Globalization and ICTs: Potentials and Challenges for the Public Health Sector of Developing Countries

Shegaw Anagaw Mengiste
Aalborg University
Center for IT Management
P.O.Box: Fibigerstræde 3, 9220
Aalborg Øst, Denmark
e-mail: mengiste@dps.aau.dk

ABSTRACT

There has been much discussion of the role that recent advances in information and communication technologies (ICTs) could play in improving health systems in developing countries. There is no doubt that the advancement of ICTs has brought both opportunities and challenges to developing countries in their efforts to ensure socio-economic development and improve public governance. In the wake of globalization, developing countries have no choice but to take advantage of the opportunities and face the challenges. Despite the fact that many developing countries are taking actions to strengthen their ICT capabilities in both private and public sector organizations, the process has been limited mostly to national and provincial capitals leaving behind majority of the communities and institutions operating in remote areas.

This paper took a case study of implementing computerized Health Information Systems (HIS) in the context of the Ethiopian public health care system and investigated the potentials of the new ICT based system and the challenges encountered at provincial and district levels. The findings also revealed that even those with access to modern ICT infrastructure do not get maximum benefit from ICT advancements due to inadequacies in data quality and lack of knowledge in data management and use for decision making and action. To this end, there is an urgent need for governments of most developing countries in general and for sub-Saharan African countries in particular to double their efforts to address constraints threatening to increase technology gap between urban minority and marginalized rural majority by setting up favorable policies and appropriate strategies. For example, the empirical analysis of this study revealed that in order to make IT-based systems work in the Ethiopian public health seating, there is an urgent need to develop proper strategies that took into account the local context.

Keywords
Globalization, ICTs, Potentials and Challenges, Public Health, Sub-Saharan Africa.
INTRODUCTION

Today, we are witnessing that some significant transformations are taking place in the world due to globalization and advancement of modern information and communication technologies (ICTs) (Bilas & Frank 2010; Walsham WP 8/2001). The term globalization is the big current buzzword in speeches of politicians, a catchword of the last decade of the century in newspaper articles, in the daily talks of journalists and managers, and in debates of academicians (Dimitrova 2002). Globalization as a distinguishing trend of the present moment and a salient feature of our time refer to the perception of globalization as an increasingly conspicuous and influential social phenomenon, seen as something imminently and strikingly present in reality, which itself shapes and transforms this reality (ibid). Information-communication technologies (ICTs) represent the main drivers of globalized societies based on knowledge in new global era (Herselman & Hay 2003). As Walsham (2001) pointed out, ICT, are deeply implicated in the changes that are taking place in todays’ globalized and modern society. The ICT influence on the modern society has been very strong and it has resulted in radical transformation in communication and information exchange around the world. Kabamba (2008) noted that technology advancements that include global telecommunication infrastructure, cross-border transfer of data, Internet, satellite networks and wireless phone contributed to the globalization process. Information and Communication Technologies (ICTs) are not only limited to the transfer of information. ICTs can accelerate development; enhance the effectiveness and efficiency of the highest priority sectors of socio-economic development, for instance health care, by introducing appropriate information systems.

However, despite the potentials of modern ICTs in transforming our society, the big question posed by several scholars (including Walsham 2001; Simba 2004; Bilas & Frank 2010) is: does globalization enabled by ICTs imply that the world is becoming a homogeneous arena of global business and global attitudes, with differences between organizations and societies disappearing?

It is well known that not all parts of the world are touched and influenced equally by globalization and ICTs. There are places, which are totally excluded and isolated from today’s global changes. In a geographical perspective, it brings about regionalization and thus divides the world into active players and passive observers. As such, the global information infrastructure is creating gaps between the rich minority and the poor majority larger and wider than any other socio-economic and cultural phenomena in the history of mankind (Robertson 1992; Appadurai 1996; Castells 1996; Bilas & Frank 2010).

Particularly, most developing countries in general and sub-Saharan Africa in particular are facing new challenges in the socio-economic development as a result of globalization and the impact of the new Information and Communication Technologies (ICTs). Most developing countries are generally classified as having comparatively less or inadequate access to the technologies. For example, Kabamba (2008) reported that in sub-Saharan Africa there is one Internet user per 250-400 people. The world average is around 1 user per 15 people, while the average in USA and Europe is 1 user per two people. Also, in sub-Saharan Africa there are 8 computers per 1000 people. The world average is 68 computers per 1000 people, and in G8 states 360 computers per 1000 users. Internet connection in Africa is the most expensive in the world (Toivanen 2009). For most sub-Saharan African countries, the digital divide and its implications has more to do with the inability of these countries to deploy, harness and exploit the developmental opportunities of the emerging digital information and technological revolution to advance the process of their socio-economic development (Bilas & Frank 2010).

Spanos, Prastacos, & Poulymenakoy (2002) argued that, while developing countries were reluctant to accept information and communication technologies (ICTs) in 1960s and 1970s, in recent years they have come to realize that “ICTs has come to constitute the basis of economic development both at the macro and micro levels, and hence those actors that fail to participate in such developments risk increasing marginalization” (Spanos et al., 2002). As a result, many developing countries are attempting to deploy IT in various facets of governance, and health is a key focus area. Bodvala (2002) on his part argues that the potential of modern ICTs for health care is being increasingly recognized and various developing country governments are in the process of implementing various initiatives ranging from telemedicine to the use of Personal Digital Assistants (PDAs) for data collection to the computerization of Health management information systems (HMIS). However, as Simba (2004) noted, many developing countries have only managed to introduce modern technologies such as PDAs and to modernize their Health Management Information System (HMIS) only at the higher levels (national and provincial) as they often do not possess economic, political, and technological infrastructure to adequately respond to and manage ICT revolution for the benefits of the large majority of marginalized communities in rural communities and districts.
The primary objective of this paper is, therefore, to investigate the potentials and challenges of globalization and ICT adaptation in the health care sector of Sub-Saharan African countries in general and to the Ethiopian context in particular. To this end, I will use a case study from the implementation of a computer based health management information system (HMIS) at different levels of the Ethiopian public health care system.

This paper, therefore, aims to answer the following research question:

- What are the potentials and challenges of implementing modern ICT based tools and technologies in the Ethiopian public health care system?

The structure of this essay consists of the following sections. Section 2 provides a review of related literature on the notions of globalization, marginalization and IT. Section 3 addresses methodological considerations. Section 4, provides an overview of the experiences of implementing computer-based Health Management Information System (HMIS) in the Ethiopian public health care system. Section 5, deals about analysis and discussion of some of the potentials and challenges of globalization and ICT adoption to the health care system of developing countries, and finally section 6 highlights concluding remarks and implications of the study.

LITERATURE REVIEW: GLOBALIZATION, MARGINALIZATION AND IT

The theoretical background to understand globalization and its effects is mainly based on selected writings of Giddens (1990); Beck (1992); Appadurai (1996); Robertson (1992), and Walsham (2001). In this section, I focus on some common themes discussed by these authors with respect to globalization, marginalization and IT and draw upon some relevant concepts. In this paper, an attempt has been made to explore some of the dialectical effects in the context of health information system of developing countries.

The multi-sidedness of globalization provokes an academic debate in which three main themes may be underlined- hyper-globalist (celebrating the coming of the global age), skeptical (denouncing the social inequality, cultural uniformization, economic and political disintegration generated by globalization), transformalist (conceiving globalization as a transformative force, given birth by modernity).

For the hyper-globalizers, globalization is a new epoch in human history defined as an irreversible, inevitable and necessarily privileged process. It defines a new age in which peoples everywhere are increasingly subject to the disciplines of the global market. They argue that not only globalization is real, it is here and it is changing everything. It is transforming the structure of states, the nature of economies, and most of our basic institutions (Giddens 1999). In their viewpoint, globalization is equated with liberalization in politics, economy and culture.

For the skeptics, unlike hyper-globalizers, globalization is not a historically unprecedented process, but one with a long history. They argue that there is nothing new in globalization. For skeptics the term globalization has been put into currency, largely by politically motivated authors to legitimize the reduction of the welfare systems and protection to workers with the argument that everyone has to compete in a global market place now (Walsham 2001). They view globalization as a process that will increase social inequality and will incite a standardization of culture.

In the transformalist account, globalization is conceived as a powerful transformative force, which is responsible for a massive shake-out of societies, economies, institutions of governance and world order (Dimitrova, 2002). For them, globalization is a very controversial and dialectical process with multi-causal dynamics. Globalization is perceived primarily as a social phenomenon tightly connected with modernity (Castells 1996).
Anthony Giddens is the first writer who challenges the existing up to now theories of globalization and academic discourse. He argued that “the early debate on globalization in the mid-1980s sought to determine if this concept was an accurate description of changes that were occurring” (Giddens, 1990). According to Giddens (1990) we are living in the high modernity era characterized by Time-Space separation, disembedding mechanisms, and institutional reflexivity. Time and space separation implies how social interactions are increasingly taking place in conditions of “absence” rather than in collocation. Except that globalization expands time and space horizons, it also binds them by linking distant places and creating higher interconnectedness. Disembedding mechanisms refer to the processes by which local knowledge systems are standardized, removed from local context and rearticulated over different time-space conditions. These two conditions taken together imply that knowledge systems are constantly changing and being challenged. This, according to Giddens (1990), leads to an “institutional reflexivity” in present times. These concepts from the globalization phenomenon are interpreted and used differently in the different social contexts. Walsham (2001) argues that these contextual variations imply that globalization is not a form of homogenization, but hybridization, where different cultural systems create their own local meanings of globalization.

Another writer about contemporary society is Ulrick Beck. To describe the current society, Beck (1992) used the term “reflexive modernity”. In Beck’s theory the most remarkable feature of reflexive modernity is the emergence of the “risk society” - “this concept designates a developmental phase of modern society in which the social, political, economic and individual risks increasingly tend to escape the institutions for monitoring and protection in individual society” (Walsham, 2001; Dimitrova, 2002). Beck places risk at the core of his analysis of contemporary social changes, and defines it as a systematic way of dealing with hazards and insecurities induced and introduced by modernization itself. For him, modernization is the primary globalizing force and global risks are product of global industrialization. Because today risks spread very quickly, they are inherently globalizing. Hence the coming of risk society accelerates the globalizing process (Beck et al. 1994).

Another influential contemporary writer about globalization is Robertson. He argued that: “globalization as concept refers both to the compression of the world and an intensification of consciousness of the world as a whole” (Robertson, 1992). He elaborates his theory proceeding from the argument, and thus objecting Giddens (1990) that “globalization is not equated with or seen as a direct consequence of modernity. Rather it should be seen as a very long, uneven and complicated process.” According to Robertson, globalization is a particular phenomenon that requires an interdisciplinary treatment. He advocates for a theoretical approach, which goes beyond simple models of world polity or world economy to the independent dynamics of global culture. Hence, his interpretation is focused on the cultural aspects of globalization. For Robertson, globalization is undoubtedly a true dialectical process, consisting of two contrary sub-processes – particularism (where the stress is on the cultural uniqueness and diversity) and universalism (where the emphasis is on the cultural unitary and homogeneity).

So, in Robertson’s interpretation, globalization brings about both cultural homogenization and cultural hetrogenization, and these two processes overlap and set up a global culture. Thus the debate about global homogenization versus hetrogenization (worldism vs relativism) is surpassed and what Robertson spells out is the way in which these tendencies are mutually implicative. For a better understanding of his idea, he coins a new term “glocalization” - the convergent point of local and global. For Robertson, globalization is a truly dialectical process and its complex nature can be grasped only if we take its major trends - homogenization and hetrogenization for complementary and interpenetrating (Robertson 1999).

With regard to Giddens’ definition of globalization as “time and space distanciation”, Robertson agrees that he is right in drawing attention to the ways in which time and space have globally separated, recombined and standardized. What Robertson criticizes is that with institutional analysis of globalization, Godden’s does not take into account the cultural differentiation. Therefore, Robertson concludes, Giddens “fails to meet the standards of a genuinely multidimensional approach” (Robertson 1999).

There are also scholars (such as Walsham 2001) who argue that advancement to modern ICTs has contributed to globalization by supplying infrastructure for trans-world connections. According to Ajayi (2000), the revolution taking place in ICTs has been the central and driving force for the globalization process. Both developed and less-developed countries cannot afford to miss out on the opportunities these technologies are creating. The use and production of ICT plays an important role in the ability of nations to participate in global economic activities. Apart from facilitating the acquisition and absorption of knowledge, ICT could offer developing countries unprecedented opportunities to change educational systems, improve policy formulation and execution, and widen the range of opportunities for business and for the poor (Ogunsola 2005). It could also support the process of learning, knowledge networking, knowledge codification, teleworking, and science systems. ICT could be used to access global knowledge and communication with other people (ibid).
However, over major parts of developing countries and specifically in Sub-Saharan African countries, ICT is available only on a very limited scale, and this raises doubts about African countries ability to participate in the current ICT-induced global knowledge economy. In practice, ICT induced globalization benefits those who have developed the capacity to use the technology and those who have access to the technology. On the contrary, it has a negative impact on the poor as it marginalizes those who lack the capacity and the resources to use it. African countries are at risk of being further marginalized if they fail to embrace these technologies to transform their economies. As pointed out by Kofi Annan, former Secretary-General of the United Nations, globalization can benefit humankind as a whole. But, at the moment millions of people--perhaps even the majority of the human race--are being denied those benefits. They are poor not because they have too much globalization, but rather that they have too little--or none at all (Ogunsola 2005).

**RESEARCH APPROACH & METHOD**

This study employed a qualitative research approach, based in the interpretative tradition (Walsham 1993), which seeks to understand complex social, technological and organizational issues related to the development, customization, and implementation of information systems in different contexts. As Walsham (1993) pointed out, interpretive research is "aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context" (ibid pp. 4-5).

This study is part of a larger joint action research project called Heath Information Systems Program (HISP) (see Braa and Hedberg 2002; Braa, Monteiro, sahay 2004, Braa, Hanseth, Heywood, Mohammed, Shaw 2007) which started in South Africa in 1994 as a collaborative action research project between the University of Oslo, Norway and University of Western Cape, South Africa. The empirical data presented in this paper is based on HISP’s initiative in the Ethiopian public health care context. As a member of the HISP-Ethiopia team, I took part in different activities of the project in Ethiopia including: conducting situational analysis, software customization, implementation, and capacity building activities in different regions and at different administrative levels since the inception of the project in Ethiopia in 2003. Apart from the knowledge and experience gained from my long term involvement in the project, the empirical material for this study was also collected through semi-structured interviews, observation during meetings, workshops, document analysis and analysis of e-mails communicated through group mailing lists.

**LESSONS FROM THE EXPERIENCES OF IMPLEMENTING COMPUTERIZED HEALTH MANAGEMENT INFORMATION SYSTEMS (HMIS) IN ETHIOPIA**

This study was conducted within the global Health Information System Program (HISP) which is an action research initiative ongoing for more than two decades in many African and Asian countries (Braa and Hedberg 2002; Braa et al. 2004, Braa et al. 2007). The HISP activities started in South Africa in 1994 as a collaborative action research project between the University of Oslo, Norway and University of Western Cape, South Africa. The aim of HISP is mainly to strengthen the process of designing and implementing effective health information systems (HIS) in developing countries. The specific orientation is to provide “information for action” at the district level where services are provided. To this end, the global HISP network has developed free and open source software called DHIS – District Health Information System.

The first version of DHIS was developed by the HISP group in South Africa at a tool to support the management of routine health data. Through time, this version of the software pass-through various modifications and implemented in various countries including: India, Mozambique, Malawi, Tanzania, and Ethiopia. The principal goal of HISP initiative is to design, implement, and sustain computerized DHIS for supporting primary health care delivery at the grass root levels for developing countries. HISP can be conceptualized as a relatively loose network structure comprising at the first (horizontal) level different countries, and at the second (vertical) level various institutions within these countries (Braa et al. 2004). HISP seeks to create networks for sharing ideas, experiences, knowledge, technology and value among the various nodes of its network. Within different countries, HISP embraces particular local institutions, people, researchers, research outputs, software, data elements, health indicators, training material, ideas, and learning experiences (Braa et al. 2004). HISP therefore is an action research project aligning to enable various kinds of flows vertically (within countries) and horizontally (across countries).
HISP initiative in Ethiopia dated back to early 2003 as a collaborative project between the Department of Information Science, Addis Ababa University and the Department of Informatics at the University of Oslo, Norway. HISP initially sought formal approval from the Federal Ministry of Health, but this failed as the Ministry wanted to pursue its own process (that development and implementation of HIS would be carried out by their own experts, and their priority was the development of a national HMIS strategy). As a result, collaboration was instead established with the relatively autonomous regional health bureaus, starting with Addis Ababa Health Bureau where an agreement was signed in December 2003. In 2004, agreements were reached also with four other regional health bureaus in Oromia, Amhara, Tigray, and Benishangul-Gumuz to carry out HIS development and implementation.

Our experience of implementing the technology in different regional states and at a national level illustrated that the development and implementation of computer-based IS in the context of developing countries is a complex and dynamic processes of collaboration and learning among different stakeholders. There were heterogeneous stakeholders who belong to different social worlds and sub-worlds. Each group has its own interests and values towards the technology. For example, there were multiple global and international actors and stakeholders with varying and sometimes conflicting interests (including donors, politicians, national and regional health care authorities, health care managers, health care providers, educational institutions, software companies, developers and analysts). There are also several health programs and services working to serve particular needs in their respective programs and services. Powerful forces were influencing the design, development and implementation of the technology towards selective, vertical and fragmented approaches aiming at central control. This has been the main obstacle to the change initiative.

With regard to the potentials of modern ICT based technologies to deal with existing fragmented and paper-based public health data management system, our experience shows that there is a huge potential that ICT can replace traditional routine paper-based HISs with flexible electronic means and could bring significant cost reduction and effectiveness in terms of timely delivery of health care services. For example, in the provinces and districts we successfully implement the technology, we witnessed positive results both in automating and making existing paper-based routine data collection and reporting system efficient, such as to make different patterns (e.g. mortality, immunization, fertility) visible that are often invisible with manual systems. The technology has also significantly improved data collection quality, accuracy and timeliness. It also make reporting potentially much more flexible and efficient by allowing data to be analyzed at the level where the data is collected as well as the levels above it.

However, we also witnessed some obstacles during the process of implementing DHIS technology in different regional states. Obstacles related to poor infrastructure, rigid bureaucracy and centralized control and lack of local flexibility in decision making, inadequate human resources, and lack of skilled manpower on basic computer literacy (See Mengiste 2010a & Mengiste 2010b for details) had negatively affected the implementation process and the efforts. We identified the following challenges for the implementation and use of modern ICT based technologies to transform public health data collection, analysis, and reporting in different regional states of Ethiopia:

- **Infrastructure related Challenges:**

The technological infrastructure (telecommunications, networks, electricity) concentrated in major cities and the remote districts and regions are not connected with basic ICT infrastructure. For example, in Benishangul-Gumuz regional state, which is one of remote and least developed regions even by Ethiopian standards, we found the ICT related infrastructure almost non-existent. All health facilities visited by the HISP team do not have a computer let alone internet connectivity. Even at the district health offices, computers were not available and all data aggregation tasks were performed manually by clerks. The kind of modern technologies, such broadband internet connection were not available even at the regional health bureau. At the regional health bureau, there was only a dial-up internet connection which was extremely slow which took so long even to open an e-mail message. The region is also characterized by poor transport facilities, poor postal and telecommunication infrastructure. For example, except one Zone (the regional capital), the other two zones use a half-duplex radio communication system. The poor ICT infrastructure in in provinces and districts has undermined efforts to spread the technology to the rural areas where majority of the people resides.
• Human Resource Related Challenges:

Implementation and use of modern ICT based technologies in the health sector is often unsustainable partly due to lack of appropriate and skilled human resource to operate new systems and technologies. Our experience in HISP also revealed this lack of local skills base in a wide range of skills. This includes IS/ICT skills of systems analysis and design, implementation skills, and operation-related skills including computer literacy and familiarity with programming languages to customize systems to fit local requirements. The human resource challenge is further exacerbated by frequent turnover of existing skilled manpower to modern cities seeking for better pay and conducive working environment. Most health workers (doctors and nurses), for example, either go in foreign countries seeking better job, or join non-governmental organizations (NGOs) operating at national and international levels. For example, during our stay in Benishangul-Gumuz regional state, two of our champions (the head f the regional health bureau and maternal and child health coordinator, medical doctors) who have exerted so much effort to change existing paper-based and fragmented HIS into computer-based application, ended up joining international NGOs working in Addis Ababa.

• Health Care system structure related Challenges:

The public health care system structure is highly hierarchical and highly centralized that makes technological interventions and local decisions taken by regions and districts less sustainable. The explicit aims of centralized focused approaches have been standardization and uniformity (see Kimaro, Mengiste, Aanstad 2008). The best strategy is to embrace decentralization and local flexibility in designing and implementing computer-based HIS. The provincial and district public health managers should be given the local flexibility to decide on different issues including defining the data sets required at a local level rather than using data sets defined centrally by national actors. Our empirical evidence in the HISP initiative in Ethiopia has shown that a well-functioning health management information system (HMIS) requires decentralization of authority over HIS and provision of local flexibility to adapt it local requirements. In Ethiopia we introduce four different local flexibility strategies to deal with context-sensitive challenges of introducing ITC based technologies in the public health sector of remote and disadvantaged regions: the use of gateways, bottom-up& top-down approaches, flexible standards, and clustering. When there is uneven development across regions and districts in terms digital and physical infrastructure, we use gateways to address the constraints by allowing data flow and communication through paper-to-paper, paper-to-computer, and computer-to computer interfaces. Lack of access to infrastructure also forced us to adapt bot bottom-up and top-down implementation strategies. That means when there access to infrastructural resources as well as skilled manpower at lower levels of the health system (such as districts or health facilities), the bottom-up approach has been followed and the standardization and computerization starts from the lower level. But, when there is a problem of access to technological infrastructure at lower levels, the implementation only starts from the top level often at regional and Zonal levels. The principle of flexible standards (see Braa et al.2007) allows local flexibility in adding data elements required at lower levels. This approach helped local users of the system to expand the essential data sets to address their specific needs, while still conforming on the data required at regional and national levels. The clustering approach has been adopted in Benishangul-Gumuz regional state manly due to the extremely poor technological infrastructure and lack of skilled human resource at all levels of the system. This strategy allows gradual expansion whereby priority was given in identifying alternative approaches to deal with the adverse state of infrastructural problems at zonal and district levels. In such settings, computers and power generators were deployed centrally in one health facility and serve as a hub to a group of health facilities that have geographical proximity. Then all health facilities send their routine health data in paper format to the central hub whereby the data cleaning, data entry and data analysis will be done and reported to the next hierarchy (District and Zonal Health offices).

ANALYSIS AND DISCUSSION

The potential of ICTs for socio-economic development cannot be ignored by politicians of sub-Saharan African countries. Specially, in the health sector, investments on ICTs should complement basic health services provision of the poor and marginalized communities in both urban and rural areas. By replacing traditional paper-based data capture, processing, storage and dissemination operations with flexible electronic mechanisms, new technologies could bring significant reduction and effectiveness in terms of improved health care management and service delivery practices of African countries. ICTs have a role to play in improving the effectiveness of the health sector as a whole by maximizing the use of scarce knowledge and limited resources and facilities. The main benefit of the new information and communication technologies lies in their ability to reach a wider range of communities. The HISP global initiative in general and the Ethiopian experience in particular aimed to make a difference to the marginalized and deprived communities by making primary health care data collection, analysis and reporting more efficient and reliable for decision making and action.
The HISP program brings a lot of experience and is considered as a successful international project. However global solutions will never resolve issues and problems that are grounded to the local context. Therefore, in this section, I will discuss some implications of the HISP approach on the following four main topics of globalization, marginalization and IT:

- Institutional reflexivity
- Homogenization and cultural diversity
- Social inclusion and exclusion
- Disembedding mechanisms

The development of empirical knowledge does not in itself allow us to decide between different value positions, and knowledge is provisional, mutable and constantly being assessed and revised (Giddens, 1990). In HISP approach, the design of the DHIS software prescribed decentralized capture, local analysis and local use of data. The concept of Open Source code also constitutes an issue of importance, in relation to DHIS translation, adaptation and use in different contexts. The fact that the DHIS is open source code means that different users from different contexts (for example Norway, South Africa, Ethiopia) can always introduce changes according to their needs and priorities. Being a mutable constantly assessed and changed knowledge it represents a good illustration of what Giddens calls “The Institutional Reflexivity of modern social life”. The ability to constantly change the software and its function mean that social practice can be constantly examined and reformed.

Information system design for local empowerment in the health sector needs to address standardization and flexibility for localization as a central issue. While standards are foundational for coordinating activities across time and space, flexibility is necessary for grounding these activities locally (Braa and Hedberg 2002). As Walsham (2001) pointed out, working with IT in particular context requires a deeper local cultural understanding, and a process-oriented view as to how culture is implicated in IT adoption and use processes. Adaptation of information systems to the local context, empowerment through practical learning, and the creation of local ownership through participative processes are central issues in the HISP approach. This conforms to Robertson’s (1992) notion of homogenization and cultural diversity. Robertson (1992) argued that “…imported themes are “indiginized” in particular societies, which local culture constraining the receptivity to some ideas rather than others, and adapting them all in specific ways.” The metaphor of cultivation at multiple decentralized levels in the HISP approach suggests one way of approaching the issue of supporting local appropriation of processes and systems being sensitive to local norms and values.

In Walsham’s (2001) terms inclusion of the excluded in the global network society involves using IT effectively to help the disadvantaged, and trying to give them access to opportunities offered by such technologies. In relation to this notion, I argue that HISP, which represents “North-South” and “South-South” cooperation, is a positive approach for the social inclusion of excluded from the global network society. HISP’s approach of designing and developing district-based health information systems and its strategy of combining experiences from different cultural contexts can be considered as a good combination of the global and the local, the technical and social aspects.

HISP represents three contexts with different social, economic and technological backgrounds, trying to share knowledge and experiences, with in the umbrella of globalization, marginalization and IT. On this attempt of sharing local and non-local particularities, some of the features of Giddens (1990) “high modernity” and “disembedded mechanisms” are present. For instance, the traditional social face-to-face interaction, less present in Scandinavia is disembedded from the local context and introduced into rural districts of Ethiopia and other sub-Saharan African countries. Due to the power of globalization, which is driven by modern ICTs, the traditional society interaction occurring in conditions of “presence” is replaced by a global systems integration, which takes place in absence.
CONCLUSION AND IMPLICATION

The contemporary world is undergoing major processes of change, labeled in various ways such as high modernity, the risk society or globalization. Information and communication technologies are deeply implicated in the global changes that are taking place, through their ability to enable new modes of work, communication and organization across time and space (Walsham 2001). However, the change processes are not seen as uniform in their effects, and organizations and societies are likely to remain distinct and differentiated. It should be known that global solutions will never resolve issues of cultural independence or enhance the preservation of cultural variety that enriches human experience. It is true that the global IT-based systems offer developing countries an opportunity to introduce many improvements in health delivery, as well as overall developmental goals. On the other hand, however, the diffusion of ICTs in most developing countries is small and the effect of its growth on the rest of the economy is very limited. To solve the existing challenges and exploit the potentials of globalization and ICTs to the health care sector of developing countries, I suggest the following issues:

- In order to adapt ICTs to local contexts, systems development in developing countries needs to be based on a social system perspective. This social system perspective conceptualizes IS and ICTs as a part of broader social systems in which technology constitutes only one of the components. The HISP approach and the case example from Ethiopia demonstrate the importance of social and technical components in adopting and implementing technological artifacts (Such as DHIS) in different settings.

- There is no doubt that globalization and the advancement of modern ICTs have created opportunities for sharing experiences and initiate collaborations that many poor countries in Sub-Saharan Africa can take advantage. But, it is also essential to get a deeper understanding of the contextual challenges encountered in each specific country at a local level and formulate context-sensitive strategies. In doing so, each specific country would always take the socio-economic, cultural and infrastructural realities so that introduce ICTs a way that supports in bridging the gap between those who have and those who have not. Poor countries, therefore, need to develop ICT policies and strategies that facilitate collaboration among them as well as with international agencies and donor countries in a form of South-South-North (see Braa 1996; Braa et al. 2004) collaboration to gain financial support as well as to collaboratively address challenges related to infrastructure and ICT related knowledge gaps. A typical example of such collaborative efforts is HISP initiative which is an action research project jointly undertaken by the Universities of Oslo (Norway), and many other African and Asian countries including Ethiopia.

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