Preface

Emerging Issues

The information revolution has generated a tremendous arousing of new information and communication technologies (ICTs) that have completely transformed its approach towards the global development. In recent years, access to these technologies is spreading fast. It was estimated that, by the end of 2005 the number of Internet users in developing countries may cross the 500 million mark, surpassing industrial nations for the first time,[1] though ITU estimates that some 800,000 villages—representing around one billion people worldwide—still lack connection to any kind of ICT (ITU, 2006). By some other estimates, more than 75% of the world's population now lives within range of a mobile network. Yet the long-heralded promise of ICT remains out of reach for most of the developing world, and in reality for the information poor, economic and social gaps are widening both within and among countries.[2]

At the same time, the significance of information management in the developing nations needs no introduction; it is a well-established phenomenon in the development arena. Consequently, there is an urgent need to understand the technology perspective along with the pragmatic applications of it and to explore the potential of different types of knowledge that it may yield. In this context, synthesis on contents from computer science and theoretical physics to information science, communication studies and entomology need to be revisited with nascent eyes, focusing development of common people; the majority of the global community.

Concrete plan of action through streamlined activities can assist any country to build a people-centred, inclusive and development-oriented information society. One of the most important prerequisite in this aspect is to build a development community among the stakeholders, forming global, regional, national, and local partnership and networking. However, successful and dynamic development of any nation in this globalize information driven society depend on highly varied and diversified parameters that are intermingled over the network, to attain common goals and objectives.

To enable socioeconomic development through ICT, the following important parameters are needed to be taken into account[3]:

- **Accelerating Digital Inclusion:** Economic growth is built on technology but remains inaccessible to most of the global population. To improve the situation, acceleration of e-readiness needs to be focused.

- **Localizing IT Industries:** Use of ICT in government's instrument always generates more employments and provides greater opportunities for its growth and competitiveness. For better utilization of in house ICT resource, dispute in correlation between GDP Growth and ICT needs to be settled.

- **Transforming Education:** To play leadership roles in future economies, each of the community member need to have knowledge in ICT and it is as essential as reading, writing, and arithmetic. Systemic transformation of education system is expected to enable them for tomorrow's employment.

- **Bridging the Digital Divide:** Accessibility to the Internet is important for education and development (Dravis, 2003). The growing digital divide may be reduced by utilizing wireless broadband and next generation WiMAX, so that most of the remote areas can be taken into the Internet coverage. Improved information infrastructure can reduce the digital divide (WSIS, 2005).

ICT as an Enabler of Economic Development

Evidently ICT is becoming an increasingly powerful tool for enhanced participation of its stakeholders in the global market; promoting governance; improving the delivery of basic services; enhancing local development initiatives; and strengthening economic capacity. But without innovative ICT policies, many people in developing countries—especially the poor—will remain as marginal (Nicol, 2003). In this perspective, international organizations are assisting countries draw on expertise and best practices from around the globe to develop strategies that expand access to ICT and harness it for economic development.[4]

Since 1992, UNDP has been a pioneer in ICT4D (Information and communication technologies for development) action programs. It has gained substantial practical expertise and knowledge through global initiatives such as the Sustainable Development Networking Program (SDNP), the Small Islands Developing States Network (SIDSNet), and the Cisco-UNDP Network Academies program; regional initiatives such as the Asia Pacific Development Internet Program (APDIP) and the Internet Initiative for Africa (IIA); and national programs such as Ukraine's FreeNet, Egypt's Community Access Centers and Cameroon's SchoolNets, to mention a few.[5]

ICT Division in ESCWA (Economic and Social Commission for Western Asia) during the first half of 2004 focused on building the information society in Western Asia. In the form of a regional preparatory activity (UN–ESCWA, 2001) towards the second phase of the World Summit on the Information Society (WSIS-2, 2005) its outcome constitutes important material from the Second Western Asia Preparatory Conference 2004 in Beirut (UNDP, 2002).

The Partnership on Measuring ICT for Development 2004,[6] launched in Brazil aims to accommodate and develop further the different initiatives regarding the availability and measurement of ICT indicators at the national, regional and international levels. It provides an open framework for coordinating ongoing and future activities, and for developing a coherent and structured approach in advancing the development of ICT indicators globally, and in particular in developing countries. Its objectives are to:

- Achieve a common set of core ICT indicators, to be harmonized and agreed upon internationally, which constitutes the basis for a database on ICT statistics.
- Enhance the capacities of national statistical offices in developing countries and build competence to develop statistical compilation programs on the information society, based on internationally agreed upon indicators.
- Develop a global database on ICT indicators and make it available on the Internet.

Similarly, socioeconomic development is a key concern of countries of the South struggling to emerge from decades and even centuries of exploitation, political conflicts, and armed struggles. Today, opportunities offered by harnessing ICT for economic development are abundant. Trade and commerce, manufacturing, transport, banking, outsourcing, software development, and supply chain are those economic sectors that are heavily facilitated by ICT (World Bank, 2004a). Furthermore, ICT is essential for increasing competitiveness and efficiency of entrepreneurs, whether small, medium or large. Most importantly, the ICT sector, on its own, provides numerous opportunities for resource creation at the one end, and employment creation at the other.[7] Therefore, initiatives have to be taken for the diffusion of ICT in the social and economic fabric within the overall regional system.

Notwithstanding, the potential of ICTs that has been overlooked for some time because of their apparent de-materiality (Graham & Marvin, 1996) in the current information society, but in the globalizing economy and evolving democracy, ICTs are regarded as overwhelming determinants for the competitiveness of local areas, cities, and regions (Pollone & Occelli, 2005). The communication and information sector can enhance the development of adequate ICT policy environments, improve equity of access to ICT, strengthen localized content, develop capacity through knowledge management, and build the investigative capacity of common people in the developing countries (Gilhooly, 2005; NGLS, 2003).

Information/Knowledge Management and Development Dynamics

It is universally accepted that, in making the most effective use of any inadequate resources for nation building, access to knowledge and information by the marginal poor is crucial. There has been growing concern that urban research and development efforts have failed in many countries to achieve their full potential due to their ignorance to accommodate and enhance the knowledge and information systems for the poor. As a result, the program developed, policy initiated and experience gathered at the top level could not be widely disseminated and adopted by the marginal users.

Furthermore, information cannot be put as a supply driven process. Instead it should be demand driven, focusing the information need of the poor and marginal communities, with relevant sources and easier access to it. Information related to basic livelihood of common people creates a demand at the user end and fabricates contents to raise their knowledge and capacity. Utilizing in micro-usage pattern, contents in the form of information can produce immense impact on the overall social uplift (and technological development) of the community through coherent strategic planning and implementation. Hence, information and content can be termed as catalysts to generate knowledge.

Knowledge can be defined as information which has been internalized by individuals, a community or a society; frequently, this knowledge has been observed to be developed by them. Knowledge is a critical factor in concurrent development dynamics. Information is different in a sense that it can be shared or transmitted through communication media; people can consider it in the light of what they know already, and either accept to add it to their knowledge base, or reject it. Knowledge is seldom developed from a particular source of information: people tend to compare it obtaining from different sources, which could include the print media, broadcasting media, physical and virtual networking and other diversified media.

Knowledge management means developing, integrating, processing, utilizing, and managing organizations' structural knowledge resources. The system should carefully design all interfaces towards the tacit knowledge at both tactical and strategic levels. This may raise the efficiency and quality of knowledge based works, maintain and develop organizations' knowledge repository, and open new horizons for knowledge based services.[8]

Hence, creation of development dynamics through information and knowledge reiterates proper scientific research and management. Here, knowledge acts as a concept, wherein stakeholders contribute to it by ways of information sharing among retrospective domains to generate resources. Along the way, accumulated resources eradicate poverty; knowledge empowers them and ICT plays a major role in bridging the gap between these two. Knowledge or information could either be enhanced by establishing interactive communication among the stakeholders or through improved information dissemination. Knowledge science seems to be a new discipline of science that evolved within and around philosophy, technology and processes to enhance these abilities. Mainly there are two approaches to develop intelligence of social individuals; one is through management science and the other is through information science. Therefore, management of information and knowledge is of prime importance for the development of the masses.

Therefore, ICT for knowledge management in the context of socioeconomic development should focus on:[9]

- Building and sustaining knowledge-based resources.
- Collecting, processing, structuring and utilizing organizational knowledge,
- Strategic and tactical management of knowledge-bases,
- Tailoring ICT-based tools to enrich knowledge management models,
- Prototyping and Testing ICT-supported entities for standardization,
- Modeling and evaluating knowledge development practices.

Challenges

So far, modern ICTs could not able to play a major role in managing livelihood information to the urban poor and rural marginal communities. This portion of the society rarely have direct access to ICTs; a factor which should be emphasized to increase their inclusion in the mainstream. Though, ICTs have worked as the most thriving parameter in a number of pilot projects in many countries, including telecentres, community databases, community videos, radio and television, but their sustainability still remains as a challenge. Similarly, the assessment on the impact of information dissemination remains intricate, amongst others because information chains are unpredictably long, and often difficult to trait to a single intervention, within the context of a wholesome perspective.

Similarly, the role of ICT in rural development can be extremely crucial. ICT provides the technology for connectivity, but connectivity without content is futile. There are agencies and governments who have successfully utilized ICT to deliver local-specific demand-driven information to be used for day-to-day activities. However, due to intricate management issues, efforts of these natures could not get authenticated momentum at the outer peripheries. Information can become knowledge if it fits in with the receiver's pattern of learning, which also can be strengthened inter alias through different ICT usage.

Technological change is both a cause and a consequence of economic and social development (Mrad, 2002). Though, much has been reported and analyzed about the digital divide challenges and opportunities, but many regions have been mostly absent from the global technology revolution. By far, the impact of all the ICT acquisition on development in the area is a difficult issue to quantify, and in general not immediately noticeable. Some may argue that ICT have a negative impact on the regional economies through the high level of spending mainly on imported infrastructure products, services, and "gadgets." In addition, ICT have supplied more efficient marketing tactics for the international firms that competed with local and regional industry and taken over local markets more effectively. Even if part of this dark image is true, in reality the backwards countries have to compete, survive, and benefit from the globalization through various ICT tools and technologies (ESCWA-ILO, 2002a, 2002b).

No set of indicators on ICT impact in development are available and no such indicators would be sufficiently exhaustive for ICT impact for socioeconomic and regional developments to be universally acceptable. Regional variations, including socioeconomic and cultural divergence would render some factors as less important, even irrelevant, in a given country, while they may be of great importance in others (UN–ESCWA, 2001; Tongia, Subrahmanian & Arunachalam, 2004). Incidentally, some effects may remain as non-measurable, such as quality, impact or outcome, in shorter terms.

New research and development has created efficient ICTs that put corporations, communities and public institutions in a challenging situation. Bureaucracies may implement tools to integrate management of recourses, even at the level of knowledge, at least to a certain extent, but may remain as a challenge for quite a period of time.

However, the tools and routines for use of structural knowledge resources are often found to be inadequate. This may apply to searching, processing or mining contents, access structures, presentation and dissemination, integration with other tools and systems and so forth. Accessing the repositories at different times, situations, and locations when necessary is also remains as an unsolved challenge. Supporting organizational learning through use

of the structured knowledge repository often proves to be challenging during routine operations, and too often leads to breaches in the organization's knowledge maintenance and the learning loop. Last, but not least at the tactical level many unsolved challenges accumulate within an organization's ability while contributing to its own knowledge repository.[10] For successful implementation, the main objective of any knowledge product activity in terms of regional developments should:

- Agree on a common set of core ICT indicators that are comparable at the international level (including all intermediary levels).
- Assist in setting up a global database for hosting data on core ICT indicators.

ICT as part of the new economy is supposed to create a lot of new jobs and in effect, may dismiss other professions. But the important aspect of it is the transformation of the old economy due to the breakdown of existing organogram and organization, leading to a completely new subset of the economic indicators. The main reason is the disappearance of delay and distance, which was a key obstacle to world trade in the old economy. Now, the digital convergence has changes the situation (Dimacali, 2002). Therefore, a number of specific dangers may threaten the developing countries, because of their lack of access to and knowledge of ICT. For instance:

- Developing countries will not experience the possible dynamo for growth and job creation that ICT as such could bring to them.
- Companies in developing countries will not be able to supply to the private sector in the industrialized part of the world, if their procedures/accounting systems/e-commerce facilities are not sufficiently developed. Their risks are not being part of the new value chain, but may also be severely prejudiced by dramatically increased global competition in the domestic economy created by introduction of the new electronic networks.
- New international capital will go to countries which have the facilities needed for the modern economy.
- Developing countries will not get access to the available knowledge that public, private and academic sectors make available publicly trough the Internet.
- The educational system could become outdated, not being able to take advantage of new technologies (European Parliament, 2001; Falk, 2001).

Consequently, further analysis is needed to better understand the demand for and production of ICT indicators, especially in poor countries. The lack of resources for statistical work may prove these countries' inability to respond to the contemporary digital access indicators. Though the existence of national ICT policies would indicate demand for these forms of indicators, but no information on indicators used in the national policies is available yet. Additional information such as the existence of inter-institutional working groups (composed by CSOs, authorities for ICT, and other line ministries), the presence of ICT authorities in the national statistical councils (where these are functional), the inclusion of ICT indicators in national statistical program (where these are in place) and the preparation of joint

publications could give further insight into the level of demand for ICT indicators and the possible response to it by statistical institutions (UN ICT Task Force, 2005).

Where the Book Stands

A book focusing on management of information and knowledge utilizing technological and applied science for the development of common citizens can feed the society as a knowledge tool and guideline. It includes knowledge information system (KIS), knowledge management (KM) system, information management (IM) and other learning tools, their evolution, planning, development, and implementation, with other implications related to their successes and failures.

ICT application related to IM can become an integral part of the overall strategy for development. Fostering partnerships among government, civil society, the private sector and other development partners can effectively address economic, social, and cultural divides. Similarly, the society can take benefits from these sequences to create a domain of knowledge networking. ICTs have the potential to digitally link each and every member of the community to open up endless dimension of opportunities through information interchange.

This book also includes indicators, parameters, synthesis of contemporary learning utilities in the realm of knowledge and information management. These accommodate successful pilot initiatives, outstanding researches, pragmatic applications, and future research scopes in orienting human resources to form a knowledge ring along the outer peripheries of the society through information management and planning.

Life in rural areas is relatively complex than the metro areas and rural people, therefore, have a different range of information needs. It is not easy to epitomize those, except in rather general terms such as earnings or lodgings, though as such they may not comply with the general requirement to fulfill the demand at the marginal end (Mchombu, 2004). The specific needs vary among geographical disparities, cultural diversities, ethnicities, localities, and even within localities, and to address those adequately, inclusive investigation is necessary.

A book with essential elements containing management of information, policies of implementation, and technological aspects of implementation, operation and maintenance of technology-based outlets to fulfill the demand at the grass root communities deserves importance. Social networks are the foremost source of information for the marginal poor. But, without proper knowledge and management of the KIS pattern ultimate benefit out of it may not reach to the end users. Main objective of this book is to take on these issues and act as a delivery modality to the target users and stakeholders.

It has been found that a major obstacle in promoting an inclusive knowledge society is due to the lack of specific national policies and strategies to ensure easy access to information and to develop appropriate localized tools, technologies and methodologies in the ICT arena. The lack of policy support and political will is also due to deficit of awareness of the economic, political, and social benefits that ICT can bring (World Bank, 2004b). The level of awareness among professionals and decision makers in the developing countries about the role of ICT in development is generally low. This book will serve as a repository and

guideline for the knowledge providers, development partners, academics, policy initiators, and general people.

Foremost, this book rationalizes the government's critical role in infrastructure development ensuring sustainability and community engagement with longer term strategy. At the same time, promotes the role of civil society organizations as the facilitators for community participation and capacity development. Academic institutions through their innovation and research, especially by harnessing the potential of distance learning techniques can assist in materializing these efforts. A multi-stakeholders partnership synergizing the efforts of government, private sector, civil society organizations, and local communities may then assist in building technology and content by providing physical infrastructure and technical assistance to local counterparts within the sphere of development.

Organization of the Book

The book is organized into 16 chapters. A brief description of each of the chapters follows:

Chapter I focuses on ICTs and their educational benefits in regional developments. It argues that ICTs can play an important role in improving public education, especially in rural regions. The effects of ICT use in schools can, in turn, bring surprising economic benefits to the region. Hence, ICT developers interested in building economies can use education as a sustainable and grassroots building block for future growth. Therefore, as long as ICTs are being recognized as pedagogical tools, they serve both the long-term economic and cultural needs of communities.

Chapter II analyzes the strategic planning of a few ICT centres, by forming a joint venture of higher education institutions. These higher education institutions (HEIs) try to focus their activities on specific fields of education and the needs of their geographical area. The strategies of focus and operations excellence are natural choices to define the strategic outlines for the centre, which aims to increase the economic growth of the region. The selected strategies are described in this chapter using the balanced scorecard approach, allowing the network of organizations to articulate and communicate their strategy to their employees and stakeholders upholding regional developments.

Chapter III has tried to critically analyze the effective role of ICT methods in learning and put forwards several success cases of learning systems that assisted in socioeconomic empowerment and at the same time, provided a few futuristic recommendations in establishing similar endeavors in potential economies. This chapter also concentrates on ICT mediated learning utilities for achieving the goal of education for all, and supports that ICT can act as an enabler in reducing the digital divide, reducing poverty and promoting social inclusion.

Chapter IV introduces the impact of new information and communication technologies (nICTs), specifically the Internet, on national and international conflict prevention and management. This analysis provides case studies on the use and examples of the prospective use of nICTs to counteract conflict as it undermines social and economic structures: public healthcare, education systems, employment, and so forth, and hinders regional development. This study reviews the specific application of nICT-related initiatives at the different phases

of the conflict cycle: from addressing the root causes of conflict as a tool for prevention and management, through the reconciliation and reconstruction phase. It also demonstrates the application and potential of nICTs to complement activities that are already being carried out in the field to address the root causes of conflict, its prevention and management, as well as the fomentation of reconstruction and reconciliation.

Chapter V tests empirically to what extent technological innovation influences the international trade and studies its effect on different groups of countries according to their level of economic development. Different measures used in the literature to proxy for technological capabilities are reviewed and the estimation results show that technological innovation has a considerably high explanatory power on trade compared with other traditional determinants. Countries tend to trade more when they have similar technological capabilities and the development of technological innovation has lowered the effect of geographical distance on trade. According to the obtained results, investing in technological innovation leads to the improvement and maintenance of the level of competitiveness; therefore, a good economic policy in developing countries should invest in technological innovation.

Chapter VI examines the role of organizational networks in the success and failure of information and communications technology projects. Within a framework informed by the literature of information systems failure, the diffusion of innovation and social network analysis, it argues that information systems projects must take into account the social context in which they are being implemented. It further argues that, the people in a regional setting felt themselves to be in an extremely disadvantageous situation, because they typically lacked support from similar networks. The author hopes that highlighting the importance of such support networks will lead to a better understanding of failure and success of this system, and will contribute to improved policy formulation and practice.

Chapter VII argues that localization of a document or other product requires tacit knowledge of the target language and culture. It also argues that a key issue in economic and regional development (ERD) is the applicability of one region's successful program of development to another region. However, localization is becoming increasingly inadequate as a strategy for disseminating knowledge on the worldwide Web. Hence, the best way to maximize the accessibility of Web content is to make it more explicit, not more tacit. Although general solutions to universal problems (literacy, environmental awareness, AIDS prevention, sanitation, transportations, etc.) can be designed by nongovernmental organizations (NGOs) or other global entities, their actual implementation needs to be adapted to local culture and conditions, ideally with grassroots stakeholder participation.

Chapter VIII examines the possibility of creating online creative production archives to make locally and internationally sourced high quality video, audio, graphics, and other broadband content available to grassroots producers in developing economies. It also argues that in a global knowledge economy, cultural production is a major driver of economic growth. The creativity and culture needed for cultural production are plentiful in developing countries indicating that if technical and institutional conditions are appropriate, there is significant potential for developing economies to compete in the global economy. It is, therefore, desirable for local groups to be able to acquire, store, and deliver locally and internationally sourced content to stimulate local level cultural production.

Chapter IX examines the issues surrounding what is meant by ICT-related development in a regional context. It also explores the usefulness of multiple measures, as opposed to single measures, to describe what in reality is very complex. In this context the chapter outlines the

preliminary development of, and the rationale behind, a holistic approach to evaluate the role of ICTs in regional development, based on insights generated from an ongoing research.

Chapter X looks into critical aspects of ICTs in raising socioeconomic development in under-developed countries and tries to illustrate success cases in developed countries that can be replicated in developing countries to reduce poverty. Furthermore, emphasis has been given to analyze the role of ICTs in poverty reduction processes upholding regional developments.

Chapter XI provides an outline of how ICTs have been used to re-shape education in a predominantly rural region, thereby preparing people for participation in the emerging knowledge-based economy. It also outlines the transition from traditional (face to face) to virtual teaching and learning environments in a small network of rural high schools. It argues, on the basis of research that, the introduction of e-learning in schools involves a shift from a closed to an open model of teaching and learning and the shift from closed to open teaching and learning has implications beyond the school in terms of regional development in Canada, as a case study.

In Chapter XII the author argues that the developing countries need to integrate ICT policies more closely into economic strategies, which can be done by strengthening the links between development and technology agencies via the organizational structure of policy-making bodies. The chapter focuses on ICT policy initiatives in a few developing nations, as a case study and make a comparison on how these initiatives are having their roles in the development processes in South Asia.

Chapter XIII offers a state-of-the-art review of the implementation of ICTs strategies in developing country with special reference to Sri Lanka as a case study. It also brings in a small number of empirical studies that serve to illustrate the practical use of the ICT to support development practices. The chapter focuses on potential challenges on ICT implementations in Sri Lanka and details out a comprehensive ICT based educational plan of the Sri Lankan government for national capacity development that will assist to face the challenges of the ICT implementations. Finally, it proposes a few strategies to restraint the challenge and to uplift the human capacity of Sri Lanka.

Chapter XIV introduces the importance of the ICTs on the regional development in Turkey, as a case study. It included a few regional programs of Turkey that are related with regional development and ICTs. Objective of this chapter is to point out improvements of information and communication technologies and importance of e-government programs in Turkey.

Chapter XV attempts to enhance the understanding and knowledge of ICTs in relation to the Tanzania National ICT Policy as a case study. It extensively explores these pervading technologies as ICTs impact on education, commerce, social, cultural, and economic life of the poor Tanzanian people. The chapter looks also on how Tanzania is coping with the issue of poverty eradication as one of the eight UN Millennium Development Goals (MDGs). It addresses the issue of digital divide and the role that ICTs can play in poverty reduction and Tanzania's efforts in embracing ICTs and the challenges facing the country.

In Chapter XVI the author has tried to give an overview on genetic sampling of ethnic minorities (minzu) in China and to the different claims companies and research ventures have on this industry. It looks at a question, like; how the new genetic knowledge—acquired by biobanking activities—could be turned into ethically sustainable, economic, and regional development of ethnic minorities in China, as a case study. The chapter focuses on the

Chinese genetic information management system and argues that there are a number of development needs among the ethnic people groups in East Asia, Southeast Asia, and in South Asia. However, nature of most of the regional and economic development conditions of these ethnic minorities remains transboundary.

Conclusion

Through the provision of information to support activities and decision-making for economic, social, and regional developments, ICT plays a major role. In addition, ICT can be a thriving parameter in the industrial sector for sustainable decent employment. In the most pessimistic assessment of ICT impact on development, the selective deployment of these technologies can be viewed as a loss minimizing strategy. True indicators of the impact of ICT on development are not universal and sometimes not measurable, especially those that are related to quality and convenience enhancement applications. ICT can only contribute to development, and is not the answer to all requirements and problems. Misleading ICT statistics in a country can sometimes lead to a wrong perception. Therefore, useful and productive ICT utilization is a challenging issue for all (Mrad, 2002; WTO, 1998; World Employment Report, 2001).

The evaluation of a complete, effective, and objective driven program with the development of ICT is a necessary condition for analyzing the current state of an economic sector, and working out effective measures to support and promote further development in regions. In addition, program should allow summarizing, analyzing and distributing the most effective methods of ICT development. Furthermore, programs should distribute ideas and values of the open information society and make them popular among the public, to involve more residents, state establishments and businesses in economic reforms implemented with ICT.[11]

Firstly, the promotion of ICT development in various fields of life will result in the reduction in budget expenses, saving of funds for the social sector (for example, for to the development of distance learning and telemedicine programs), and more effective interactions between community members and local governing bodies. Secondly, increased information support will attract the attention of local and foreign IT companies and investors. Thirdly, and probably most importantly, partnerships will enable regional entities to estimate the current state of ICT and the corresponding outlooks compared to other regions of the world, defining the set of necessary priority measures for supporting ICT development. Finally, the outputs will establish additional information base for a region's effective development.

Therefore, harnessing ICT in developing countries can have important impacts:

- In the fight against poverty; by improving sectors such as education, health, environment, rural development, and tourism.
- In empowering people in developing countries; particularly with respect to their economic situation, their ability to develop and participate in democracy by creating good governance and strengthening human rights.

- In extending support to already existing development strategies and programs through more effective delivery mechanisms, as well as improving the final result (European Parliament, 2001; O'Sullivan & Lloyd, 2004).

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Endnotes

[1]   http://www.global-reach.biz/globstats/

[2]   http://topics.org/special/informationsociety/

[3]   http://www.developmentgateway.org/ict/rc/filedownload.do~itemId=1046992

[4]   http://sdnhq.undp.org/it4dev/

[5]   http://www.sdnp.undp.org/it4dev/docs/about_undp.html

[6]   http://www.itu.int/ITU-D/ict/partnership/

[7]   http://www.escwa.org.lb/wsis/meetings/apr04/main.html

[8]   http://www2.nr.no/documents/imedia/research_areas/work_in_future/ict_for_km_text.html

[9]   http://www2.nr.no/documents/imedia/research_areas/work_in_future/knowledge_management.html

[10]   http://www2.nr.no/documents/imedia/research_areas/work_in_future/ict_for_km_text.html

[11]   http://www.rbcnews.com/press_rev/press_rev150403_esp.shtml