structure of the countries of the world?

Early in the history of ICTs, UNDP suggested that ICTs would play crucial roles in the process of globalization. For instance, the UNDP *Human Development Report* of 1999 suggested that the Internet, mobile phones, satellite networks and other ICTs have shrunk space and time, bringing together computers and communications in an unprecedented explosion of ways to communicate. Fast transfer of information can reduce the cost and increase the speed with which countries, companies and individuals communicate with one another, thus raising the volume of international trade. By closing the boundaries of time and space, international trade is reduced to real time transactions, reducing the imperfections of information and its management, and thus transforming international trade to a competitive model. In sum, ICT is the essential tool for economic development and material well-being in our age; it conditions power, knowledge and creativity; it is, for the time being, unevenly distributed within countries and between countries; and it requires, for the full realization of its developmental value, an interrelated system of flexible organizations and information-oriented institutions. Cultural and educational development condition technological development, which in turn conditions economic development, and which conditions social development, stimulating cultural and educational development. This can be a positive cycle of development or a downward spiral of underdevelopment. And the direction of the process will not be decided by technology alone, but by society, through the dynamics of its conflicts.

Information and communication technologies have played vital roles in industrial production, where there is also a higher level of application of such tools as computer-aided design (CAD) and transaction-processing systems (TPS), among others. This will also affect patterns of international trade among countries. Based on their socioeconomic capabilities, different countries adopt these technologies to exploit competi-

tive trading advantages. One of the aspects where this pattern manifests very properly is at the level of multinational corporations' activities. Many rich developing countries, such as South Korea, have exploited these ICT resources for their competitive advantage, and this manifests in the new pattern of ICT-driven investment by the multinational corporations.

ICTs, MULTINATIONAL CORPORATIONS AND GLOBALIZATION

Simon and Stephen (2004) have defined a multinational corporation as a firm that has ownership of a technology (which includes business practices) that gives it a competitive edge in the product market. Such a corporation spreads its operations around the world either to access resources in other countries – whether petroleum in Nigeria or software professionals in India – so as to add to its competitive edge, or to use its competitive and technological advantage to sell its products in the local or host country market. Given its technological advantage over competing firms in the local market, the biggest challenge facing a multinational corporation is the informational asymmetry with respect to potential business partners and the business environment in the host country.

ICTs facilitate movement of goods and services, and have thus changed the way organizations, particularly multinational corporations, conduct their businesses and control the economies of their host countries. In 2002, there was an estimated 65,000 multinational corporations with about 850,000 worldwide affiliates employing about 54 million employees, a rise of 141 percent over the 1990 employment figure (United Nations Conference on Trade and Development, 1996). The United Nations Conference on Trade and Development (UNCTAD) had earlier, in 1990, elaborated on the role of ICTs in the wide diffusion of the activities of the multinationals. According to UNCTAD

Progress in information and communication technologies has not only made it possible for firms to process and communicate vastly more information at reduced cost, but it has also helped in the management of day to day far flung and widely dispersed production and service networks. Moreover, advances in combining information and communication technologies have increased the transportability of many information-based services, enabling them to be

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traded across distances without necessarily being embodied in people or goods (United Nations Conference on Trade and Development, 1996:96)

Hence, ICTs have helped the multinationals to spread their tentacles widely across the globe. ICTs have also strengthened the multinationals by easing the central administration and monitoring of activities and sensitive aspects such as finance. Inter-firm linkage, surveys of new investment opportunities, recruitment of workers and their activities, which were hitherto bottlenecks in the way of the fast expansion of multinational corporations, have been largely eased by the revolution in ICTs. Freeman and Hagedoorn (1995) have documented the tendency of the multinationals to engage in strategic alliances with organizations and governments, particularly in the era of ICTs. ICTs are also marketed as a good by the multinationals, which also use them to manage and promote their corporate expansionist projects.

James (1999) has summarized the mechanisms and typologies of the information technologies marketed by the rich developing countries, and how they induce international trading by the multinationals, as illustrated in Table 2. Industrial technologies have been most widely adopted in the relatively affluent developing countries such as Hong Kong, Singapore, South Korea and Taiwan. These countries have also exploited the export opportunities for products associated with ICTs, such as micro-components like diodes, resistors, transistors, etc. (James, 1999). Using complex communication technologies, these countries have achieved the dispersal of their multinational

corporations in many other countries, including their services and research and development facilities. This is not the case with most other developing countries, which are not only poor but have not developed capacity for ICT production and utilization. Hence, the impact of ICTs generally in developing countries can be considered inegalitarian because the benefits accrue more to the rich developing rather than the poorer developing countries, and to the urban rather than the rural areas.

There are also disparities with respect to the use of ICTs among people of different status such as those working in the private or the public sectors (James 1999) or those living in urban or rural areas, among others. Furthermore, ICTs have been observed to favour large organizations in comparison with small ones, just as skilled persons seem to reap the benefits of ICTs more than the unskilled. The vicious social pattern in which men are often at an advantage in social, political and other matters, as compared with women, also applies to information technologies. The question of ICTs and gender is a current issue among gender scholars, and so far, there is every reason to believe that ICTs, like technology generally, are engendered in favour of men (Hafkin and Taggart, (2001). Worse is that many countries and communities implement ICTs that tend to increase the chances of those who are rich, educated, skilled or male. ICT-induced globalization thus tends to leave the poor behind the global economic agenda.

As is the common experience everywhere, ICTs easily replaces those categories of workers that are 'poor' by the standards we have enumerated. The poor

| Form of ICTs | Mechanisms of influence |
|---|---|
| Communication technologies | Promote trade by reducing information imperfections, and expediting the flow of information. |
| Industrial technologies (CAD, TPS) | Adoption enhances comparative advantage of adopting firms and countries at the expense of non adopters |
| Electronics (diodes, peripherals, computers) | Exports of electronics to world market raises ratio of trade to world total output |
| Communication technologies (telecommunications and computers) | (a) ICTs promote global dispersion of production by multinationals (b) ICTs promote global dispersion of services by multinationals (c) ICTs promote global dispersions of R&D by multinationals. |
| Information technology in general | International strategic alliances in information technologies promote globalization |

Table 2. Trade and foreign induced mechanism of technological influence on globalization.

Source: Adapted from James, 1999.

developing countries, many of whose citizens fall in the 'poor' category, will therefore produce a larger proportion of persons who are replaceable by ICTs. The implications of this are immense. The implementation of advanced ICTs will increase the chances that countries with a relatively highly skilled and educated citizenry will have fewer unemployed persons, and will be more capable of exploiting and harnessing innovations, than countries that are poor. Even innovations developed in poor countries are, most of the time, not actuated except with the cooperation and participation, and by implication, the influence, of the richer countries. The issues encapsulated in this observation have been aptly captured in the centre-periphery discourse, which has an implication that resource-rich countries even attract skilled labour from resource-poor countries. The result is that resource-rich countries continue to appear more innovative. This contradiction is aptly demonstrated by the fact that India, for instance, produces much of the software manpower working in the United States today, while itself remaining a relatively technologically poor country.

We also notice that, although ICTs are marketed as a universally useful technology, they are actually a local facility in some countries, but alien or new in the others. Those communities where ICTs happen to be new ideas often step backwards to acquire the skills and knowledge required to gainfully employ ICTs. Although ICTs are believed to have the capability of enabling underdeveloped communities to leapfrog, the initial energy required to take a meaningful leap will require heavy investments in planning and programming, acculturation and assimilation, which many developing countries, in their present economic and other circumstances, may not afford. Anyimadu (2004) has captured the struggles of many communities in the developing countries to mainstream ICTs into their national programmes by positing that most developing countries are digital by default while the developed countries have always been digital. The ICTs that appear to be the credo of modern human society are a sophistication of a culture that was already part of the lives and culture of people in the West. Standing (1999) supports this when he observed that ICTs are designed for developed rather than developing countries. According to Standing,

... it is the former [developed] rather than the latter [developing] countries that usually provide an environment that is conducive for the appli-

cation of information technologies - an environment that includes, among others, an advanced (telecommunication) infrastructure, skilled labour, a high level of capital per unit of labour, and consumers with relatively high average income levels. (Standing, 1999)

In the relatively rich developing countries, the initial obstacles to mainstreaming ICTs have been somewhat overcome by policy-directed actions over a very long time, and ICTs have been part of the development focus of those countries for many years. In contrast, and despite the implementation of ICT policies in many developing countries, ICT applications can be considered young in terms of being properly mainstreamed in their economies. This is mainly the case in poor developing countries. ICTs have been embraced as a universal necessity, but without being properly absorbed into the fabric of their national schemes of things. In Nigeria, for instance, there is a national policy on IT which spells out various aspects of the national life where IT is expected to bring its benefits to bear. But the agency responsible for implementing the policy has yet to successfully fashion adequate strategies for bringing the benefits of IT to the rural communities, which constitute over 75 percent of the national population and where the majority of disadvantaged populations live.

What then is the place of poor developing countries in the regime of ICTs, given the crucial roles of ICTs in the globalization process and considering further the need for these countries to contribute to the global information infrastructure? The crucial point that ought to be made here is that ICTs can benefit all communities, irrespective of their characterization as poor or rich. In a typically market-based global economy, every country has some strength, which can accumulate rather than diminish over time, and which can form a basis for harnessing information technology alternatives. Hence there is always a way to use ICTs or any other technologies to the advantage and benefit of human society. Related to this is the fact that there is always a contribution, which every country can make to the global economy; and appropriate investment in and channelling of ICTs can actualize these contributions. Also, appropriate identification and characterization of the level and type of applications suitable for a particular country can help to alleviate poverty by engaging people in those ICT tasks that are not alien to their environments and backgrounds. The practice now prevailing is that the multinational

corporations, some of which belong to the rich developing countries, use ICTs as a means of spreading their investments worldwide. They thus dictate, to a great extent, the platforms to which most developing countries tie their information and communication technology activities.

The tendency, therefore, is that the direction of ICT development and application may differ from the requirements of most poor developing countries, considering the education, skill and other factors that make ICTs give their maximum expected results. Although developing countries benefit from the globalizing influence exerted by the investments of the multinationals and from the exports that are generated, the pattern of ICTs use and development, and their impact on national development generally, will generate a bias that can be considered inequitable from the global economic perspective. In a nutshell, therefore, developing countries should identify and characterize those aspects of ICTs and their applications that fit and address local needs and conditions based on universal poverty markers. What we need to do next is to identify those suitable ICT activities, some of which already exist in poor developing countries, but whose potentials the poor developing countries need to explore in order to harness the opportunities that ICTs present.

WAYS OF INTEGRATING ICTs IN THE GLOBALIZATION AGENDA OF POOR DEVELOPING COUNTRIES

To take but one example, poor developing countries have not been integrated into the complex industrial and product alliances of the big firms in East Asia. Although the benefits of big East Asian initiatives seem to reach everybody, mainly by way of their products, their business strategies could perpetuate the consumerist status of other developing – but poorer – countries, without creating opportunities for the poor countries to contribute to global economic activities. Standing (1999) has expressed some reservations about how those living in poverty could benefit from multinational corporations' location of ICT-heavy R&D activities in the poor countries. But we can identify several ICT initiatives that can thrive in such countries and which can also enhance the participation of their citizens in global market activities and then improve the integration of these countries in the global economy. Although some of the initiatives discussed here are not new in themselves, they have

not hitherto been viewed from the same perspective. A major element of our opinion is that, by adequate policing, these initiatives can return more than individual level benefits, address specific national development needs and focus the host countries' activities towards meeting the challenges of globalization.

Small-Scale Communication Facilities

We have posited in this paper that information technology reduces and sometimes removes all obstacles usually encountered in using, sending or managing information, and that this aids globalization by integrating different communities. In saying this, it is obvious that rural communities, which constitute the majority of the population in poor developing countries, will not experience the benefits of information technology too soon. Generally speaking rural communities in poor developing countries are not well served by communication technologies. Although global system for mobile communication (GSM) technology has drastically increased teledensity generally, rural communities are not equally served, coupled with the fact that the technology suffers some utility setbacks such as the high costs involved when used for Internet purposes.

Sub-Saharan Africa, which has 13 percent of the world's population, has only just over 1 percent of Internet users, whereas the 5 percent of the world's population in North America constitute almost one third of total Internet users. According to the International Labour Organisation (2001) about 70 percent of workers in the European Union are engaged in technology intensive occupations, while over half of the world's population has not even made a telephone call. Before the advent of GSM technology, two phones per person was the norm in the industrialized countries while there were 21 million phone lines for 788 million people in Africa. The situation with technology generally in a few selected African countries is shown in Table 3.

Even what is known about technology penetration in many poor developing countries, as the data in Table 3 show, is often a generalization of the rural and urban conditions. If the rural populations are isolated and then compared with the urban population, the disparity will be very disparaging. In many African and Asian countries, landline telephone penetration is generally very low. Based on landlines, Kayoni and Dymond have observed that,

| Country | Telephones per 1000 population | Cost/local call USD/3 min | Personal computers per 1000 population | Internet host per 1000 population |
|--------------|--------------------------------|---------------------------|--|-----------------------------------|
| Benin | – | – | 1.5 | 00 |
| Botswana | 77.0 | NA | 31.0 | 6.0 |
| Burundi | 2.8 | NA | – | 00 |
| C.A.R | 2.7 | 0.5 | 1.4 | 00 |
| Egypt | 75.0 | NA | 12.0 | 0.3 |
| Ethiopia | 3.1 | NA | 0.7 | NA |
| Ghana | 8.0 | 0.1 | 2.5 | 0.1 |
| Kenya | 10.3 | 0.1 | 4.2 | 0.2 |
| Nigeria | – | – | 6.4 | 00 |
| Mozambique | 4.0 | 0.1 | 2.6 | 0.1 |
| South Africa | 125 | 0.1 | 54.7 | 33.4 |
| Tunisia | 89.9 | NA | 15.3 | 0.1 |
| Uganda | 2.6 | 0.2 | 2.5 | 0.15 |

Table 3. Technology in Africa.

Source: World Development indicators 2001 and World Bank Group Database.

Note: NA = not available.

The average imbalance, in terms of telephone penetration, in Asia, for example, is over 10 to 1 and is often as high as 20 to 1. This means that a country whose urban market has a penetration of say 4 telephone lines per 100 inhabitants (e.g. India and Pakistan) has a rural penetration of less than 0.2 per 100. The situation is more acute in most African countries and in some parts of Latin America. (Kayoni and Dymond 1997: 2).

This situation holds true with respect to other technologies; only the urban population can actually participate in the international trading system, and the lowest income groups in these countries are therefore excluded from participation in the global market. The rural communities are poorly served with electricity, paved roads, telecommunication and other facilities that support digital technologies. Since the bulk of the developing countries' populations live in the rural communities, how ICTs will serve the rural countries and other underserved groups should be a policy concern of many poor developing countries. This point should be very important in all the technology-induced leapfrogging dreams of the developing countries if they wish to achieve a rounded develop-

ment. In all the leapfrogging projects, the common expectation has been that digital technology has the capability of helping developing countries bypass older and relatively expensive technologies that exist in the developed countries, and then proceed directly to the more modern digital systems. In this regard, therefore, for the poor developing countries to exploit the technologies of the relatively industrialized Asian countries for digital solutions will only lead to concentration of ICT development in the urban areas at the expense of the larger rural population. There is also an extent to which increased communication among persons in the rural communities can aid their connection to the global environment, for example, through small rural radio communication systems, which serve a relatively small number of persons and are installed to foster exchange of ideas and sharing of knowledge with and among rural dwellers.

Rural Telephony Services

Some of the problems of delivering telephone services to rural areas have been overcome by the Bangladeshi Grameen model, initiated and funded by the Grameen

Bank, in which telephones equipped with small meters are made available to entrepreneurs who set them up on tables on street corners and in cafés or shops that attract customers. Their operators charge fees to their customers but pay back to the telephone companies with some reasonable discount. In Nigeria, phone shop businesses are blossoming in the urban areas using the GSM phone facility. Although GSM services have enabled telephone services to penetrate deeper in the communities than before, and although operators make some profits using the 'booster' technology which enables them to extend the life of a single time recharge card, the rural communities are not yet properly served. This is mainly because the GSM operators use expensive masts to connect their clients, and rural communities might not be profitable enough to attract such heavy investments. The Grameen model does not require such expensive masts. Rather, the model uses small transmitters, which are much cheaper than masts and can therefore serve rural communities. Pitrods (1993) has described in detail the Indian experience, in which the government was consciously working towards giving the rural dwellers access to telecommunication services. In many other poor developing countries, expression of interest in this regard is not discernible. Many rural communities are not within telephone reach because the telecommunication companies emphasize connections to urban areas where their profits come from. Policy instruments that would guide the inclusion of rural communities into the telecommunications agenda, such as the mounting of antennas in such communities or the application of cheap transmitters, while not compromising the profits of telecommunication companies, are often not in existence. Although many developing countries have deregulated their telecommunication industries, it would appear that deregulation policies are mainly designed to favour the provision of the privatized services for which many operators have entered the market. The business motives of private sector telecommunication operators tend to route their services to those urban communities that yield financial profits. Government intervention is required to ensure that the benefits of deregulation reach beyond the urban areas.

Telecentres

According to Qvortrup (1994), telecentres are multi-purpose centres that provide telephone services together with other computer and computer-aided

telecommunication services. Gomez et. al. (1999) categorize information providing activities in rural areas as consisting of basic telecentres, telecentre franchises, civil telecentres, cybercafés, or multipurpose community centres. In addition to telephone services, fax machines, e-mail services, photocopy machines, personal computers and printers and modems for data communication are made available. The idea is that telecentres in the rural areas should embrace much more than the Internet but should encompass a much broader diffusion of skills and tools to help ensure that the services of such centres are well patronized. Narrowly focused services such as those providing only Internet access require the user capabilities of the target group or beneficiaries to be developed to an appropriate level so that investment in the complex technological facilities will be justified. As a way of improving Internet use in rural communities, some countries have instituted low local charges for Internet services, regardless of distance. This greatly reduces costs for those in remote areas and increases the viability of the Internet services provided by rural telecentres. In Africa, nineteen countries have adopted this strategy to date: Benin, Burkina Faso, Cape Verde, Chad, Ethiopia, Gabon, Malawi, Mali, Mauritius, Mauritania, Morocco, Namibia, Niger, Senegal, South Africa, Togo, Tunisia, Uganda, and Zimbabwe. In the Seychelles, Internet charges are 50 percent of the normal rate for local voice calls (Etta and Parvyn-Wamahu, 2003). But most rural users (and telecentres) still have to make costly long distance calls to connect to the Internet. The high cost of Internet use limits individual use, and creates demand for public telecentres where the cost of a single telephone line can be shared among a host of customers who would not otherwise be able to afford access. Telecentres, cybercafés, telekiosks, etc., address the low-income levels of users by sharing the cost and maintenance of equipment and connectivity amongst a larger number of users.

Digitization of Local Languages

A crucial problem that has not been adequately addressed by poor developing countries such as those in sub-Saharan Africa is the absence of content in languages that rural persons can easily understand and relate with. Despite the relative development of many local languages in Africa, say, and the large number of persons who use them, such languages have not yet made any significant content contribution to the Internet. There is an indication that African and South

Asian languages are not very prominent in the Internet revolution. Indigenous communities in these countries therefore cannot make contributions to or benefit from the Internet or even have reason to make use of it, despite the fact that the numbers of aboriginal speakers of many of these languages are relatively large in comparison with some languages that are already digitized (Adegbola, 2004).

External Economy of Scale

The introduction of ICTs is often expected to minimize production costs, for instance, by replacing human labour by machines to ensure that the same amount of goods can be produced with less input. However, this does not necessarily apply in all sectors. In the production of plastic goods and textiles, Mody and Wheeler (1990) have shown that human labour will always be cheaper and therefore most efficient. In such areas of production, the spreading of multinationals to the poor developing countries may thus create employment for both skilled and unskilled labour. What the host countries need to do is to develop policies that could integrate their local needs, such as the employment and training of their citizens, with the ICT activities of the multinationals operating in their countries.

This is most applicable in sub-Saharan Africa, where cheap labour is in abundance. Standing (1999) has observed that many countries in the sub-Saharan Africa region are yet to attract foreign direct investment from the multinationals due to social, economic and political instability. These include the magnitude of internal crises that disrupt economic activities in the region, which is so high as to scare away investors, poor national leadership characterized by high corruption, and long periods of highhanded military regimes. Among other consequences of these shortcomings is the lack of adequate industrial infrastructural policies based on active and consistent investment and low unit labour costs (Standing, 1999). There exist numerous examples of poor developing countries where foreign ICT-based investment has led to tremendous turn-around in the economy. The German Development Institute (1992), for instance, has described the case of Mauritius, where investment by Japanese ICT-heavy multinationals has eradicated unemployment. But it is worth noting that Mauritius exploited a policy strategy based on the realization

that foreign investment could boost the creation of employment for their skilled and unskilled workers, and that this could accelerate their integration into the global economy.

There are other benefits to be derived from multinational ICT-based investments. ICT skills such as word processing and data entry operations are typical technology-based activities that do not require very intensive skills or an advanced level of computer education. Although workers who function in these capacities often have access to strategic documents of their employers, they do not directly influence tactical level operations such as pricing or market-related matters, and are therefore the first categories of workers to be engaged in the operations of foreign multinationals. After the initial expert installation of factory and other facilities, it is less cost-intensive, in most cases, for such companies to employ local persons in activities that require cheap labour. Poor developing countries where the rich ones establish their multinational presence could exploit those ICT opportunities that could ease poverty and increase employment by creating jobs for their citizens. Since multinationals often require the cooperation and assistance of the national government agencies to establish their business, policies that channel the ICT activities of the foreign investors are required to ensure that such investments benefit citizens.

CONCLUSIONS

ICT is a multidimensional technology, and can be the platform for giving every community some role in the globalizing world. The challenge for communities is therefore to identify how to appropriate the benefits of ICTs according to their levels of development. This challenge is not just manifested, and therefore faced, at the local level only; the international community should realize that true globalization should incorporate the knowledge systems of all human communities on earth. It may not be possible for all communities to contribute equally, but every human community can make an input in the form of its rich indigenous knowledge, which may often have been excluded from the world store of knowledge for a long time. While there are aspects of the ICT revolution that will better suit the globalization needs of poor developing countries, the present pattern of implementation seems to increase the gulf between the rich and poor countries.

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Abstract

The impact of ICTs in developing countries generally can be considered inequalitarian because their benefits accrue more to the rich than the poor developing countries, thus defining a new form of digital divide. Certain ICT-induced developments such as globalization tend to leave the poor developing countries behind the global development agenda. In this article, we recognize the need for global-scale countervailing policies to establish the true pattern and structure of poverty and ICTs consumption and utilization in the developing countries in order to determine how the ICTs-heavy activities of the rich developing countries can be aligned with the ICTs needs of the poor develop-

ing countries. This will help ensure that ICTs are contributing in the development and globalization of the poor countries. The article recommends strategies that can be adopted to boost the participation of poor developing countries in the globalization process.

Keywords: Information and communication technologies; Globalization; Developing countries

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MORE ON ICTs, GLOBALIZATION AND DEVELOPING COUNTRIES

Information and communication technologies and the effects of globalization: twenty-first century “digital slavery” for developing countries: myth or reality?

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The main goal of this paper is to examine the ICT (Information and Communication Technology) revolution and the concept of globalization as they effect developing countries. Globalization as one of the reasons for possible widening of the gap between the poor and the rich nations was examined and the emerging concept of “digital slavery” was carefully evaluated. The wide gap in availability and use of ICTs across the world and the influences ICTs exert on globalization at the expense of developing countries were carefully examined and suggestions and necessary policies were offered for developing countries to leap-frog the industrialization stage and transform their economies into high value-added information economies that can compete with the advanced countries on the global market. This is why it is important for Africa, in general, and Nigeria, in particular, to be aware of the implications, prepare to avoid the most telling consequences and prepare to meet its challenges.

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