Journal of Sustainable Development
www.ccsenet.org/journal.html
Vol. 1, No. 1
March 2008

Information Communications Technology (ICT) Effect on Sustainable Development in Cameroon's Fragile Economy

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Abstract

This paper looks at how sustainable development is effected and affected by Information Communication Technology (ICT) in Cameroon – West Africa. It highlights some of the socio-economic, political and environmental issues involved in the adoption and use of ICT by Small to Medium size Enterprises (SMEs) and Government Institutions (GI), and the effect on sustainable development. It will attempt to bring some understanding of the peculiarities and challenges faced by SMEs, together with the opportunities to influence societal changes and integration into the digital world.

Keywords: Information Communication Technologies (ICT), Emerging Economies, Small to Medium Size Enterprises (SMEs), Economic dependency, Cameroon and Sustainable Development

1. Introduction

Businesses in advanced economies have in past twenty years enjoyed some levels of successes with the adoption and use of technologies, especially Information Communication Technology (ICT). On the other hand, some advancing economies, for example Cameroon, have reacted some how very slowly to the chance of making an impression with the available technologies. Interestingly, this situation is not unique to Cameroon alone but also in most of Africa and Asia's emerging economies.

2. The Information low Economy

In the early 20th century, emphasis was placed on the absolute need of machineries to promote economic growth in the economy. There was a greater need for human power to work these machineries, their intellectual capacity or skill specialty was not usually a pre-requisite for carrying out the tasks as long as the workers were skilled enough to carry out their daily routine. Users also had to wait lengthy period of time to see products and services they required. The whole productive cycle was done in a top-down fashion. And any error discovered at project completion phase meant a complete condemnation of the finished product and a fresh start from the analysis of specification stage. Much of these could be attributed to the fact that, there was no loop-style method of product design which is widely present in today's economy, in which, a prototype of the specified product or service is designed and tested. Any fault detected at testing phase is simply corrected by re-visiting and correcting the programs or design in the offending loop, and re-integrating the new change into the product cycle.

The early stage economies were at low information-(in) accessibility phase. A stage where entrepreneurs, program designers, analysts and even end-users did not have adequate knowledge of products and services they required, developed and/or used. Tasks were routinely carried out with no thought about how the cycle of production could be shortened or high-quality low-cost goods and services produced. It became the case of "the Good, the Bad and the Ugly", where results were either achieved or not and with little foresight.

3. Survival of the fittest

The advent of the Internet and modern communication technologies, have provided a breakthrough in information accessibility and dissemination. And the rules of the game changed, whereby, the strongest players were individuals, businesses or corporations, with the most access to relevant information – and who takes advantage maximally of such opportunities. In fact, it is worth noting that, availability of information does not necessarily imply acceptance and

usage. Some individuals and government agencies, even when provided with full access to information still prefer not to adapt their existing systems to provide modern solutions. Despite the many reports on successes of information-rich economies, many in the advancing world are not catching up with the trend and lagging behind.

3.1 Cultural and Socio-political Effects

According to Arreymbi (2006), low technology up-take can be directly attributed to and/or influenced by the socio-political atmosphere in these economies. In most emerging economies, the socio-political and sometimes personal to cultural influences play a major part in the adoption and use of modern technologies. For example, many reports have pointed out the cultural influences on women in predominantly Muslim countries, which does not allow for women entrepreneurship and/or exposure to foreign technology. There have been reports (BBC News, 2002) of many such restrictions imposed by Muslim leaders especially in pre-war Afghanistan, in the education of women and general use of Western technology, because it was seen to be influencing the culture and could be used as a manipulative tool. Alterman (2000) also cited similar socio-political and cultural reasons in countries such as Bahrain and Tunisia, where they openly monitor Internet traffic. The United Arab Emirates and Yemen use proxy servers to prevent users from accessing "undesirable" sites. Iran allows access, but the extent of the traffic monitoring in that country is uncertain. Meanwhile Arreymbi and Williams (2005) reported that, in cold- war China, restrictions on use and monitoring of internet accessibility stems from believes that such technologies are a manipulative tool designed by the Western Governments to oppress and spy on their citizen and economies. However, some socio-cultural impact could be attributed to ignorance on the part of the citizens. Very little is known about the existence and use of alternative/modern technologies, which may also influence acceptance and/or adoption rate.

3.1.1 Fear factor

Another example cited by When (1998), as one of the reasons tendered for the non-acceptance of ICT in some advancing countries is the fear that, "the poor financial, technical and human resources in these economies would perpetuate further ties of dependency, such that developing economies would be kept economically subservient by the need for Western equipment and expertise". Therefore at times, the fear of a level of dependence on the more developed economies is often a barrier to technological solutions offered by these economies to the less developed ones. However, it is still a thought worth considering that technological upgrading is vital for socio-economic advancement of all economies; to an extent that it provides a unique opportunity for advancing economies to raise per capita income, and also improves the demand for a knowledge-based workforce. Arreymbi (2006) citing Nagy (1991) reported a statement by the Malaysian Prime Minister Mahathir Mohammed who said, "…it can be no accident that there is today no wealthy developed country that is information poor and no information rich country that is poor and underdeveloped…"

Therefore, it can be safe to suspect a correlation between the information level and socio-economic development of a nation. How strong or beneficial this link is, depends on a number of factors; chief among them is the Information and Communication Technologies (ICT) available in an economy. The statement is further supported by the increase ICT adoption by many economies of the world both the rich and not so rich in promoting societal, business and more recently government (e-Government) activities.

4. The Economic Drivers

Many technologies are driving ICT usage around the globe and with the World fast becoming a global village; these technologies are increasingly contributing to many countries' economic and sustainable developments. In fact, Arreymbi (2006); Qiang and Khalil (2006) have argued that developing economies have gone through great development in the roll out of basic infrastructure for ICT.

4.1 The Internet and WWW

These technologies have blurred national boundaries. Citizens can now source information or do business far beyond national boundaries through the complex Web of systems networks connected with super high-speed links cutting across sea, air and land. The information superhighway has developed from these technologies and provides access gateway which has been brought about by the World Wide Web (WWW) - a network of globally linked resources. Table 1 shows the increase use of internet is more noticeable in Africa, the Middle East and Latin America/Caribbean compared to other regions of the world.

Presently, the Internet is not proprietary and is available to anyone with computer access connecting to the vast information market around the world. ICT through the Internet and www have developed strong virtual communities linked by interests, language, beliefs, habits, social networks etc. Williams and Arreymbi (2007) have reported on these communities which they called cyber tribes and showed how the activities of the avatars within these communities can influence either directly or indirectly the way we live, interact and/or do business in cyberspace. Electronic networking has become a very powerful, rapid, inexpensive and lively way to communicate and exchange information. Social networks are increasingly being built and when available, previously unanticipated collaboration seems to come into being almost spontaneously. The underlying cause seems to involve a latent demand that remains latent as long as joint

work requires either the disruption of waiting for the text mail, the continual retyping of texts transmitted by mail or fax, or the ever daunting need to secure large budgets and approvals for extensive international travel.

This globalisation of economies has drastically improved access of more advanced technologies to most deprived economies, providing opportunities for them to raise per capita income and improve demand for skilled or semi-skilled labour. Given the usefulness of the Internet it is clearly self-evident the correlation between information, communication, and economic growth. With the Internet and/or WWW, there are no set boundaries for business in cyberspace, including the transfer and movement of labour and capital. The Miniwatts Marketing Group (2006) provided estimates that suggest an increasing Internet usage growth rate around the world, presently at around 20 per cent a month with over 1 billion users (MIDS Press, Miniwatts Marketing Group, 2006).

4.2 Mobile and wireless Technologies

Most advancing economies especially in Asia and Africa (IMT, 2006), are experiencing ICT growth more in areas of mobile and wireless communications, which have preceded all expectations in terms of level of penetration and system usage. Just as in most advanced economies – Japan, America and Europe – advancements in the Internet, WWW and mobile-wireless communication technologies have continued to drive these economies. Internet access is comparatively very low per population in advancing economies than in advanced economies. Access to and use of the Internet is unbalanced due to factors which will be highlighted later in this paper. There are obvious gaps between developed and developing economies in terms of the numbers of nets, hosts and users as evident in table 1. John (1995) agrees and quotes a study from the Panos Institute which suggest, there is a danger of a new information elitism which precludes the majority of the world's population. However, these disparities are increasingly being addressed by some forward looking governments in advancing economies.

The BBC in a report highlighted the Ethiopian government’s collaboration with the South African Education Authorities, and invested approximately £2 million providing satellite links and plasma screen technologies to Schools and colleges in Ethiopia. The link delivered life educational programmes from South Africa, in a pack with South African Schools. The students get the same life-link teaching with their counterparts in South Africa as the courses are delivered (BBC2, August 2006).

5. Digitalisation and Cameroon

Many UN reports (ITU, 2004, UNDP 2006) cites increasing use of mobile-wireless technology within the African continent and the technologies are contributing to an increasing growth proliferation of handheld devices especially the use of mobile phones in many rural areas. In Cameroon, where the country had upgraded parts of the telephone network with digital technologies (CamTel report, 2004) has, since privatisation, seen some improvements in mobile connection and call quality; and also, expanding subscriber base using 155,000 CDMA lines (Reuters, Feb, 2006). The Mobile and wireless technology system has also facilitated some penetration into the hinterlands of the country. Many analysts attribute the dramatic change, much to the benefits derived out of many factors. For example, digitalisation of networks, improved reliability and high bandwidth, low overhead costs of and flexibility of wireless systems structural implementation, falling costs of technological devices, and ease of use; as opposed to hitherto difficulties of implementing wired networks, equipment and maintenance costs, physical topography, funding and historically exaggerated bureaucracy and/or inadequate government policies.

The Cameroon Radio and Television (CRTV) and Cameroon Tribune newspaper (May 2007), recently reported the Cameroon government have signed an agreement pack with the CISCO Company to develop and propagate ICT network throughout the country, linking universities, schools and businesses. Presently, the country has a monopolistic supplier - CAMTEL, state-owned and created in 1998 - for the fixed or wired lines telecommunication networked systems and services. Also, CamTel provides Leasing Services (LS) and Internet via RTC and ADSL. But within the mobile domain, competition is fierce from other mobile-wireless suppliers who are increasingly putting up strong challenges for the mobile–wireless market.

Major players in this domain today are MTN (58% market share) and Orange (40%), who both have the majority of the wireless users and signal coverage spanning almost 40% of the country and about 80% of the population (Redline Communications, 2007). Another arm of CAMTEL, CMT joined the mobile market in 2005 with their CT phone, which is based on CDMA and providing competitive services for mobile subscribers (Africanews.com). However, it is worth noting that some of the services provided in the Cameroon mobile/wireless telecommunication systems, just as in many other advancing economies of the world, especially sub-Saharan Africa; are limited to voice calls and SMS text only. Other value-added services and technologies such as emails, MMS, GPRS and mobile web-browsing that could enhance users experience and give access to limitless resources on the WWW are almost non existent.

This could be attributed to inferiority of the technologies still in use today in most parts of the Country, which provides very limited facilities such as low bandwidth, poor connection with high drop rates, poor signal quality and infrequent power supply and/or fluctuating power outages and other societal and/or social influences. The application of new

technologies in these economies have not always been easy, the digital divide is still prominent in such situations and problems could be attributed more to issues of costs and/or lack of support infrastructures for technology, technical know-how, funding and other factors of opportunity costs of acquiring such technologies. The situation has been exacerbated by the general poverty, ignorance, lack of demand, inadequate capital funding and/or lost-motivation to buy such quality value-added services, (Arreymbi, 2006). And according to ITU report (2006/7), Cameroon has a Networked Readiness Index (NRI) score of 2.74, one of the lowest in the modern World today (ITU report, 2006-07).

6. Motivation or the lack of it

There are many motivational factors that would determine the extent to which the drive of activities within an economy either from government, individuals and/or business may be influenced to bring about sustainability and economic development.

6.1 Spending power

Most advancing economies on the one hand have on average less than $500 per capita income (Aguolu, 1997, UNDP 2004). And with limited disposable income, most do not see the need to spend on technology against feeding themselves or being able to afford medical care. The people have basic needs – healthcare, food and shelter and many see ICT role as crucial in the long term provision of these socio-economic needs (OECD, 2000). The opportunity cost of forgoing a daily meal just to acquire a mobile system is huge and cannot easily be met by most and left entirely for the affluent few. However, there is some indication that the technology climate is changing, more especially in the cities where MTN in a deal with Redlines Communications group Inc., are installing WiMAX broadband networks and moderately affluent businesses and citizens are changing habits and desires, increasingly adopting emerging technologies to compete with the rest of the world, more so, due to peer pressure and keeping up with trends.

On the other hand advanced economies such as the UK and USA can afford to spend over 10 per cent of its national resources (GDP) on information services alone (Garfield, 2001). But advancing economies such as Cameroon often spend less than 1% of GDP per cent on information services. Much of their scarce funds is allocated to other social services like health, government, education, housing, agriculture, transportation, etc., which are given priority over information systems such as libraries, documentation and information centres etc.

6.2 Physical hindrance

Cameroon has most of its population scattered in numerous communities of towns and villages often with great physical distances between them. Therefore, free flow of information among and beyond the communities requires sound developmental infrastructures such as good road networks, regular electricity supply, transportations (vehicles, trains, aeroplanes, airports) and reliable postal and telecommunication services. Some of these amenities exist but their quantity and quality are generally inadequate and poor. The country has shown the desire for rapid growth in the adoption of new technologies and industrialization of her economy. She is striving to provide adequate basic infrastructures that foster development and promote information accessibility to important areas such as health, education, library services and general communication systems. But many problems are still abound within the country - problems with steady supply of electricity, inadequate roads and transportation infrastructures, and including postal and telecommunication networks coverage services.

6.2.1 Communications Network

The country with a population of approximately 18 million has just about 110,000 fixed telephone lines and giving access to approximately 0.61 per 100 populations. There are only approximately 170,000 computers connected to the internet and with very few or almost non-existence registered Country-domain namespace - .CM – users. The national operator CamTel, is making very little or no effort to manage the .CM registry and/or promote development of the Internet in Cameroon. The majority of web applications such as emails originating from or terminating in Cameroon are hosted on either, **.COM, .FR, .NET** or **.CO.UK** and other registries because no alternative is being developed in the country. Many of the country's SMEs and her big cyber player's sites are priced out of the .CM domain name registration, which can cost $400-$800 (CamTel, 2005) per year to register.

The mobile subscribers' number on the other hand, has experienced a steady increase to total almost 2.3 million at approximately 14 per 100 populations. Internet users reached 370,000, at 2.3 per 100 populations in 2006 (ITU, ICT indicators, 2006). These figures show clearly the mobile and internet areas as potential directions for progressive ICT development and holds substantial promise for the information have-nots in this developing economy. Also interesting is the fact that, the government of Cameroon in a recent report (Cameroon Tribune, 2006) identified the relevance of ICT, especially Internet access, to the growth and advancement of her economy. Through capacity building and technology transfer, it is intending to provide mechanisms for developing skills in ICT via training, awareness and infrastructural developments etc. Hearn et al. (1998), Anderson (2005), and Arreymbi (2006), all agree that, the success of bridging the digital divide would be measured by the degree to which the lives of those who do not have access could be improved by having it. The consequences of which, if not, may disengage or disenfranchise the citizens to personal

and national sustainable development. Other analysts such as Sadowsky (1996) have argued the importance of the role of the nation and her government in such calculations; by claiming that the result of lack of ICT or Internet access affects the entire country and may hamper development. Therefore, one area of focus for the government would be to further implement some degree of economic liberalisation, privatisation and facilitate increase competition in the telecommunication and ISP sectors; improve banking and finance sectors and provide adequate legal or legislative frameworks, including support infrastructures for conducive business operations.

The ITU through its Telecommunication Development Bureau is supporting ICT initiatives in emerging economies, and has launched project called Electronic Commerce for Developing Countries (EC-DC). The EC-DC initiative addresses the challenges faced by developing economies in the application of new technologies (ITU report, 2006). The programme runs in collaboration with partners from both advanced and advancing economies, including the public and private sectors in facilitating developing economies to acquire and use electronic commerce technologies for economic development. In 2000-01, CamTel and ITU carried out EC-DC projects to facilitate infrastructural development, in Cameroon; to establish e-commerce platform and provide secure transactions, trust and secure payment services for online businesses (ITU, 2004).

7. Dilemmas of fixed lines systems

ICT on its part has brought about previously unforeseen opportunities to gain access to knowledge and services from around the world in a way that would have been unimaginable previously. For example, Internet kiosks, Telephone call boxes (phone booths) mostly facilitating email and phone calls to overseas relatives, are springing up in many parts of Europe, Africa, Asia and Middle East. However, inappropriate and poor services land line telephone systems in most of Africa and Asia are rapidly being bypassed by the introduction of smart mobile/wireless phones, some of which have internet access and with improved communication and collaboration enabled technologies. The fixed line systems inherently have problems with implementation, operation and maintenance costs. The tasks and troubled experiences of most in the industry are very daunting and limiting.

7.1 Declining Market share

Recently, fixed line operators have been facing very strong competition from the mobile sectors and a fast declining market share. There has been a disproportionate decrease (negative growth rate) in the number of fixed line subscribers in Cameroon since the late 90s, with decreasing revenue due to the introduction of mobile telephone systems (MTN, Orange and CT-phone). Africa in general has shown similar minimal growth rate in the total number of main telephone lines penetration, to almost stagnation point for several years. This situation is reflective of most other countries of the world especially in Europe, where stagnation in the fixed line market in many situations is partly as a result of saturation; and with most household having a telephone line (see figure 2 in appendix), (ITU, 2004/05). However, in Africa and Cameroon where penetration has not reached saturation, the stagnation is more of inadequate line infrastructure, funding, government policy structure, and ongoing business monopolistic tendencies.

There has also been poor strategic management on the part of the organization – CamTel – which shows little drive for expansion, and including other issues already highlighted. Most of the high yielding fixed line subscribers in the late 90s were SMEs with businesses such as telephone call boxes (phone booths), Internet cafes and others which came about with the prominence of the internet and some privatisation.

7.2 Falling prices and bureaucracy

Mobile systems have challenged the fixed line systems due to high drop in prices, triggered by major competition in the mobile sector. Worldwide, the gap between fixed and mobile prices has shrunk considerably and as a result the fixed line operators are losing traffic and revenues to the mobile sector. The fixed line telephony market has continuously been dropping both in value and volume since the early 2000s. Cameroon's largest telecom operator CamTel again reported a fall in its fixed line business in 2005/6 financial report (CamTel Report 2005/6).

The inflexibilities of the fixed line systems and the comparatively high costs, plus users' desertions (to mobile systems) have resulted in low usage of the services – particularly for voice telephony. The monopoly Telco (CamTel) has been suffering from the ills of bad management and its inability to innovate, provide and market services adequately to the masses. This is partly due to lack-of or no serious competition from peers, and/or as a result of state ownership influence with improper supervision of the state management system which runs on laisser-faire tendencies with inadequate controls. Some are para-statal with full state controls. Consequently, many local and/or international long distance fixed line markets have been lost to the mobile sectors which have comparatively low implementation overheads and have provided consumers with improved and more flexible services, choice, fallen prices and manageable users' running costs.

Increasingly, most SMEs and private households find it extremely difficult and bureaucratic to own a fixed line, albeit the challenges coming from mobile-wireless telephony. The fixed line installation process is cumbersome, very expensive and delay can take many months to years, including going through inappropriate channels and expenses

before a line can be connected. There are issues of inadequate capacity - limited number of line and/or numbers, networked system unavailability and reliability, call clarity, high call drop-rates and the overall operational costs compared to mobile-wireless systems, which have enjoyed some strong growth rates and good penetration. The mobile-wireless systems have brought the added features of portability, mobility, convenience, usability, reliability, adaptability, slickness, miniaturisation, style and class; customisation and personalisation of systems and content, and, all-the-time anywhere services to many users (Arreymbi and Dastbaz, 2002).

7.3 Threat of Substitution

Another potential worry for the fixed line operators in Cameroon is the threat of substitution. In such lower income society, the comparatively cheap and easy access to owning mobile phones, together with the relative ease of use or maintenance means new users are choosing only to have access to mobile systems. Meanwhile existing users are frequently substituting their fixed line phone calls for mobile phone calls. Some even prefer making cheaper internet access calls – voice over IP (VOIP) via internet Cafes. Hence, the drastically poor demand for fixed lines systems throughout the country. From personal experiences and small survey sample carried out in early March 2007 among SMEs and many private individuals within Cameroon, showed a general trend that is, an increasing number of households now own one or more mobile phones. The survey also exposes the fact that, many SMEs are more likely to substitute and use mobile telephony to operate and run their business more now than before. Although the mobile users operate on the model Pay-As-You-Go (PAYG) or Pay-As-You-Use service from the mobile operators, the majority see the convenience factor and tend to use their systems to receive rather than make expensive calls. Generally, the overall developments in the ICT arena have benefited the consumers who have seen an increase in choice and services tied with falling prices in both the fixed and mobile sectors. The fact still remains that, the increasing use of mobile systems would however not totally bring about the down fall of Cameroon fixed line systems in the short term, because; easy, fast and cheap access to the internet resources can now only be achieved via fixed line systems.

8. Government Policies and other issues

Cameroon has a fairly high literacy rate at 75% (UN Report 2006), and an enthusiastic youthful population with an appetite for technology. This means that with some level of training and awareness, such active and vibrant population can exploit and make good use of information stored in both print and other media formats to bring about enhance use of ICT that would contribute to economic sustainability. However, government policies and developmental frameworks are lacking behind the citizens' drive to acquire and personally develop themselves and/or businesses with ICT. Another feeble argument for low ICT uptake is that, majority of the people in developing economies are generally peasant farmers, semi-skilled craftsmen and women, who in most cases are unaware of the need for information. These assertions, from the authors' personal experiences are not the complete facts. However, it is understood many in advancing economies live their lives routinely, using whatever little information they may stumble on, or is passed to them orally by spouses, relatives, friends, colleagues, religious workers and/or community. There are very low level public ICT drive or awareness campaign policies from government institutions. Some small scale ICT campaigns have been recorded recently but mostly targeted at Schools and not enough for SME or the public in general.

John (1995), Khan (2001), and Arreymbi and Williams (2005) identified the major causes of poverty in developing economies to include: issues of political environment, systemic discrimination based on gender, race, ethnicity, religion, or caste, political inclinations or affiliations, ill-defined property rights to agricultural land and other natural resources, high concentration of land ownership giving unfair disadvantage to tenants, political corruption and/or bureaucratic red tape, large family sizes resulting in high dependency ratios, and national economic and social policy biases. Information poverty in such situations, is one of the more significant and insidious obstacles to effective exploitation of information processing and other types of technology. Lack of adequate information regarding developments in other countries and other environments is often not noticed, and in the absence of new information, old techniques and procedures are continued without conscious knowledge of alternatives. In addition, even though developing nations may not be hurt in an absolute sense by lack of information, they are certainly negatively affected by any relative measure (Sadowsky, 1996). Cameroon, like most advancing economies is lacking in transport and communication infrastructure for delivery of goods and information services. What exists is generally slow, poorly maintained and managed, and also very expensive to run. In contrast, the developed economies have well established infrastructures that are properly maintained and managed for optimum flow in delivery of goods and services.

According to Arreymbi (2006), it has been demonstrated in a number of countries including Cameroon, that, the link between the free flow of information and movement toward democratization cannot be downplayed. Access to information affects political democratization efforts at both the global and national levels. In advancing economies such as Cameroon, where much of the media is controlled by the state, and individual access to the web is currently limited, it is no surprise that current research show less than 2% population penetration (Miniwatts Marketing Group, 2006) and having relative contact with ICT. Therefore, the need to decentralize control over information and over networks themselves is very clear. Many parts of Cameroon have limited and unreliable communication networks which break

down every so often and are very costly to maintain and keep up-to-date. The government must do all in her effort and design of policies for example, Internet policies (which are presently inadequate), to address the gap. It is now widely acknowledged that ICT have generally provided avenues supportive of the development processes by giving easy access to information and knowledge and making it directly more useful in other technological applications for example, disaster warnings, location-based/geographic information systems, distance learning, and/or telemedicine etc.

Another significant problem is that many research and academic institutions in the Country have very little facilities and access to the WWW which is known to yield tangible economic benefits and very vital to scientific research and/or development efforts. Commercial economic growth is enhanced by access to information and improved contact with support personnel. Although some academic research institutions in advancing economies may be using the ICT web resources for these purposes, only very few have explored this phenomenon. However, a study by Jimba and Atinmo (2000), reportedly found that, access to ICT-Internet had no positive impact on the number of publications in five research institution in Africa. The surprising results comes amid many issues such as; generally low productivity, content of the electronic database not relevant to research in question and that the African knowledge base has not been integrated with the services.

In general, within developing-economic environments, requisite specialized knowledge is often either missing or in short supply. There is generally substantial competition for the scarce, more talented individuals within both the public and the private sectors as well as between them. Recently too, emigration to better labour markets in the more advanced economies - the so-called 'Brain Drain Syndrome' – has to an extent caused depletion of the resources necessary to exploit technology, in the face of countries having a limited set of human resources with which to work. Cameroon is financially poor relative to developed economies and suffers from low levels of both institutionalised financial assets and national income. The economy is subject to wide-ranging performance fluctuations due to factors beyond her immediate control. The country is to some extent relied on development assistance from International financial institutions and/or friendly governments.

9. Conclusion

In this paper, we have explored issues in the adoption of ICT in Cameroon. Also explained is the nature of the aggressive fight for voice volume between the fixed and mobile operators. The market trend is shifting more in favour of the mobile sector than fixed line. Therefore, in order for the Cameroon fixed line operators to strongly compete in the ICT market, they need to develop and experiment with new technologies such as provide and support broadband, converged fixed-mobile products (e.g. BT Fusion type technology in UK) etc. The future in fact depends on the ability of mobile networks to provide high speed internet access. And until it comes to the point when users would be able to easily access the Internet at comparable prices and quality over their mobile phones, they would not do away with fixed lines in the short to medium term. ICT is increasingly penetrating the Cameroon economy and changing information practices and management in various sectors. The World Wide Web for example, is changing traditional ways of conducting business by establishing new sources of information sharing, and environments for new modes of communication. It has created pressure to improve information and communication technology infrastructures, and has similarly created competition by bringing many international and indigenous information technology vendors on to the same platform. Also, it has provided opportunities for policy to take advantage of access to global information resources.

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Miniwatts Marketing Group, 2006

http://www.afridigital.net/country_profile.php?id=23

ITU Report 2007

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CamTel, available at; http://www.camnet.cm/

http://www.csdptt.org/article342.html

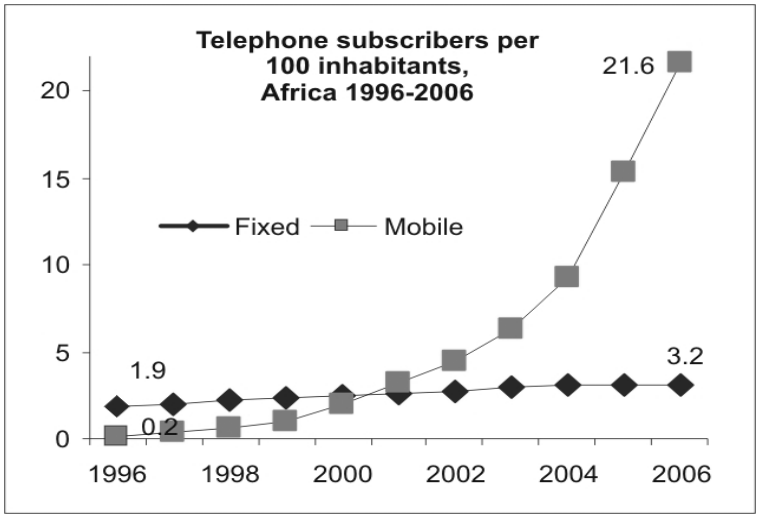

Figure 1.

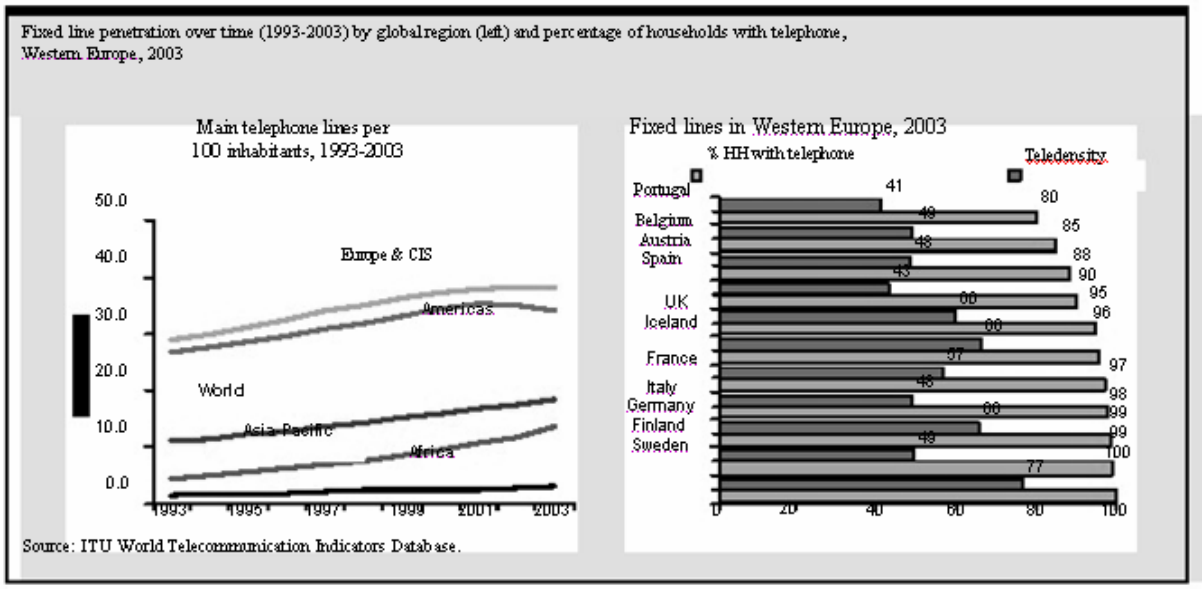

Figure 2. Fixed line stagnation

The survey, which was carried out for the European Commission, was based on a sample of 44’219 respondents in 127 regions, being representative of the total population of the 15 pre-accession EU Member States by demographics and regions. The interviews were carried out between the end of 2003 and the beginning of 2004.

See http://europa.eu.int/information_society/newsroom/cf/itemlongdetail.cfm?item_id=1347.

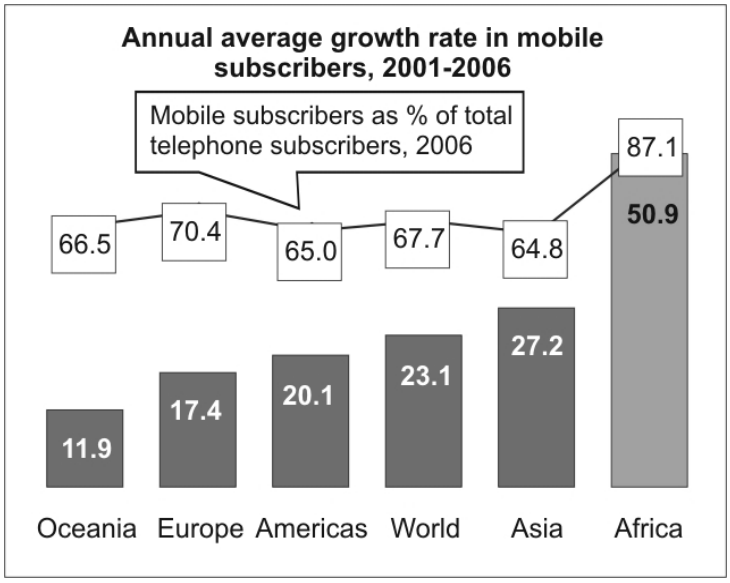

Figure 3.

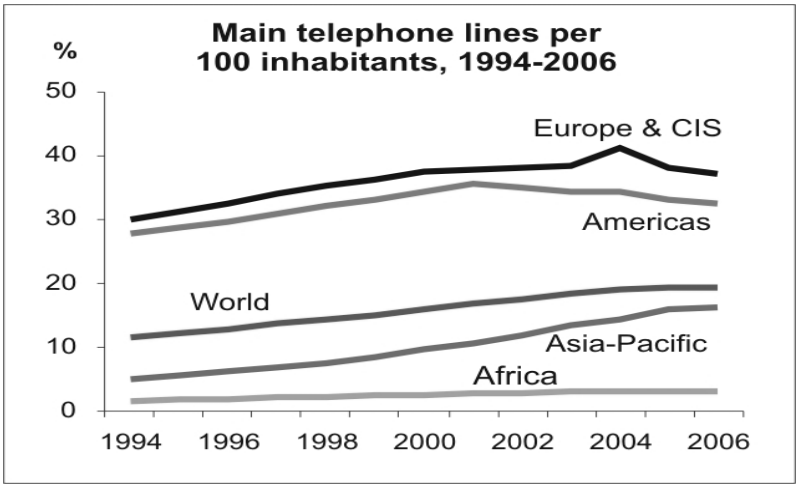

Figure 4.

Source: ITU World statistics. Available at: http://www.itu.int/ITU-D/ict/statistics/ict/index.html [Accessed 07/12/2007]

Table 1. Basic indicators

Population		GDP		Total Telephone Subscribers	
Total (M) 2006	Density (per Km2) 2006	Total (B US$) 2005	Per capita (US$) 2005	Total (000s) 2006	Per 100 inhabitants 2006
16.60	35	16.6	1’016	2’352.8	14.42

Table 2. Main telephone lines

Main telephone lines			Main telephone lines per 100 inhabitants		
(000s)		CAGR (%)			CAGR (%)
2001	2006	2001-‘06	2001	2006	2001-‘06
106.3	100.3	-1.4	0.69	0.61	-2.8

Table 3. Mobile cellular Subscribers

Mobile cellular subscribers					As % of total telephone subscribers
(000s) 2001	(000s) 2006	CAGR (%) 2001-'06	Per 100 inhabitants 2006	% digital 2006	2006
417.3	2'252.5	52.4	13.80	100.0	95.7

Table 4. Internet, Users and Broadband subscribers

Internet				Broadband Subscribers	
Subscribers (000s) 2006	Subscribers per 100 inhabitants 2006	Users (000s) 2006	Users per 100 inhabitants 2006	Total (000s) 2006	Per 100 inhabitants 2006
15.0	0.09	370.0	2.23	0.2	-

Source: ITU ICT indicators. Available online at: http://www.itu.int/ITU-D/icteye/Indicators/Indicators.aspx# [Accessed 25/11/2007]

Table 5. World Internet Usage and Population statistics (Miniwatts Marketing Group, 2006)

WORLD INTERNET USAGE AND POPULATION STATISTICS						
World Regions	Population (2006 Est.)	Population % of World	Internet Usage, Latest Data	% Population (Penetration)	Usage % of World	Usage Growth 2000-2005
Africa	915,210,928	14.1 %	23,649,000	2.6 %	2.3 %	423.9 %
Asia	3,667,774,066	56.4 %	380,400,713	10.4 %	36.5 %	232.8 %
Europe	807,289,020	12.4 %	294,101,844	36.4 %	28.2 %	179.8 %
Middle East	190,084,161	2.9 %	18,203,500	9.6 %	1.7 %	454.2 %
North America	331,473,276	5.1 %	227,470,713	68.6 %	21.8 %	110.4 %
Latin America/Caribbean	553,908,632	8.5 %	79,962,809	14.7 %	7.8 %	350.5 %
Oceania / Australia	33,956,977	0.5 %	17,872,707	52.6 %	1.7 %	134.6 %
WORLD TOTAL	6,499,697,060	100.0 %	1,043,104,886	16.0 %	100.0 %	189.0 %

NOTES: (1) Internet Usage and World Population Statistics were updated for June 30, 2006.
(2) Demographic (Population) numbers are based on data contained in the world-gazetteer website.
(3) Internet usage information comes from data published by Nielsen//NetRatings, by the International Telecommunications Union, by local NICs, and other reliable sources.
(4) For more information see www.internetworldstats.com. ©Copyright 2006, Miniwatts Marketing Group.