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The Millennium Development Goals and Information and Communication Technologies

INTRODUCTION

The turn of a century is often marked by reflection on the past and fresh aspirations for a better future. One way this has been addressed at the global level is through the Millennium Declaration, adopted by 189 Member States of the United Nations at its 55th General Assembly in September 2000. [UN 2000] Through the Declaration, some 147 Heads of State and Government reaffirmed their commitment to working together to uphold the principles of human dignity, equality and equity at the global level, and to reducing poverty.

THE MILLENNIUM DEVELOPMENT GOALS

The Millennium Goals MDGs, set out in 2000 as part of the Millennium Declaration, set clear targets for reducing poverty, hunger, disease, illiteracy, environmental degradation, and discrimination against women by 2015. They represent a global partnership that has grown from the commitments and targets established at the summits in response to the world's main development challenges and to the calls of civil society. The MDG's promote poverty reduction, education, maternal health, gender equality, and aim at combating child mortality, AIDS and other diseases.[UNDP 2003]

Millennium Development Goals

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a Global Partnership for Development

Along with the eight goals, 18 specific targets are set out for achieving the MDGs. Monitoring is based on 48 indicators formulated to measure the 18 targets.

The uniqueness of the MDGs lies in two dimensions. First, by defining the goals in terms of development targets – as distinct from inputs and outputs – the MDGs draw attention to the multisectoral determinants of development targets (World Bank 2003a). Second, the MDGs focus on the achievement of quantified and time bound targets, providing both opportunities to make headway in the fight against poverty and risks of non-attainment.[World Bank 2003]

Over the last decade academicians, researchers and global institutions such as the United Nations Development Program (UNDP), the International Telecommunications Union (ITU) and the World Bank have been working together to try to achieve these Goals (MDG). One of the areas of special interest has been, the question of how best to harness the power of information and communication technology (ICT) for development towards achieving these Goals.

CHARACTERIZING INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)

The acronym ICT is used to denote a new concept which is a combination of two previously unrelated concepts, (1) information technology and (2) communication technology. Information technology (IT) is the term used to describe the equipment and software elements that allow us to access, retrieve, store, organise, manipulate and present information by electronic means. Communication technology (CT) is the term used to describe equipment, infrastructure and software through which information can be received and accessed, for example phones, faxes, modems, digital networks, and DSL lines.

ICT is then the result of the convergence of IT and CT technologies. One early example of ICT convergence is the crossing of photocopy machine and telephone, leading to the creation of fax. But perhaps the clearest example in this area is convergence of computer and telephone that resulted in the upsurge of the Internet.[Leverhulme: Accessed 2008].

The measurement of ICT impacts is challenging for a number of reasons including, the nature of ICT itself. As explained by ITU in 2006, measuring the impact of ICT can be compared with measuring the impact of electricity, „Part of the difficulty is that both ICTs and electricity are „enabling” or „General Purpose Technologies”... which means their use and their impacts are ubiquitous yet difficult to measure because they are mainly indirect. It is not electricity or ICTs as such that make the (bulk) impact on economy and society but how they are used to transform organization, processes and behaviours.” (OECD, 2007).

ICTS AND TARGET 18 OF GOAL 8

Goal 8 of the MDGs envisions the „Development a Global Partnership for Development” and specifically Target 18 aims at „in co-operation with the private sector, making available the benefits of new technologies, especially information and communications.” This is invariably the most imprecise target of the MDG’s – it does not state exactly which ICTs should be made available, to whom and also there is no clear indication as to by what time. Fortunately, however, the UN has stipulated what indicators we can use to help measure this particular target. In light of the fact that the goal states: „...benefits of *new* technologies”, the indicators are targeted around ICTs such as mobile phones, computers and the Internet. Fixed telephone lines can also be included under „new” technologies, because, besides being an ICT in their own right, they are the main conduits for, and therefore integral to, accessing the Internet.[ITU: Accessed 2008]

Consequently three indicators were determined to aid in the measurement of ICT availability in countries:

- total number of telephone subscribers per 100 inhabitants
- personal computers per 100 inhabitants and
- Internet users per 100 inhabitants.

Table 1. Dynamics of target 18 indicators

Telephone mainlines (per 100 people)	2000	2005	2007
High income	42,0	55,0	64,0
Medium income	4,0	9,0	18,0
Low income	1,0	3,0	5,0
Mobile phone subscribers (per 100 people)	2000	2005	2007
High income	65,0	85,0	97,0
Medium income	12,0	30,0	47,0
Low income	1,5	8,0	23,0
Internet users (per 100 people)	2000	2005	2007
High income	31,2	55,5	63,5
Medium income	1,9	9,4	17,7
Low income	0,2	2,9	5,2

Source: World Bank data.

Significantly, of all the MDG targets it can be said that ICT has made the most rapid progress to date and is „on-track”. There is currently a high momentum in the deployment of ICT infrastructures such as optic fiber, wireless and the advancement in the use of ICT in general such as mobile phones, multipurpose telecentres. It is believed that these developments can facilitate

provisioning of relatively inexpensive, easily accessible, diversified and expandable ICT services.

Of all the MDG targets, number 8 is perhaps where the most progress was made during since year 2000. As shown in the figure below, all of the developing regions of the world have grown their fixed and mobile telephone networks at a faster rate since 2000 than in the entire period before that date i.e. 1990–2000.

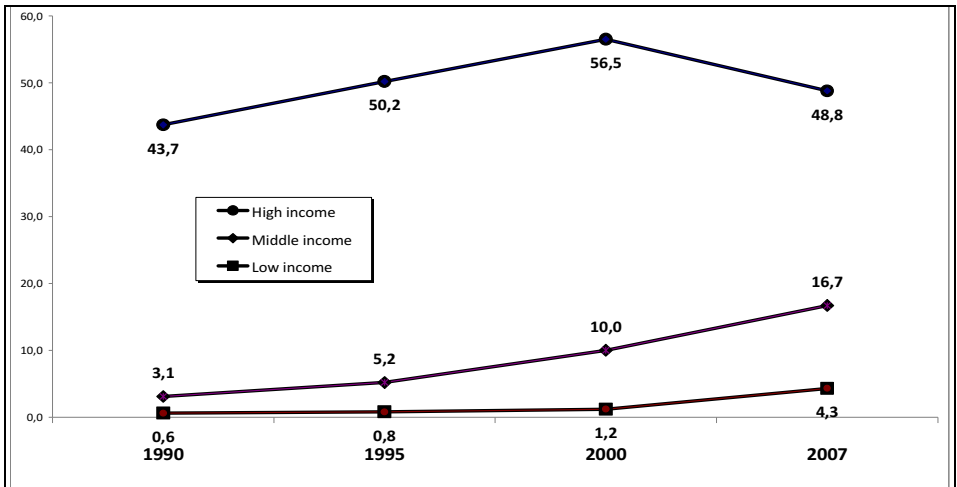


Figure 1. Total telephone subscribers per 100 inhabitants (1990–2007)

Source: Own compilation based on World Bank data.

ICTS AND MDG GOAL OF ERADICATING POVERTY AND HUNGER

According to one estimate the correlation between the UNDP human development index and a networked economy index across countries is above 0.8, suggesting a link between welfare and the existence and use of ICT in developing countries. [UN Global 2005]

With respect to the MDG of the eradication of extreme poverty and hunger – there is doubt as to whether ICT should be a priority for development agencies or for developing countries themselves. This due to the fact that there is sharp contrast between the complexity and expense of some of these technologies and the urgent, basic needs of the poor. [Marker et.al. 2002]

If ICT is appropriately deployed to take into consideration people's differing needs, it can become a powerful economic, social and political tool for the poor, and for all those who work to eradicate poverty. Promoting

opportunities for the poor is essential for reducing poverty. ICT can help reach this objective by:

- stimulating macroeconomic growth
- making markets more efficient
- improving social inclusion
- facilitating political involvement.

One of the concepts leading towards economic growth is through sustained economic growth. It can be argued that through the employment of ICT, societies and countries can improve labour productivity throughout the entire economy and thereby bring about overall productivity growth. It is undoubtedly a fact that ICT can provide individuals and entrepreneurs opportunities to reduce transaction costs, increase market coverage and improve competitiveness in most of their economic endeavours.

For persons living in geographically remote areas ICTs like telephones, radio and TV or even the Internet (if available) can make a marked difference on their subjective appreciation of the feel of being „connected” to the outside world. These communication tools serve as a conduit of relevant and often needed information as well as allow for the reduction in the exclusion (marginalization) of societies. Some aspects of ICT, like their interactive character, have made social inclusion of the poor more feasible.

In summary, it should be pointed out that ICTs have the ability to provide increased access to market information and thereby assist in the reduction of transaction costs for poor farmers and traders. Another area of potential benefit to income generation is through tele-work, which allows work from home there by making certain job opportunities more accessible to inhabitants of outlying areas. There have been numerous reports on ways in which Information and Communication Technologies have served to give people a voice in the political discussions influencing their societies. One must however take into consideration the fact that this privilege is often dependent on other social factors such as the ability to effectively and responsibly use the technology.

ICT & THE ACHIEVEMENT OF UNIVERSAL PRIMARY EDUCATION

Education is the foundation of all societies and globally competitive economies. It is the basis for reducing poverty and inequality, improving health, enabling the use of new technologies, and creating and spreading knowledge. ICTs provide a unique opportunity for spread of educational opportunities, increased access, distance learning, and bridging an intellectual gap between richer and poorer population groups.

In the context of educational development, increase in the availability of ICT has generally been considered as positive in less developed countries. Hence many of the supply indicators can be considered as being relevant in the context of access to education. Undoubtedly, other indicators need to be considered to determine the full nature of ICT impact on education in different strata and regions. Children's access and usage of ICT in the classroom would, for example, be an important indicator in this context as well as would be student/computer ratios [Kundu 2004].

Literacy rates among young people ages 15 to 24 are the only widely reported measure of educational outcomes. The global youth literacy rate has risen from 75% in 1970 to 88% in 2004. Throughout the developing world literacy rates are higher among youth than among adults, while among females in the lower income group of countries there was an increase from 53% in 2000 to 66% literacy in 2005. Such improvements were accompanied by subsequent increases in the diffusion of Information and Communication Technologies.

Table 2. Literacy rates indicators

Persistence to last grade of primary, total (% of cohort)	1990	2005
Low income countries	63,0	73,4
Middle income countries	93,1	96,6
High income countries	99,0	99,3

Source: Own compilation based on data from The World Bank.

Analysis of results from the OECD's Programme for International Student Assessment (PISA) surveys conducted in 2000, 2003 and 2006, show that, for all countries in the survey, the mathematics performance of students without access to computers at home was significantly below that of those with home access. Importantly, in 23 out of the 31 countries in the study, a performance advantage remained even after accounting for different socio-economic backgrounds of students. There is also a performance advantage associated with school access to computers though, for most countries, it is less marked. The highest performances in both mathematics and reading tended to be from students with a medium level of computer use, which suggests that excessive computer use could have a negative impact on school performance (OECD, 2005). The 2003 PISA study also revealed that students with Internet access at home had a higher proficiency in reading than those who do not [OECD 2005].

It can, however, be claimed that Information and Communication Technologies can assist in increasing the supply of trained teachers through ICT-enhanced and distance training of teachers, as well as giving them the ability to feasibly join networks that link them to other teachers thus creating an

informal network for the profitable exchange of ideas. An argument which can be considered infallible is the fact that the Internet along with computer technology (programs) is the basis for fostering an improvement in the efficiency and effectiveness of education authorities and related bodies.

In summary, it can be said that Information and Communication Technologies are the driving force in the development of the educational sector all across the world. The following summarize the input of Information and Communication Technologies in developing the education sector: (a) supplying computers and connectivity, (b) building school computer labs, (c) enabling instruction in computer programming and computer literacy, (d) developing and disseminating new curricula in electronic format and (e) using ICT as tools for presentation for learning to promote and develop skills related to critical thinking, information evaluation and reasoning, collaboration and intentional awareness. Additionally, these digital tools allow for: Distance Learning and the creation of Educational Management and Information Systems aimed at increasing efficiency and effectiveness of administration of educational programs through improved information and planning systems.

INFORMATION AND COMMUNICATION TECHNOLOGIES FOR ACHIEVING HEALTH-RELATED MDGS

Health issues are at the central point of the MDGs, – this is so since personal and community health is central to the global agenda of reducing poverty – as well as it constitutes an important measure of human development. ICT has the potential to impact upon almost every aspect of the health sector. In public health, information management and communication processes are fundamental for the proper functioning of the whole system and ICTs are the basis for any improvements. In addition, beyond the formal health sector, the ability of poor communities to access services and engage with and demand a health sector that responds to their priorities and needs, is importantly influenced by wider information and communication processes, mediated by ICT.

Three of the eight MDGs are directly health-related:

- Reduce child mortality (goal 4)
- Improve maternal health (goal 5)
- Combat HIV and AIDS, malaria, and other diseases (goal 6)

The other MDGs include health-related targets but reflect a myriad of determinants that have an acute impact on the health of societies. These targets include:

- empowering and educating women (goal 3);
- eradicating extreme poverty and hunger (goal 1);

- improving international partnerships (among them to improve access to health services and health related education and training) (goal 2);
- improving water and sanitation systems (a key component of goal 7)
- affordable, essential drugs on a sustainable basis (goal 8).

The health sector has always relied on technologies. According to WHO (2004), they form the backbone of the services to prevent, diagnose, and treat illness and disease. ICTs are only one category of the vast array of technologies that may be of use. Given the right policies, organization, resources, and institutions, ICTs can be powerful tools in the hands of those working to improve health [Daly 2003].

There are examples which clearly indicate that ICTs have clearly made an impact on health care. They have:

- improved dissemination of public health information and facilitated public discourse and dialogue around major public health threats
- enabled remote consultation, diagnosis and treatment through telemedicine
- facilitated collaboration and cooperation among health workers, including sharing of learning and training approaches
- supported more effective health research and the dissemination and access to research findings strengthened the ability to monitor the incidence of public health threats and respond in a more timely and effective manner
- improved the efficiency of administrative systems in health care facilities [McNamara 2007].

ICTs are presenting health communicators, media, and other stakeholders with a range of new and stronger opportunities for health information dissemination. Whether this dissemination is effective or not requires further analysis, but the actual mechanisms for distributing health information and debate have clearly been expanded by the advent of ICTs.

CONCLUSION

While some authors like Gersten and Zimmermann (2005) and Harris (2004) suggest that under suitable conditions ICTs have the potential to induce social and economic development, others researching the link between ICTs and development and poverty reduction (for example, UNDP *et al.* (2001), Skuse (2001), and CAPDD (2005)) are not so positively impressed. [Franklin 2006] There is a growing acceptance that ICT can play an important role by providing new and more efficient methods of production, bringing previously unattainable markets within the reach of the poor, improving the delivery of government services, and facilitating management and transfer of knowledge, a key factor in reaching the MDGs. At the same time, it is important to acknowledge that

despite the vast potential of ICT to contribute to development strategies, it cannot do the job on its own. ICT will only be helpful to the extent that users are able to use the technology and take advantage of the opportunities it creates.

There are a few initiatives underway that look at measuring the impact of ICT on the MDGs. Some researchers have started to talk about the need for connecting ICT-based e-strategies with more concrete development goals although none have offered guidelines for how to do this. Adapting the concept of "e-readiness" and using it to frame strategies to tackle specific social and economic targets may offer a mechanism to help developing countries put ICT to work toward the MDGs.

This requires policies that create the right incentives and institutions, which are strong enough to implement those policies. In the end, the measure of success of ICT will not focus on the spread of technology, but rather on the overall progress towards reaching the MDGs. [World Bank 2003]

In conclusion, of all the MDG targets it can be said that ICT has made the most rapid progress to date and is „on-track”. But despite the obvious benefits to economic growth, including pro-poor growth, of the global explosion in ICT supply and demand, it is as a generic technology and development enabler (Goal 1–7), rather than simply as a stand-alone production sector (Goal 8), that ICT will most impact the MDGs: through the creation of new social and economic opportunities; the promotion of greater participation in development policies and processes; and, by increasing the efficiency, accountability and delivery of public and private services.

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Abstract

There is already a strong correlation between Information and Communication Technologies (ICTs) and the Millennium Development Goals (MDGs) in that they offer the possibility of creating a system which allows for the efficient and affordable flow of goods, services and information between people, governments and firms. Generally speaking it is without doubt that ICTs are playing an ever increasing role in the proper generation of social, economic, cultural and political changes. However, it is difficult to quantify the impact of ICTs and to separate their influence from those of other factors, such as good governance or economic growth.

Although there is a large amount of evidence that serves to show that ICTs have a significant macroeconomic impact it is not clear to what extent ICTs have helped to directly reduce major development concerns reflected in the MDGs such as poverty, hunger or sickness. It must, however, be admitted that ICT do have an enormous impact on the practice of development activities and plays a great part in those activities which serve to improve the plight of underdeveloped populations all over the world.

Milenijne cele rozwoju a technologie informacyjno-komunikacyjne

Streszczenie

Istnieje silna korelacja między Technologiami informacyjnymi i komunikacyjnymi (ICT) a Milenijnymi Celami Rozwoju (MDG), w tym że ICT umożliwiają stworzenie systemu, który pozwala na skuteczne przepływy towarów, usług i informacji pomiędzy ludźmi, rządami i firmami działającymi na rzecz poprawy bytu ludności świata. Uogólniając ICT odgrywają coraz większą rolę w zakresie właściwego wprowadzenia zmian w sferach społecznych, gospodarczych, kulturowych oraz politycznych. Trudno jest jednak dokładnie określić wpływ technologii informacyjno-komunikacyjnych na rozwój warunków życia ludności oraz wyodrębnić ten wpływ od wpływu innych czynników, takich jak skuteczne zarządzanie czy poziom wzrostu gospodarczego w danym kraju.

Wprawdzie istnieje wiele dowodów na to, że technologie teleinformatyczne mają znaczący wpływ makroekonomiczny, nie jest jednak jasne, w jakim zakresie ICT bezpośrednio przyczyniły się do zmniejszenia poważnych nierówności, które były przyczyną ustanowienia Milenijnych Celów Rozwoju (nędza, głód nierówności kobiet oraz choroby). Trzeba jednak przyznać, że ICT posiadają ogromne możliwości wpływania na praktykę w wielu aspektach działań podejmowanych na rzecz rozwoju. Ponadto odgrywają wielką rolę w wspieraniu osób i organizacji pracujących w celu poprawy sytuacji społeczno-gospodarczej na świecie.