

## **TRANSFORMING RECENT GAINS IN THE DIGITAL DIVIDE INTO DIGITAL OPPORTUNITIES: AFRICA AND THE BOOM IN MOBILE PHONE SUBSCRIPTION**

Peter A. Kwaku Kyem  
Central Connecticut State University, USA  
[Kyemp@mail.ccsu.edu](mailto:Kyemp@mail.ccsu.edu)

Peter Kweku LeMaire  
Central Connecticut State University, USA  
[Lemaire@mail.ccsu.edu](mailto:Lemaire@mail.ccsu.edu)

### **ABSTRACT**

This paper discusses the mobile phone boom in Africa and examines the potential impacts of mobiles on the socio-economic development process in African countries. Drawing on data from case studies, the paper explains that mobile phones may not just help create new jobs and new sources of revenue to the state but can also contribute to economic growth by widening markets, creating better information flow, lowering transaction costs, and becoming substitute for costly transportation that is lacking in rural Africa. On the social front, the paper contends that the mobile phone can help create unique personal identities and status symbols for some users. The technology also facilitates the democratic process as groups can use the enhanced communication tools for political and community action thereby reducing the reliance on conventional and often government controlled media. The paper discusses these and other ways by which mobile phones can influence conditions in Africa to induce changes that promote economic and social development. The paper concludes with suggestions that can strengthen ICT adoption in African countries.

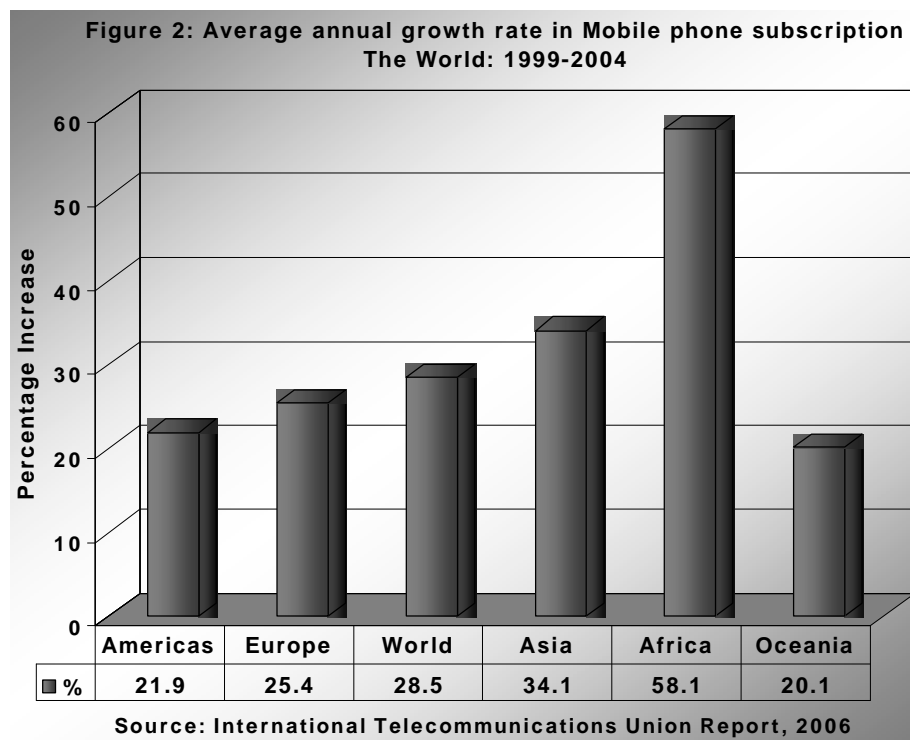
**Keywords:** Information Communication Technology, Digital divide, Mobile Phones, Africa.

### **1. INTRODUCTION**

The International Telecommunications Union reported this year (2006) that access to information and communication technologies continues to grow at high speed. The report stated that overall, the gap separating the developing and the developed countries has been shrinking in terms of mobile subscribers, fixed telephone lines and Internet users. Africa was said to have experienced the highest mobile cellular growth rate of all continents between 1999 and 2004 (ITU, 2006). Growth in mobile phone subscription on the continent during the 5-year period between 1999 and 2004 averaged close to 60% every year (see Figure 2) - more than twice the global average (ibid.). What does the closing of the digital divide through increasing subscriptions to mobile phones mean to economic development on the continent? Will the narrowing of the information telecommunication gap via mobile phone usage bring any socio-economic dividend to African countries? This is the subject matter for discussion in this paper.

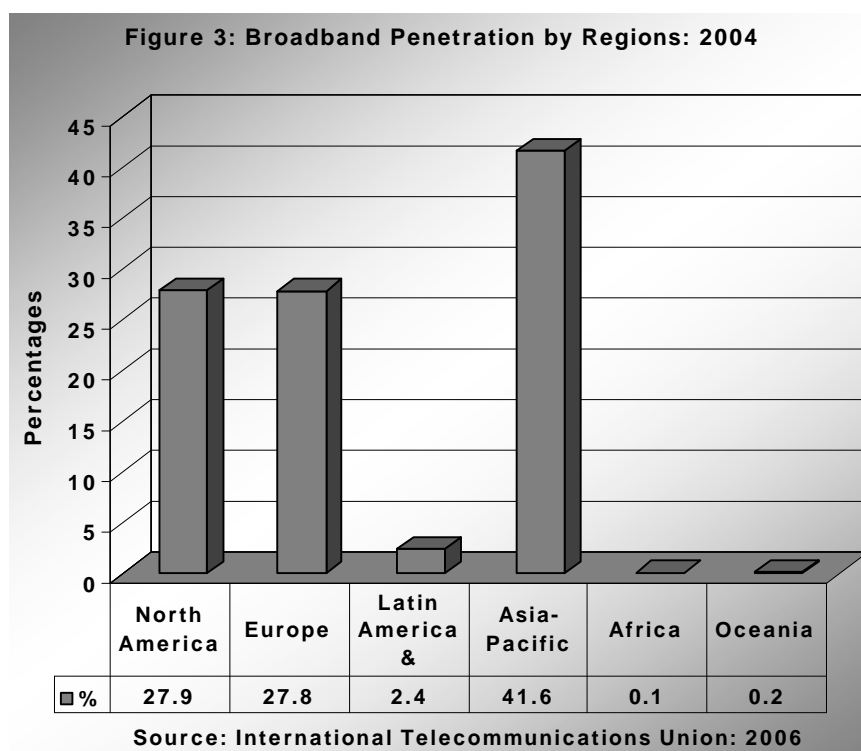
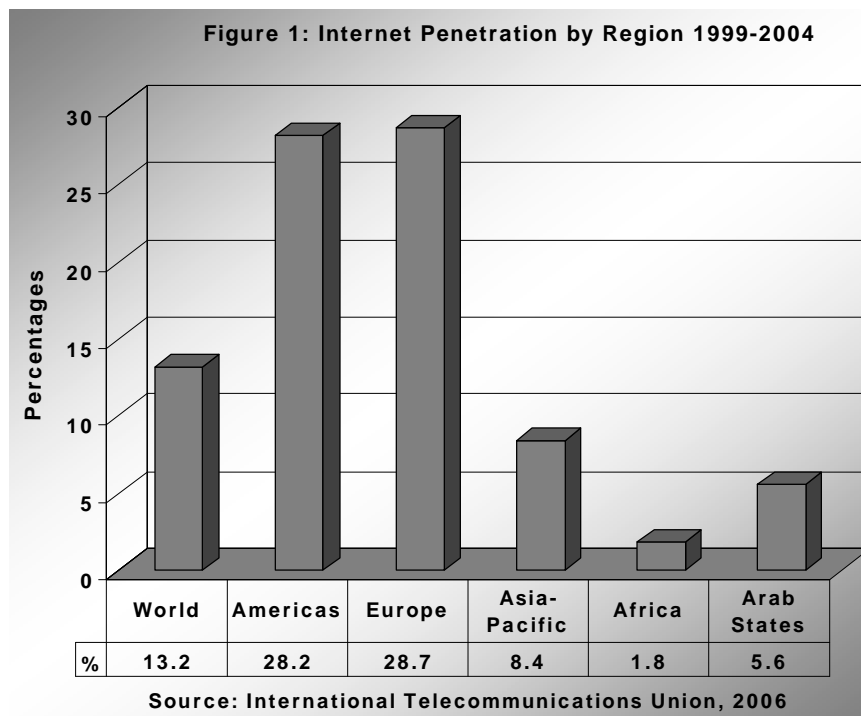
Even though the “technological gap” between the rich and poor countries of the world matters enormously when one considers the opportunities that information communication technology (ICT) offer for socio-economic development, the digital divide has until recently, been defined mainly in terms of the degree of access to ICT between the technological “haves” and “have nots” of the world. However, impacts of recent increases in the use of wireless telecommunication technology (especially mobile phones), in developing countries reveal that the problem of the digital divide is not so much about access to information technology (IT) but an economic development problem that is defined by access or lack thereof to information technology. There is little doubt that Africa currently has the world’s

lowest penetration of fixed phone lines, with a continental average of around 3 main lines per 100 people (ITU, 2006). In a recent report on the state of ICT penetration by the International Telecommunication Union (ITU), Africa (accounting for 13% of the world's population in 2004) had only 3.7% of all fixed and mobile subscribers worldwide. There are currently over 20 African countries that have a national average of less than one main line serving every 100 people. The continent had some 22 million Internet users in 2004, for an Internet penetration of just about 2%. Europe's Internet penetration is almost 15 times higher (ITU, 2006). See Figure 1 for associated data for comparison.



On the other hand, the digital divide has been shrinking in terms of the numbers of fixed phone lines, mobile subscribers, and Internet users over the past decade (BBC, 2005). In the ITU report, Africa experienced the highest mobile phone growth rate of all continents between 1999 and 2004 (ITU, 2006). Growth in mobile phone subscription throughout the continent during the five year period averaged close to 60% (see Figure 2) which is more than twice the global average (ibid.). Of the close to 100 million total telephone subscribers recorded in Africa

In 2004, 76 million were mobile subscribers thus making Africa the continent with the highest ratio of mobile to total telephone subscribers of any world region. Africa has subsequently been called "the least wired region in the world" (ITU, 2006). Twenty five million new mobile phone subscribers were added during the 5-year period between 1999 and 2004 – almost equivalent to the total number of telephone subscribers (fixed and mobile) in Africa in 1996 (ibid).



The trend in ICT penetration in Africa shows that even though the disparity between the “haves” and “have nots” has been decreasing (in terms of mobile phones), there are still major gaps amongst national economies and between the rural and urban sectors (Hudson, 2001). The continent has reaped very little economic benefit from the recent increases in infodensity. This is because Africa possesses a negligible fraction (0.1%) the global broadband distribution (ITU, 2006) see Figure 3. The lack of broadband connection in African countries is a great set back to the efforts being made to boost economic development through ICT applications. The broadband is a platform for other ICT applications besides offering a high speed but low cost transmission of text, video and audio data. It is also

important to note that much of the growth in mobile phone boom in Africa is propelled by factors that have more to do with profits for foreign companies than the raising of the economic and social wellbeing of Africans. Subscription to mobile phones is driven by demand-side factors, such as the increasing popularity of mobile phones and by supply-side factors, such as regulatory reforms, falling costs and prices, and technological innovation.

In many parts of the continent, the impact of the arrival of the information economy is yet to be felt. Several barriers remain to be identified and dealt with before any potential benefit might be realized. In this regard, the choices African countries face in the present regarding mobile phone subscription and institutional arrangements in which they deploy the technology today will influence the future socio-economic development of countries on the continent. Accordingly, the integration of mobile phone usage into economic development activities and the relationship or potentials that the technology has, or may later develop with socio-economic development, demand scholarly inquiry. With the pent-up demand for phone links amongst Africa's teeming population, the mobile phone boom is bound to continue in many countries but the main questions are:

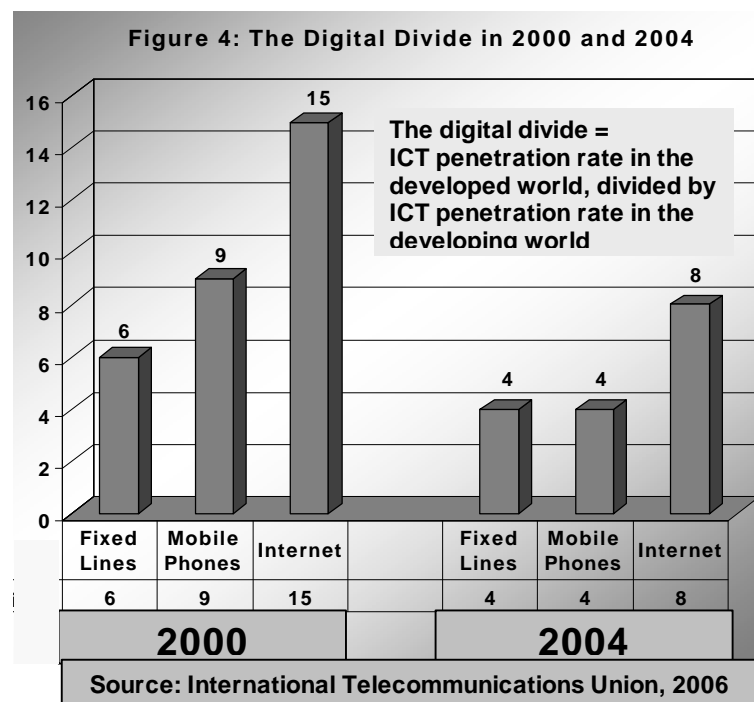
1. Can African countries translate their share of the recent gain in the digital divide into digital opportunities to support socio-economic development on the continent?
2. Is the rush by Africans to subscribe to mobile phones by itself enough to raise the standard of living of the people?

Answers to these questions will form the basis of discussion in this paper. The paper begins with a discussion of the links between the digital divide and socio-economic development in Africa. Thereafter, the economic potentials of mobile phones are explored and the possible direct contributions that the mobile phone can make to social and economic life of Africans are outlined. The paper discusses these and other ways by which mobile phones can influence conditions in Africa to induce changes that promote economic and social development, and concludes with suggestions that can strengthen ICT adoption by African countries.

## **2. LINKS BETWEEN THE DIGITAL DIVIDE AND SOCIO-ECONOMIC DEVELOPMENT**

Known generally as the gap between nations whose citizens have access to, and use a variety of ICTs and those nations whose citizens have limited access to these technologies, the "digital divide represents the area of overlap between the economic and social aspects of the global information society" (Sciadas, 2005). The gap results from socio-economic differences between nations that in turn affect their access to digital information. The digital divide thus reflects existing economic divisions in the world (Dzidonu, 2001). Countries with unlimited access to the internet and other ICT products can develop their economies and compete better in the global economy (Dzidonu, 2002; Warshauer, 2002). In today's information society, jobs and education are directly related to ICT. Countries with low ICT penetration may fall behind the rest of the world and thereby be excluded from the numerous potential economic and social benefits of ICT deployment (Gillward, 2005). This could lead to greater widening of the economic divide between poor and rich countries, with the poor getting poorer and the rich getting richer. There is a domestic variant of the digital divide within both the rich and poor countries which manifests itself in regards to access to ICT between people in urban centers and rural areas of the continent. This domestic digital divide is often a reflection of existing economic inequities within a given country (Gillward, 2005). The existence of the technological gap therefore has the ability to exacerbate existing inequalities and inequities in the global distribution of resources and economic development (Rodriguez and Wilson, 2000).

The ITU statistics displayed in Figure 4 show that by the end of 2004, phenomenal growth rates in the mobile sector have been able to reduce the digital divide from nine in the year 2000, to four by the end of 2004. The gap has also been reduced in terms of fixed lines, from six to four, and from 15 to 8 in terms of Internet users. Information is critical to the efficient functioning of social and economic activities that make up the machinery for modern economic development. The economic development potential of information handling technologies such as mobile phones derives from a succession of “technological innovations” that play a crucial enabling role in economic development (Beninger, 1986). Through timely delivery of data and other information required for production, marketing and consumption of goods and services, ICT facilitates expansion in business and industry and the mobility of capital for development (ibid). Thus, a mobile phone is not simply a connection between people, but a link in the chain of the economic development process itself. For example, the shortening of time delays in disseminating price information between trading centers, made possible by successive improvements in information communication technology, is central to “historical explanations of the integration of national and international securities markets” and national banking transactions (Garbdade and Silber, 1978). The question is; will the mobile phone be used to improve banking and thereby enhance economic development in Africa?



There is little doubt that ICT can make significant contributions to socio-economic development, but mere access to the technology alone is not sufficient for development to occur. Access to ICT for the promotion of socio-economic development cannot rest on the provision of mobile devices alone. Information technology may be an enabling element of development, but is “certainly insufficient when simply added to the mix of resources” without adequate provision of important set of complementary resources including roads, capital and the business interactions associated with production and distribution of goods and services (Warshauer, 2002). Consequently, the goal for deploying ICT within developing African countries need not be one that attempts to just overcome a digital divide, but rather a policy that promotes the processes of socio-economic development. This is partly because the digital divide (in regards to mobile phone usage) is not a lack of access to technology. Rather, the threat posed by the divide is playing out to be more of “an economic development

problem” (Dzidonu, 2002; ITU, 2006). Consequently, the digital divide framework provides an incomplete road map for using information technology to promote social and economic development. The concept places too much emphasis on the physical presence of ICT and connectivity to the exclusion of other factors that allow people to use the technology for meaningful ends. Throughout the continent, inefficient ICT deployment due to the absence of a comprehensive ICT development policy and a sustained action from governments, has led to scattered distribution of ICT-oriented activities among economic sectors (Dzidonu, 2003; Sciadas, 2005). This had led to a very low integration of mobile phones into productive economic ventures throughout the continent. There is a need to investigate ways by which ICT can be effectively utilized and applied to bring about expected social and economic changes and improvements in the lives of people on the continent. It is therefore important that discussions of the digital divide extend beyond implications of the divide purely in terms of physical access to technological resources and services, to include investigations into uses of ICT products and their implications for social and economic development. It is the solution to this task that we seek to discuss in the remaining sections of this paper.

### **3. ECONOMIC DEVELOPMENT POTENTIAL OF MOBILE PHONES IN AFRICA**

One of the main reasons mobile phones have received so much attention in Africa lately is the promise that wireless telecommunication technology holds for social and economic development on the continent. In many African countries, mobiles are primarily substitutes and not complements for fixed phone lines (Vodafone, 2005). As a result, the potential socio-economic dividend for mobile phones is very high in many African countries. Besides, much of the basic work to reach people in remote parts of the continent have already been done and majority of the population live in areas already covered by mobile networks (BBC, 2006). Unlike previous tools of socio-economic development (i.e. land lines, factories and industry) whose influences were limited to urban enclaves scattered all over the continent, the beneficial impacts of mobile phones can reach anywhere on the continent without an expensive landline infrastructure and with little capital outlay. As a unifying medium for information interchange, the mobile phone is unique in creating opportunities for sending and receiving information anywhere and everywhere that is under network coverage. As a result, the mobile phone greatly expands interactivity between people and therefore provides a necessary and enabling economic development tool to many Africans who have in the past been excluded from the means of economic advancement. It is hoped that the unique openness of this information technology will spread economic benefits around.

The mobile wireless communication has greater ability to overcome geographic hurdles e.g. mountains, deserts and miles of jungle forests and deserts than land lines or the internet. The wireless technology is less vulnerable to natural disasters and economic saboteurs (e.g. cable thefts) than fixed telecoms. On the continent, mobile phones usually open up entirely new means of communication in very remote locations. This helps to integrate the rural sectors into national economies and also open up the rural and urban sectors of the economy of a nation to entirely new economic opportunities. In other words, mobile phones can do for an African country’s economy what fixed telephone lines did in many advanced economies years ago - widen markets, create better information flow, lower transaction costs, and substantially reduce costly transportation. An important attribute of the mobile phone is that low income does not prevent mobile use on the continent. A recent Vodafone study of the impact of mobile phones on African economies revealed that even the absence of electricity does not present an insurmountable barrier to mobile phone usage, thanks to the sharing of mobiles and recharging batteries in the immediate urban centers or recharging locally by a generator or car battery (Vodafone, 2005). There is enormous pent-up

demand for mobile and other forms of communication in Africa. Investigations into mobile phone usage on the continent have revealed that consumers across the are willing to pay a much greater portion of their income for communications technologies than users in developed countries (Frempong et al., 2005; Gillwald, 2005). This is in line with the fact that people will adopt whatever medium of communication is available, in any given period of time, provided it is convenient, accessible and affordable (Vodafone 2005; Gillwald, 2005).

What makes the mobile phone a great vehicle for economic development in Africa is the fact that a country does not necessarily have to acquire capital of its own to invest in the mobile networks industry. Even though wireless networks in Africa are still in their initial growth, huge foreign investments in new capacity continue to be made (Vodafone, 2005). Uncharacteristic of foreign investments in Africa, revenues from investments in wireless networks are often re-invested in new capacities (ibid). The investments often extend beyond state capitals and large urban centers to cover large geographical areas in the hinterlands (Sciadas, 2005). The race among network operators to out-build each other to gain a large share of the consumer market in African countries continue to spur on network coverage in areas where there have never been any telephones before. Currently, the cost of making mobile phone calls in Africa are astronomical compared to incomes, and the increased competition between mobile network operators do not seem to have made much difference. It is however expected that with time, competition among network operators and appropriate public policy will drag down prices to make the services accessible to more people.

Of particular importance to development efforts is the capability of the infrastructure for wireless networks to carry not only voice traffic (even though that is what may be paying for the investment now) but also data traffic as well. The convergence of voice communication, data processing, and imaging technologies is ushering in the era of multimedia wireless technology in which voice, data, and images may be combined according to the needs of users (Sciadas, 2005). Digital compression also allows more efficient use of bandwidth so that the new customers in Africa may have more choices and/or lower costs, such as use of compressed video for distance education and compressed voice for Internet telephony (ibid.).

The potential economic value of mobile phones to African countries is quite high because other forms of communication (such as postal systems, roads and fixed-line phones) are often far removed from majority of the people. For example, it takes the average Ghanaian living in any of the major cities of the country about half an hour to reach a post office to mail a letter (Frempong et al., 2005). Mobile phones on the other hand, are becoming ubiquitous, providing the requisite points of contact and thus enabling users to participate effectively in the economic system (Vodafone, 2005). In addition, mobiles do not require the high levels of education and literacy as other technologies such as computers or the Internet require of users. This makes mobiles accessible to a great number of rural as well as urban dwellers. Accessibility is further increased by the lower up-front expenditure required to set up a mobile phone business, flexible pricing plans (compared to fixed lines), and also because of greater ease of sharing mobile handsets. The fact that mobile phone calls can be funded on a pay-as-you-go basis makes it easier for less well-off customers to budget for it (Vodafone, 2005). One of the popular ways disconnected communities in Africa have gained access to the wireless network is through public access points (PAPs) (Vodafone, 2005). These PAPs include multipurpose community telecenters and traditional cybercafés that are often located in low-income, under-served areas in African countries. As a result, large numbers of urban as well as rural people are getting connected for voice as well as Internet and other data transmission services via wireless networks.

#### **4. DIRECT ECONOMIC BENEFITS FROM MOBILE PHONES**

Studies sponsored by such agencies as the International Telecommunication Union (ITU) and the World Bank have shown that telecommunications can facilitate many economic development activities including agriculture, fisheries, commerce, tourism, shipping, education, health care and social services (Hardy, 1980; Hudson, 1995; ITU, 1986). These studies show that substantial benefits accruing from improved telecommunications lead to improvements in rural enterprises, time savings in ordering spare parts and savings in travel costs and time (ITU, 1998; Saunders et. al., 1994; Parker and Hudson, 1995). After analyzing scores of economic data from different countries, Hardy (1980), and Cronin and colleagues (1991, 1993) concluded that investment in telecommunications do make a statistically significant contribution to economic growth. Mobile phones and ICT in general, are economic development enablers, and as such, the real benefits from adoption of the technology may not be the direct impact of the ICT sector itself. Rather, the key economic impact of the spread and use of mobile phones is indirect, by transforming the way individuals, businesses and the society in general works, communicate and interact. For example, ICT deployment has led to the decentralization of the industrial and service industries in the developed world. This has been the impetus behind outsourcing of businesses to developing countries where wages are low. Throughout the world, information technology and knowledge are becoming the key drivers for socio-economic development world-wide. With a global focus on information and services, and a general shift away from raw material exports, information technology offer the best opportunity for African companies to actively participate and play critical roles in the global economy, and thereby improve the economies of their countries. It is ICT's support for micro-enterprise (i.e., diffuse, small scale rural ventures) that can empower disadvantaged Africans to create their own sustainable futures (Mayur and Daviss, 1998).

Under the ICT revolution, there is a continuous shift of profitable economic activity from mass manufacturing and raw material production to services and this is forcing decentralization in the economies of nations. Mayur and Daviss (1998) have argued that in a future economy where income from export of raw materials has dwindled, it is decentralized, small, private enterprises that will provide the much needed income for economic development. The authors explain that small scale private enterprises are not only more efficient, but also, better able to respond to the rapid changes that characterize today's information economy (ibid). The ability to access and share information via a wireless telecommunication contributes to the development process by improving efficiency, effectiveness or quality of products, extend reach and distribution and also ensure equity in the distribution of goods and services (Hudson, 2001; Vodafone, 2005). Mobile phones contribute to the efficient running of businesses through the use of just-in-time manufacturing and inventory systems. Agricultural extension officers can relay timely information on weather, crop and soil contents to farmers to help improve agricultural yields. Mobile phones provide small businesses with the capability to contact new customers or clients. Mobile telecommunication contributes to equity by enabling the disadvantaged, including the poor, isolated rural people, and the disabled, to obtain information that would otherwise be very difficult or impossible to access.

In economies such as those of African countries that depend heavily upon agriculture and the extraction of natural resources for development, distance from urban markets has traditionally been overcome only with the provision of roads or railway facilities. Poor transportation links between urban and rural Africa prevent businesses from accessing information that is becoming increasingly important in the production and marketing of commodities (ITU 1998). With mobile phones, rural communities in Africa once separated

by distance and time develop new virtual relationships uninhibited by conventional notions of distance and road or railway transportation links. The implications of the enhanced cross-community and national contacts for the economic development of the hinterlands in African countries can be tremendous. Among the economic benefits of mobile phones is the opportunity the technology offers for producers to track price information. Increased mobile connectivity improves access to information (Vodafone 2005). Farmers and fishermen for example, can compare prices in nearby markets before selling, allowing them to get fair prices for their produce, eliminate dependency on local middlemen, and/or modify their products in response to market demand (Hudson, 1984; Vodafone, 2005). Knowledge of latest prices in different markets, can improve price transparency for small farmers and fishermen. In some circumstances, mobile phone calls may be substituted for travel, resulting in significant savings in personnel time and travel costs. For the business owner with very limited economic resources for gathering information, a successful phone call that allows her to avoid the time and expense of a long bus trip or one that gives her information about availability and location of cheap goods or services can go a long way to reduce cost and save time. In addition, timely delivery of information on current market prices is critical for high value perishable agricultural products such as fresh fish, fruit and flowers. In Sri Lanka for example, Saunders and others (1994) have reported that the use of mobile phones by small farmers to obtain prices of their produce resulted in higher prices for the goods the farmers sold to retailers. Improved coordination of transportation is also important in the marketing of perishable products. Hudson (1984) has reported that fishermen in the Philippines use cell phones to book space on air cargo for their tuna, so that it can be flown to Japan and sold at premium prices. Wireless communication technology facilitates timely ordering of spare parts and immediate contact with technicians resulting in reduced downtime of production equipment. Businesses can reduce inventories they need to keep on hand if replacements can be ordered and delivered as needed. This can result in huge savings in time and money for the small business.

Availability of wireless telecommunication can help to attract industries to rural areas, and allow for the decentralization of economic activities away from major urban areas on the continent (Hudson, 1984). In some circumstances, the mobile telecommunication can be substituted for travel, resulting in significant savings in personnel time and travel costs. Mobile phones can also reduce the need for travel. In India, the benefits to villagers who use long distance public telephones are about five times the cost of the call, taking into consideration bus fare and time lost from work in traveling to town to deliver the message (Pierce and Nicholas, 1983). A study conducted in Yemen for the ITU revealed that the use of telecommunications to facilitate organization of the transport and storage of goods saves about 15 per cent of all transportation costs, in addition to reducing delays caused by equipment breakdowns (ITU, 1998). Transportation accounts for 10 to 20 per cent of the total energy consumed in the low income developing countries (Hudson, 2001) but the use mobile phones to coordinate logistics of shipping and transportation can help minimize fuel consumption and reduce accompanying environmental pollution. Related to travel savings is the ability to make more efficient use of transportation. An ITU study on the impact of ICT on the transportation sector revealed that through better telecommunications, developing countries that import oil can save about US\$18 billion a year (ITU, 1998). This benefit can be extremely important for African countries where oil imports continue to be a major drain on foreign exchange.

In addition to this, the use of mobile phones can help cut down the cost and time of collecting information to support economic decisions. The individual businessman can then make more transactions in a given time than before, while each business decision is based on

better information. In both cases value is added. For example, banking services may be improved in rural Africa, when mobile telephones are used to confirm payments and money transfers among allied banks. This will stimulate economic activity and open up new business opportunities. In a study of the impact of mobile phones in selected African countries by Vodafone in 2005, 62% of businesses in South Africa and 59% in Egypt linked their increases in profits to mobile phones (BBC, 2005). Another study conducted in Tunisia, Jordan and Bahrain revealed that the mobile phone has become a vital tool for businesses in the Arab World (Fayoumi, 2005; MTC, 2005). 32% increase in business profits in Bahrain and 25% increases in profits in Jordan and Tunisia were attributed to the use of mobile phones. Additionally, 62% of respondents in Tunisia believed that the mobile phone has helped lower their costs by reducing travel needs (Mavros, 2006).

According to Hudson (2001) information and communication media serve as a catalyst at certain stages of the economic development process. Explaining further, Hudson stated that the technology becomes particularly important when innovations such as improved farming practices, lines of credit and banking are introduced (Hudson, 2001). Evidence from India suggests that the need for efficient telecommunications becomes critical when rural modernization begins, for example, when improved farming practices are introduced or a new credit line is made available, or when an integrated development plan is being implemented (Pierce and Nicholas, 1983). On the other hand, lack of adequate telecommunications can hinder the growth and efficiency of industries in Africa. A study of businesses in Kenya estimated that losses incurred as a result of poor telecommunications are on the average 110 times higher than the total cost of providing adequate telephone service, and amounted to an average of 5 per cent of total turnover (ITU, 1988).

## **5. SOCIO-CULTURAL IMPACTS OF MOBILE PHONES**

In a study of the socio-cultural impacts of mobile phones, the International Telecommunications Union reported that the advent of the anywhere, anytime mobile phone technology, allow users to construct their own "at-home" environment regardless of where they find themselves in physical space (ITU, 2004). The report stated that the sense of belonging to a place is slowly giving way to a sense of belonging to a communications network. This has both positive and negative implications for the African family. The mobile phone may cause the dilution of the collective identity of a family or people living in a community when individuals rather become closely attached to people they are linked via a mobile phone. This has the potential to fragment the traditional African household but it is also encouraging to note that the phones can encourage individual thought and may facilitate the establishment of closer ties with distant relatives. Mobile phones can also bring the poor and needy closer to external support networks of family members.

Mobile phones can be harnessed to strengthen the fragile democracies in African countries. The technology has the potential to facilitate assemblies of unrelated people at a moment's notice. For example, the use of Short Message Service (SMS or text messaging) has been cited as partly responsible for the overthrow of President Joseph Estrada of the Philippines. Mass political protests, such as the recent 2006 riots in France and rallies planned to protest economic policies of the World Trade Organization have been organized quickly and effectively via SMS. Mobile phones and FM radios have and are already playing major roles in the conduct of fair elections in Ghana and many other African countries. These activities may increase the rapidity of political change in Africa and open up varying paths for democracy to thrive on the continent.

The mobile phone, as is the case in developed countries, has become somewhat of a status symbol for many Africans. Many young people show off with their mobile phones and their social status is enhanced by the unique ringing tones they use and the number/quality of messages they stored on their mobile phones. Mobiles are quickly becoming fashion accessories for Africans. In many African countries, the mobile has become the principal mode of socializing for the people (Vodafone, 2005; ITU, 2004). Young people use the mobile primarily to sustain and enhance their social networks. The phones have certainly made it easier to engage in spontaneous communications, perhaps facilitating that first step in finding a mate. The ITU study found that text messaging plays a very important part of courtship among teens in the developed world (ITU, 2004). This will not be different for adults and teenagers in Africa. The phones help maintain relationships by allowing couples to communicate better and to keep in touch when school or business drive them apart. On the other hand, the mobile phone can also contribute to heightened individualism, and some argue, to a reduced degree of intimacy between couples (ITU, 2004). In this respect, the mobile phone can also strengthen and even initiate romantic relationships outside a marriage.

The ITU report revealed that the pervasiveness of mobile communications in everyday life has almost eliminated the distinction between the public and the private spheres of human existence. Public places such as post offices, shopping centers and car stations are commonly “colonized” by the private lives of mobile phone owners (ITU, 2004). This has led to the blurring of the separate contexts of social life. The intrusion of remote relatives, friends and others into any given social context has become commonplace, and such intrusions are even anticipated (*ibid.*). The concern is that the use of mobile phones may be affecting social behavior. While admitting to an overall increase in spontaneous and widespread social interaction, some argue that mobile phones may be reducing the quality of face-to-face social interaction that characterizes traditional African life. In addition to this, wireless telecommunication is eroding the boundary between work and private life and rapidly transforming African societies into one shaped by mobility thereby redefining our sense of time, space and context. One’s sense of time is no longer necessarily governed by linear clock time, but can instead be “socially negotiated” whenever needed. The traditional segregation of context disappears, in that private life can interrupt professional life and vice versa. With mobile phones, individuals may increase their productivity, but this may come at the expense of their leisure and family time. One of the principal reasons people cite for owning a mobile phone is the added safety and the sense of security it provides. Mobiles give users easy access to friends, family and emergency numbers. Besides, with the proliferation of mobile devices, there is an increased chance that somebody witnessing an emergency (e.g. car accident, fire) or a crime has a phone and can contact the pertinent authorities or call for help (ITU, 2004).

### **5.1 Other Potential Uses and Impacts of Mobile Phones in Africa**

If appropriately utilized, mobile phones can have tremendous impact on the provision of health services in African countries. The phones can be used in emergencies to summon immediate medical assistance and provide health education to target populations including expectant mothers, mothers of young children, groups susceptible to contagious diseases. Further more, mobile phones can be used to collect public health information such as epidemiological data on outbreaks of diseases such as malaria and cholera. Other potential uses of mobile phones may include the provision of educational services such as providing test results via text messaging and checking absenteeism in schools by sending text messages to parents. Equally important is the capabilities ICT offers to open up the government and bring it closer to the people by making it accessible through additional channels and

increasing the ability of the people and civil society to make their voices heard by government (Gillwald, 2005).

## **6. CREATING DIGITAL OPPORTUNITIES: THE ROLE OF AFRICAN GOVERNMENTS**

For an information technology such as the mobile phone to make effective contributions to poverty alleviation and sustainable development, the adoption of the technology must be done within an integrated development strategy that is informed by national policies at the macro and micro economic levels. In a study of the potential impacts of ICT on rural development, Martin and McKeown (1993) concluded that “unless there is minimal infrastructure development in transport, education, health, and social and cultural facilities”, it is not likely that investments in ICT alone will enable rural areas to make any substantial progress in economic development. For example, if there is no reliable transportation, producers may be forced to sell to local middlemen even if they learn that prices are higher elsewhere. Without a source of credit, farmers may not be able to buy better seeds or pesticides, even if they learn from their phone conversations that some input will improve their crop yield. If there is no way to store harvested crops, farmers will have little marketing options, leading to loss of revenue.

Accordingly, the missing link in the economic development of African countries under ICT relates more to the formulating and implementation of appropriate ICT-led development policies and plans that effectively embed the technology into economic development activities (Dzidonu, 2003; Schiadas, 2005). This means that African governments need to enact effective and pragmatic ICT policies. In a study of ICT access and usage among eleven African countries in 2005, Gillward and others found policy reforms adopted by African governments to develop the IT sector focuses exclusively on privatization with the intention to open up of the local ICT markets to foreign trade and investment (Gillward, 2005). The authors explained that privatization policies have been implemented “without regards to other reform drivers such as fair competition and independent regulation” that are equally critical to securing the investment required for not only network expansion, but also for ensuring competitive and affordable services on the networks (ibid.). What African countries are realizing, according to the report is that “privatization without the regulatory capacity or political will to manage a private monopoly or control it in a competitive environment, can be entirely counterproductive to the goals intended by liberalization” (Gillward, 2005). The ad hoc and piecemeal efforts at planning for ICT-led development have, and may continue to undermine efforts that African governments make to take advantage of increases in mobile phone subscription to support socio-economic development on the continent.

For mobile phone markets in African countries to flourish and make contributions to the socio-economic development of adopting countries, a competition friendly and transparent operating climate will need to be put in place. African mobile markets now have more than one operator and a glimpse across the continent’s mobile markets reveals the benefits of competition (Vodafone, 2005). Policies that proactively seek to make competition work in the mobile industry should be maintained with the government intervening only in cases of dispute. It is well documented that the ICT market performs well when governments resist the temptation to pick winners and dictate solutions to technical problems (Hudson, 2001). Excessive surcharges and fees by African governments on mobile operators are invariably passed on to the consumers, making mobile phones astronomically expensive to own in African countries. The disproportionate amount of personal income spent on mobile phones threatens to undermine the positive economic impact of these technologies. It is thus

imperative that African governments carefully balance their need for operating capital through taxation, and the easy access to these technologies for socio-economic development. For example, several approaches can be adopted to achieve the goal of providing cheap universal access to telecommunications services throughout the African countries, including access to rural, remote, and disadvantaged residents. These approaches include incentives through competition or concessions to operators, requirements of licenses or franchises, and subsidies for services in areas that are believed to be unprofitable to serve. African governments can negotiate with providers to include universal service obligations (USO's) as a condition of their licenses. Latin American countries including Argentina, Chile, Mexico, Peru, and Venezuela have such a policy that makes it possible to provide service to all communities. In the Philippines, local exchange obligations are bundled with cellular and international gateway licenses (Hudson, 2001).

A variety of subsidy schemes can be used to subsidize operators that serve regions where costs may not be recovered from expected revenues. Subsidies may be paired with universal service obligations (USO's) to compensate the carrier with the obligation to serve. For subsidies to have the intended impact, they must be made explicit and targeted at specific classes of customers or locations such as high cost areas, disadvantaged areas or customers that cannot afford typical prices for installation and usage. The government can also negotiate with service providers to establish route averaging by which all customers pay uniform distance charges, regardless of location. Funds for subsidies may be generated from sources such as contributions from all carriers, (e.g. a percentage of revenues or tax on revenues), a surcharge on customer bills, and government subsidies from general tax revenues or other government sources. African government can also provide funds to achieve the same goal. In Poland, a phone project for rural localities connected 7,885 localities between 1992 and 1996 with funding from the state budget (Kayani and Dymond, 1997). In 1994, Peru established a rural telecommunications investment fund, FITEL, financed from a one per cent tax on revenues of all telecommunications providers to provide phone service to communities with fewer than 500 inhabitants and not covered by private providers (ibid).

## 7. CONCLUSION

ICT is changing the way many Africans live and work. The mobile is a powerful enabling technology whose impact can range from enhanced financial transactions, wealth generation and its distribution, improved education, and expansion in democratic practice. On the social front, the advent of "anywhere, anytime" mobile technology helps to create personal identity and facilitates assemblies of activists or unrelated people at a moments notice. Other potential contributions include blurring public and private life, facilitating romance and strengthening relationships by allowing couples to communicate better than before. As an intrusive technology, the mobile phone may also threaten traditional African values of privacy, security and courtesy. These aside, we need to be mindful of the fact that new technologies (such as the printing press, radio and television and the type writer) create totally new opportunities for human progress. However, the conditions of life of people in particular societies did not change until the technology in question was adopted and used widely in productive ventures to alter the socio-economic condition. Like any other tool, the mobile phone is not a means to an end. Having underutilized roads, abandoned factories and rusted telecommunications networks does not increase the productive capacity of a nation. The same holds true for underutilized mobile phones in the hands of Africans. What is needed is an integrated development plan that will effectively utilize the mobile phones in productive ventures. It is important to note that the recent increase in Africa's teledensity has been propelled by demand spurred on by increasing popularity of mobile phones and by supply-

driven events such as falling costs and prices, technological innovation and easy access to foreign direct investment. Generally, African governments have played a minimal role in the recent bridging of the digital divide through subscriptions to mobile phones. Dzidonu and Adenya (2001) for example, have observed that the “absence of a dedicated technology champion has prevented full and steady progress in the ICT industry”. But the non-committal stance taken by African governments seem to suggest that the key policy makers are not fully aware of the contributions that ICT can make to socio-economic development. Studies such as this that demonstrate the uses and benefits of ICT thus have a crucial role to play in sensitizing policy makers on the continent about the development potentials of the mobile phone and other ICT infrastructure.

## 8. REFERENCES

- BBC World Service (2005) Mobile growth fastest in Africa  
<http://news.bbc.co.uk/2/hi/business/4331863.stm>
- BBC (2006) Mobiles aid drive for development  
<http://news.bbc.co.uk/2/hi/technology/4716286.stm>
- Beninger, J. (1986) *The Control Revolution: Technological and Economic Origins of the Information Society*, Cambridge, MA, Harvard University Press
- Cronin, F.J., Parker, E.B., Colleran, E.K. and Gold M.A. (1991) Telecommunications Infrastructure and Economic Growth: An Analysis of Causality, *Telecommunications Policy*, **15**, 6, 529-535.
- Cronin, F.J., Colleran, E.K., Herbert, P.L. and Lewitzky, S. (1993) Telecommunications and Growth: The Contribution of Telecommunications Infrastructure Investment to Aggregate and Sectoral Productivity, *Telecommunications Policy*, **17**, 9, 667-690.
- Dzidonu, C. and C.N. Adeya (2001). The potential of the emerging educational technologies on the education system in Ghana. Background paper for the World Employment Report 2001 [http://www.bib.ulb.ac.be/cdrom/wer\\_lawitie/back/ghan\\_toc.htm](http://www.bib.ulb.ac.be/cdrom/wer_lawitie/back/ghan_toc.htm)
- Dzidonu, C.K. (2001), The Socio-Economic Development Implications of the Digital Divide within the Context of African Countries, Presented at the, Joint African Finance and Economic Planning Ministers Meeting of the ECA, Algiers, Algeria, 8-10.
- Dzidonu C.K. (2002) A Framework for Guiding the Development of ICT-led Socio-Economic Development Policies, Strategies and Plans, Africa Technology Policy Study (ATPS), Special Working Paper Series No.5, Nairobi, Kenya.
- Dzidonu, C.K. (2003) Monitoring the Information Society: Data, Measurement and Methods. Joint UNECE/UNCTAD/UNESCO/ITU/OECD/Eurostat Statistical Workshop, *Event related to the World Summit on the Information Society*, Geneva, 8-9 December.
- Fayoumi, A. (2006) Mobile Telecom Companies and Arab Stock Exchanges: A True Love Affair; Mobility One Language, Diverse Cultures: in MTC, 2006. Report on the Socio-Economic Impact of Mobile Phones in the Arab World, *Creating jobs and improving everyday life*  
<http://www.mtctelecom.com/muse/obj/portal.view/content/Media%20centre/Press%20releases/Socio%20Economic%20Report> .
- Frempong, G., Esselaar, S., LINK Centre, Stork, D. and Anyimadu, A. (2005) “Ghana” in Towards an African e-Index Household and individual ICT Access and Usage across 10 African countries Research ICT Africa, in Gillward, Alison (ed.)  
<http://www.researchictafrica.net/images/upload/Chapter06Ghana.pdf>
- Garbade K. and Silber, W. (1978) Technology, Communication and the Performance of Financial Markets: 1840-1975, *Journal of Finance*, **33**, 3, 819-832.

- Gillwald, A. (2005) Towards an African E-Index Household and Individual ICT Access and Usage Across 10 African Countries Research ICT Africa! <http://www.researchictafrica.net/images/upload/Toward2.pdf>
- Grace, J., Kenny, C., Qiang, C., Liu, J. and Reynolds, T. (2001) Information and Communications Technology and Broad-Based Development: A Partial Review of the Evidence, World Bank.
- Hardy, A.P. (1980) The Role of the Telephone in Economic Development. *Telecommunications Policy*, 4, 4, 287-294.
- Hudson, H.E. (1984) When Telephones Reach the Village: The Role of Telecommunications in Rural Development, Norwood, NJ, Ablex.
- Hudson, H.E. (2001) The potential of ICTs for development: Opportunities and Obstacles, Background paper for the World Employment Report 2001: [http://www.bib.ulb.ac.be/cdrom/wer\\_lawitie/back/hud\\_toc.htm](http://www.bib.ulb.ac.be/cdrom/wer_lawitie/back/hud_toc.htm)
- Hudson, H.E. (1995) Economic and Social Benefits of Rural Telecommunications: A Report to the World Bank, Washington DC, USA.
- International Telecommunication Union. Information, Telecommunications, and Development, Geneva: ITU, 1986.
- International Telecommunication Union (1988) Benefits of Telecommunications to the Transportation Sector of Developing Countries. Geneva: ITU.
- International Telecommunication Union. (2004) Social and Human Considerations for a Mobile World; Background Paper, ITU/MIC Workshop on Shaping the Future of a Mobile Society, Seoul 4-5 March.
- ITU, 2006. World Telecommunication/ICT Development Report 2006: Measuring ICT for Social and Economic Development [http://www.itu.int/ITU-D/ict/publications/wtdr\\_06/index.html](http://www.itu.int/ITU-D/ict/publications/wtdr_06/index.html)
- Kayani, R. and Dymond A. (1997) Options for Rural Telecommunications Development, Washington, DC, World Bank, 1997, p. 18.
- Laffont, J. (2003) Regulation and Development, Cambridge University Press, Cambridge.
- Martin, W.J. and McKeown, S.F. (1993) The Potential of Information and Telecommunications Technologies for Rural Development, *Information Society*, 9, 2, 145-155.
- Mavros, (2006) MENA Survey; Mobility One Language, Diverse Cultures, in MTC Report on the Socio-Economic Impact of Mobile Phones in the Arab World, Creating jobs and improving everydaylife <http://www.mtctelecom.com/muse/obj/portal.view/content/Media%20centre/Press%20releases/Socio%20Economic%20Report>
- Mayur, R, and Daviss, B. (1998) How Not to Develop an Emerging Nation, *The Futurist*, 32, 1, 27-31.
- MTC (2006) Report on the Socio-Economic Impact of Mobile Phones in the Arab World Creating jobs and improving everyday life. <http://www.mtctelecom.com/muse/obj/portal.view/content/Media%20centre/Press%20releases/Socio%20Economic%20Report>
- Pierce, W.B. and Jequier, N. (1983) *Telecommunications for Development*, Geneva: International Telecommunication Union, 1983.
- Rodriguez, F. and Wilson, E. (2000) Are Poor Countries Losing the Information Revolution?, Paper prepared for InfoDev. <http://www.infodev.org/library/working.htm>
- Saunders, R., Warford, J. and Wellenius, B. (1994) Telecommunications and Economic Development, second edition, Baltimore: Johns Hopkins University Press.
- Sciadas, G. (ed.) (2005) From the Digital Divide to Digital Opportunities. Measuring Infostates for Development, Claude-Yves Charron.

- Vodafone (2005) Africa: Impact of Mobile Phones: Moving the Debate Forward, *Mobile Phone Paper Series No. 3*, March.
- Warschauer, M. (2002) Reconceptualizing the Digital Divide, *First Monday*, 7, 7.  
[http://www.firstmonday.org/issues/issue7\\_7/warschauer/index.html](http://www.firstmonday.org/issues/issue7_7/warschauer/index.html)