Defining the ‘D’ in ICT4D: 
Graduate Papers on Development, 
Globalisation, and ICT

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Defining the ‘D’ in ICT4D: Graduate Papers on Development, Globalisation, and ICT

Edited by John Sören Pettersson, course examiner

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Foreword

Development, Globalisation and ICT (Defining the ‘D’ in ICT4D)

IPID\(^1\) – the International Network for Postgraduate students in ICT4D – arranged this course in the academic year 2008/2009 as a response to several requests from IPID members for an introduction to development theories and for guidance in how to define the ‘D’ in the expression ICT4D. As Richard Heeks put it a few years ago:

\[\ldots\] the explosion of work on ICTs for development (ICT4D) has (unconsciously) followed Marx’s dictum: “the philosophers have only interpreted the world differently; the point is, to change it.” There has been a bias to action, not a bias to knowledge. We are changing the world without interpreting or understanding it. Most of the ICT4D research being produced is therefore descriptive not analytical.\(^2\)

The aim of the course “Development, Globalisation and ICT (Defining the ‘D’ in ICT4D) – 7.5 ECTS” was thus to provide a sound foundation for advanced studies in ICT4D. The course was designed to provide insights into some of the most influential development theories. The selection was made on the basis of classical bodies of ideas with a strong impact on recent notions of development.

The course moreover illuminated development theory from various angles, especially the perspectives of different social sciences, viz., anthropology, political sciences, and economics. I am very happy to acknowledge the contribution from the three scholars that provided literature lists, lectured, and also reviewed student papers: Paula Uimonen, Peter Smekal, and Anders Danielsson. These devoted researchers have also written summaries of their lectures and included short introductions to the student papers that make up this report. Thirty postgraduate students from all over the world registered for the course. Video recording was used to provide access to the lectures for those who could not attend. Now, finding time for assignments was hard for many – some have started to write on their essays but not found time to complete them – and in the event we have eleven completed papers, which are presented here.

Special thanks for financial support go to SPIDER – The Swedish Program for ICT in Developing Regions\(^3\).

Finally, I must express my deep and sincere gratitude to the IPID co-ordinator, Gudrun Wicander, research student at Karlstad University, who took the initiative for this course and also made all the arrangements around it. I am sure I am not the only one to be thankful for this initiative and all the efforts!

Karlstad in July, 2009

John Sören Pettersson
Course examiner, Professor in Information Systems

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\(^1\) http://www.humanit.org/PID/
\(^3\) http://www.spidercentre.org/
# Contents

Perspectives on Development presented by an Anthropologist, a Development Theorist, and an Economist ................................................................. 1  
Paula UIMONEN, Peter SMEKAL, Anders DANIELSSON  

An ICT4D project’s impact on rural women’s life: Results from an explorative study in a Bangladeshi village ................................................................. 7  
Mahfuz ASHRAF  

Gethok Tular in ICT4D: Defining the (Advanced) ‘D’ by Way of a Traditional Method ................................................................. 19  
Nuria WIDYASARI  

Mapping the Information System Context in Organizations ......................... 27  
Tuija TIIHONEN  

Is e-learning promoting social capital? .......................................................... 38  
Zahra OJAGH  

An analysis of how underlying ideas of development are reflected in education and possible roles for ICT ......................................................... 45  
Annika ANDERSSON  

Education for Development – Realizing the Millennium Development Goals ........ 57  
Mathias HATAKKA  

Investigating Universal Access from a Human Development Perspective ........... 67  
Florence Nameere KIVUNIJE  

The invisible hand of the market or the visible hand of the state – How to reach universal access? ................................................................. 77  
Gudrun WICANDER  

Participatory Design Approach: The missing link in user adoption of the new health information system ......................................................... 84  
Bahol RAHIMI  

Gender Dimensions of Information Communication Technologies for Development ................................................................. 94  
Arzak KHAN  

M4D Applications in Agriculture: Some Developments and Perspectives in India 104  
Kasina Venkateshwar RAO
Perspectives on Development presented by an Anthropologist, a Development Theorist, and an Economist

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Abstract: Three researchers gave lectures and read the student papers of this course. In this chapter each teacher presents the perspective she or he represents and gives also short summaries of the students papers following later on in this report.

An Anthropological Perspective on ICT4D

This series of four lectures analyzed ICT4D from an anthropological perspective, moving from macro-level global theories to empirical case studies in developing country contexts. The main thrust of the lectures was to identify and explain the dynamic interplay between ICT and society. To this end, sociological and anthropological knowledge was brought to bear on ICT, building on ethnographic research on the social, cultural and political dynamics of ICT development in developing countries.

In the first lecture, social network theories were introduced, combining Castells’ (2004) theories on the emerging network society with Uimonen’s (2003) ethnography on Internet and globalization. Contextualizing Castell’s work in theories on the information age, it was underlined that his focus on organizational transformation enabled him to identify networks rather than information or knowledge as the defining criteria of society in the information age. Although networks are a fundamental aspect of social life, and have been so throughout human history, the development of ICT has led to networks becoming a dominant social structure in contemporary society. This amounts to the rise of what Castells defines as the network society, with specific economic, political, cultural and social features.

Building on Castells’ notion of the global network society, which he defines as inherently diverse and fragmented, anthropological theories were used to explain salient features of the networked world order. Inseparable from the process of globalization, the Internet has contributed to a higher degree of global interconnectedness and interdependence, as evidenced in Uimonen’s ethnography of Internet development in developing countries. Generally defined as the network of networks, the Internet enables the transnational flows that underlie globalization, tying the world into webs of communication and interaction. Nonetheless, the Internet also reflects the asymmetric nature of the networked world order, which continues to be divided into centres and peripheries, of economic, political and cultural power. This global division is illustrative of the diversified nature of modernization. Despite the common belief in science and technology-driven unilinear progress, modernization takes different paths in different contexts. If anything, the Internet unravels some of the inherent
contradictions of modernity, not least the notion of bounded, sovereign nation states versus boundary crossing networks.

The second lecture focused on the cultural underpinnings of ICT. Using an anthropological definition of culture, the lecture emphasized the social and cultural embeddedness of ICT. Viewing Internet as a cultural construct, a result of culturally informed social practice, some of the cultural characteristics of ICT were identified. Sociological and anthropological analyses of ICT development were used to pinpoint the values of openness, freedom, creativity and sharing to be prominent among people involved in technological development, such as software developers and Internet pioneers. This culture of the Internet, which has been defined as the culture of networking, has a pronounced libertarian and cosmopolitan ethos, reflecting the technical interfaces of the Internet, and the ideas and values accompanying its development (Uimonen 2003). The culture of networking is, however, varied and flexible. It interacts with other cultural forms in different social and cultural contexts, thus exemplifying the dynamic interplay between technology and society.

In the third lecture, the focus shifted from abstract theory to global and national policy making. Building on anthropological readings of policy, the normative nature of policies was underlined, and their ensuing role in the ordering and functioning of society. Policies thus offer a key to understanding the architecture of modern power relations, which in turn is expressive of the workings of the state and its monopoly on political power. In this regard, it is imperative to view policies both as products (normative models) and processes (discursive practices). This theoretical understanding of policy was exemplified by empirical case studies from the United States, Finland, Malaysia and Laos, outlining the historically shaped political and institutional contexts informing ICT development in national settings. The UN World Information Society Summit (WSIS), which took place in Geneva in 2003 and in Tunis 2005, was used to exemplify global policy making.

In the final lecture, the analysis was brought down to the ground, looking at the development and use of ICT in the context of an Arts College in Tanzania. Drawing on an ICT user study (Uimonen 2006), a multimedia presentation was used to communicate the main findings of the research. Based on interviews with teachers and students at the College, the study found that without sufficient training in ICT, costly ICT facilities tended to be underused. Nonetheless, in the absence of formal training, peer-to-peer learning proved very useful and the pedagogical role of ICT staff was also significant. Despite rather basic user patterns, the study found that users had come to value the Internet as an important part of their lives, without which they would not prosper in their studies or overall personal development. The value of the Internet was extended to society at large, and users felt the Internet to be of crucial importance for the development of their nation in an era of globalization.

This anthropological appraisal of ICT4D, with its focus on the dynamic interplay between technology and society, resulted in three papers. All of them focus on the social and cultural contexts informing ICT development in developing countries. The papers are based on empirical research in different parts of the world, from Bangladesh and Indonesia to Finland, South Africa and Mozambique.

**Development Theory**

The lectures on development theory covered two broad topics: the “history of development” and Post-War development thinking.

The basic argument of the first topic was that the development theories which emerged after the second World War did not start from scratch, but built upon two older currents of ideas: (1) political economy, the notion of “improvement”, of increasing prosperity and standards of living, of increasing the “wealth of nations”; and (2) evolutionism, i.e. the notion of directional social change, of more or less advanced societies, of “forerunners and latecomers”; etc. In both cases, moreover, and this was the main argument of the first lecture, the discourse was heavily influenced by the legacy of European expansion.
It is quite obvious that the emergence of political economy in the modern sense was closely related to the European overseas enterprises since the 15th century. In fact the classical schools of mercantilism and liberalism historically corresponded to the two main phases of European expansion: the mercantile phase (1400-1800) and the industrial capitalist phase (1800-1914).

Evolutionist thinking, which began to appear in the 18th century, was likewise closely related to European imperialism and colonialism. It became an integral part of a discourse by which the colonial powers tried to convince themselves and their subjects in the colonies that Europeans were superior. It justified colonialism, as Europeans began to understand their mission as the development of the rest of the world (“the white man’s burden”). Evolutionism in various ways also influenced the emerging social sciences.

During the period of European colonial expansion “development” was not only an idea, but also praxis, concrete actions effectuated by Europeans to “civilize” the non-European world, and to exploit and draw profit from its resources. After 1945 “development” came to be used in a new sense, as an expression of the belief that it was possible for less developed countries to “develop” themselves, albeit with the aid and support of the former colonial masters. The different schools of political economy (mercantilism, liberalism, Marxism, Keynesianism) together with evolutionary thinking in the social sciences offered various elements for the “new” development theories.

The second topic of the lectures maintained that the major bodies of ideas and strategies for development since the 1950s – the Soviet model, theories of growth and modernization, structuralism and dependency theories, neo-liberalism and globalization – primarily differed in their position concerning the relative importance of the state vs. the market. They shared, however, a common belief in modernity, in science, rationality and technology, in social and economic progress, and in Western development as the universal norm.

This “Enlightenment Developmentalism” also had its critics. Particularly since the 1980’s we have seen the appearance of various “post-positions”: post-modernism, post-structuralism, post-colonialism and post-developmentalism. Common notions are disillusionment with Western development and modernity, dissatisfaction with capitalism and socialism, a criticism of the enduring power of the coloniser’s mindset in the former colonies, and a dismantling of “development” as a repressive discourse. The proponents of these ideas emphasize the need of “another development”, of ecological sustainability, cultural pluralism, small-scale-ness, decentralization and grass-root empowerment.

The Economics Perspective on Development

The Economics lectures were intended to give non-economists a taste of what it is like to look at development problems through an economist’s glasses. The lectures were divided into three parts: to focus on how the views of development and its causes have changed over the years; to give a more precise definition of well-being (or lack of it) and the delicate balance to strike between comprehensiveness and operational usefulness; and to outline some ideas of why and how economists believe that growth is essential, though not sufficient, for poverty eradication.

The first part of the lectures dealt with how economists’ perception of development has changed over time. From the capital fundamentalism that characterized much of development thinking in the 1950’s, over the unfettered liberalism of the 1980’s to the attempts to a “results-based” thinking à la the Millennium Development Goals of today. An important feature, however, that has characterized economists’ thinking through this period is that more money (e.g., foreign aid or larger government expenditures) is better than less. This view has indeed been challenged, but critics have been, and remain, rather isolated voices.

The second part dealt with poverty and how to define it. Traditionally, poverty has been associated to a lack of income, but modern research – and inputs from other disciplines – has made it clear that poverty is much more than missing purchasing power, particularly when measured in an aggregated way, such as via national accounts. The most serious attempt to
challenge the traditional viewpoint came when the UN’s Development Programme, the UNDP, launched its Human Development Index (HDI). This is an attempt to capture well-being that is broader than the traditional measure, per capita income, so it includes life expectancy and literacy as well. However, we discuss in the lectures to what extent HDI really captures anything new, as it correlates – on a cross country basis – very closely with per capita income: the rank correlation coefficient is over 0.9. It seems, then, that even if we recognize that well-being – or poverty, its antithesis – is multidimensional, it is still possible to use per capita income as a rough indicator when quantitative estimates are made.

Having established that lack of income can be used as a rough indicator of poverty, we turned to one of the fundamental lessons of the course (which is very simple, yet seems to be ignored by many commentators): that there is a simple and inescapable relation between economic growth, poverty and inequality. This is not the forum to go into the details, but this very simple relation explains why economic growth in, say, South Korea had a tremendous impact on income poverty, while in, say, Nepal, economic growth hardly affected poverty levels at all. The point here is that it is important – when you look at how and why poverty levels change in a country – to consider not only how fast per capita incomes are changing, but also to look at the pattern of growth.

The third part of the Economics part of the course dealt with what can be done (as Lenin would have had it!). There has been a virtual explosion of micro-level data in the form of household surveys during the past twenty years; these have brought an understanding of why people stay poor and of which societal and political changes that lift people out of poverty. This knowledge forms the base on which policy recommendations can be formulated. Thus, for instance, it is clear that economic growth in agriculture and in rural areas is more efficient that growth in manufacturing and urban areas. Thus, a government interested in poverty alleviation should focus on agriculture rather than manufacturing, and on rural, rather than urban, areas. Alas, this is not always the case, despite all rhetorics. There are also other important factors to consider, such as a gender-bias in the use of money (the way women use money is generally better for poverty alleviation), the impact of government spending (infrastructure and agricultural extension are efficient vehicles to combat poverty), and the initial distribution of assets (such as land).

In sum, the course concludes that economists do know quite a lot about global poverty and how to combat it. But the problem remains that very few governments seem willing to put this on the top of their agenda. Why this is so would be the topic of a course – much longer! – of its own.

**Summary of students’ papers**

*Mahfuz Ashraf* explores the impact of ICT on rural women’s lives, based on an exploratory study of the famous Grameen Village Phone project in Bangladesh. Using a qualitative and interpretive research methodology, combining interviews with Village Phone operators and an innovative use of content analysis software, the study is aimed at academics, practitioners and policy makers who wish to understand ICT through the lenses of individual women in a social, rather than a techno-centric context. The study analyses the empowerment of women in terms of economic and social progress as well as decision-making capacity. While the main benefits of the Village Phone project are to be found in the financial independence resulting from business opportunities for women, the impact has been positive in other areas as well, from civil society to family relations.

*Nuria Widyasari* uses the concept of Gethok Tular, a traditional Indonesian communication method, to develop a model for the analysis of Internet development in a cultural context. Similar to the concepts of word-of-mouth or phone-tree, Gethok Tular represents an informal method for disseminating information. It also resembles the concept of networking, and Widyasari analyses Gethok Tular in relation to network and world-system theory. Her research is based on fieldwork in the remote Aceh province, where she investigated local
efforts to develop the Internet in the aftermath of the tsunami. Rich in ethnographic detail, the paper shows the challenges of brokering a new technology between core and periphery, and how such efforts are influenced by a variety of cultural factors in a local context dominated by traditional values.

_Tuija Tiihonen_ develops three context maps, to be used as tools in the research of socio-technical, non-measurable areas of Information Systems (IS), in different organizational environments and cultures. She argues that the ultimate reason for the failures of many IS, in developed as well as developing countries, is the tendency to ignore the whole socio-technical context of the system. Based on literature review, secondary data and interviews in Finland, South Africa and Mozambique, Tiihonen proposes a model that incorporates the socio-political environment as well as financial, physical and human resources, as factors informing the IS of an organization. This map model is aimed at IS and ICT education for teachers, researchers, and students, as well as IS/ICT professionals, to assist in identifying the socio-technical context they are studying.

_Zahra Ojagh_ asks whether e-learning can promote social capital. As the author says, e-learning citizenship is simple in theory, but it is complex in practice. However, there are potentials in this mode of education. Ojagh surveys e-learning’s ability to make relation between various groups of people through cultural codes and hence prompting social capital. The communicative process in e-learning has a core that is a resource of power, whence the author concludes that “Practically, it means participation and engagement for limiting government dominance on personal and private sphere.”

_Annika Andersson_ relates the different theoretical approaches to development to educational ideals. The important role of education for development is generally cherished today, and so-called e-learning plays a crucial part in the field of ICT4D. The paper demonstrates that different “kinds of development” correspond to different ideas on the role of education in society. From a mainstream perspective development is essentially economic growth, and education therefore has to prepare people for the (global) market. Alternative development theories emphasize other educational ideals, like critical thinking and liberation from Westernization. Anderssons paper thus makes a valuable contribution, questioning the often rather simplistic and naïve propagation of education for development.

_Florence Nameere Kivunikes_ paper addresses ICT more directly. Seeing universal access to information and communication technology as an important prerequisite for development, many developing countries have adopted policies to increase the provision of telecommunication and Internet services, particularly in rural districts. But do these universal access policies really lead to human development? The author tries to answer this question utilizing material from a field study in Uganda. The conclusion, based on two cases, is that Uganda has moved from providing the necessary infrastructure for access to a service delivery approach. Still lacking, however, is an inclusion of the beneficiaries’ perspective. This illustrates a general problem with ICT not only in developing countries, i.e. the risk that
the new technologies are adopted for their own sake without considering the needs of human beings.

Also Gudrun Wicander is interested in universal access policies, although from a more theoretical angle. In her article she addresses the issue of how universal access to mobile telephony can be reached. Assuming that ICT can have positive effects on developing countries, and that the use and accessibility of mobile phones in particular is part of economic development in general, Wicander makes use of mainstream development theories in order to review and compare the various positions. Some policy-makers are in favour of a Pro-liberalization Strategy, others argue for a Regulated Liberalization Strategy. The paper points out that both strategies have a long history in debates about economic development.

Bahlool Rahimi studies how IT-based systems have been used – and should be used – in health information systems. The paper reviews the experience in using IT-based systems in healthcare and focuses on the shortcomings as perceived by end users. A survey cited draws a number of interesting conclusions: (i) there is insufficient user involvement in the design of the system; (ii) systems are seldom adapted to the different needs of different types of users (say, nurses versus doctors); and (iii) training is insufficient and not always relevant. The paper therefore argues for a participatory approach when it comes to the design of IT-based health care systems and analyses a number of arguments in favour of such an approach.

Arzak Khan looks into the issue of how information technology is used by men and women and argues that there may be a gender digital divide, in the sense that women – for various reasons – do no adapt to new technology as rapidly as men. The empirical base for the paper is a study from Pakistan. It is clear from the paper that while women use the Internet almost as frequently as men, they (as well as men) prefer to use it from home. However, men are much more willing to use the Internet from cafés and from work, while women seem to be frequenting learning centres to access the Internet. However the frequency of use (measured as the time per week online) is not different between men and women. These surveys are potentially important for designing strategies to reach relevant groups with appropriate information.

Kasina Venkateshwar Rao studies how mobile solutions can be designed to farmers’ needs. This paper looks specifically at India, but the conclusions are not limited to India. Focus is on how businesses can come up with innovative strategies to enhance crop yields, provide input and output information, and other factors critical for small farmers, often located in remote areas. The core of the paper discusses a number of pilot projects undertaken in various parts of India. The author concludes that while mobile solutions indeed have a potential relating information to small farmers, there is much more to do before such a system will be the backbone of a more efficient allocation of resources in Indian agriculture.

References
An ICT4D project’s impact on rural women’s life: Results from an explorative study in a Bangladeshi village

Mahfuz ASHRAF

Abstract: It is now recognised that Information Communication Technology (ICT) has the potential to contribute to development, especially in rural areas of developing countries. But the mechanisms through which ICT can be combined with development agendas and an understanding of the actual development process and impacts of ICT are less well understood. This research is an attempt to contribute to this understanding by analysing the impact of a particular ICT initiative namely ‘Village Phone’ in Goma-Krisnokathi village in Bangladesh. This is done by adopting a qualitative and interpretive research methodology. Data was collected by interviewing ‘Village Phone’ operators. Leximancer, a content analysis software was used to identify the core themes from interview transcripts. Our findings demonstrate that this ICT project has had significant impacts on income and empowerment, including decision making capacity on the ‘Village Phone’ operators. This paper will be useful for those academics, practitioners and policy makers who wish to understand ICT through the lens of individual women in a social, rather than a techno-centric context.

1. Introduction

ICT\(^1\) and its role in improving quality of life has been a concern of international donor agencies, development partners, non-government organisations, academicians and so on [1-3]. Since the 1990s, a great deal of emphasis has been given to the deployment of ICT in rural areas of developing countries, in the expectation that it will contribute to ‘development’ of those people who were previously untouched by ICT [4]. Despite a growing understanding of the potential role of ICTs in promoting the principles of social inclusion and gender equity, there is nevertheless a recognised knowledge gap relating to the impact of ICT initiatives, particularly with respect to impact on women. Despite many ICT4D initiatives aimed at women, the gender related documentation consists mainly of short-term success stories, often written, or commissioned by the agencies responsible for funding. Where research on impact is available, the gender dimension, particularly as it relates to rural women, has not been well analysed (at least, this was the opinion by various authors some five years ago; [5, 6]). The lack of awareness of the potential benefits of ICT use could constrain wider ICT deployment and adoption.

\(^1\) ICT is defined as: “technologies that facilitate communication and the processing and transmission of information by electronic means. This definition encompasses the full range of ICTs, from radio and television to telephones (fixed and mobile), computers and the Internet” Marker et al. [3, p.4]. When the term ICT for D is used in this paper, it should be understood that the focus is on information and communication rather than the technology.
This research is an attempt to contribute to filling this gap by studying one particular aspect, women empowerment of the Grameen ‘Village Phone’ initiative in Goma-Krisnokathi, a small village in rural Bangladesh. Similar to most of the population in Bangladesh, the population in this village suffers from low literacy, high unemployment and poverty levels. The ‘Village Phone’, is an income generating programme for poor rural self-employed women, enabling them to resell modern telecommunication services in rural areas.

The aim of this research is to demonstrate the impact of ICT on the lives of rural women at an individual level. In its simplest form, an impact assessment is a systematic process of identifying and analyzing the potential and actual impact (positive and negative) of an intervention. A key function of impact assessments is to enable researchers, users or policy makers to compare intervention objectives with the actual outcomes, taking into account the surrounding social and economic environments and human contexts.

2. ICT and gender dimension

Why are we concerned about women’s involvement in and benefit from ICT? Most importantly, it is a matter of social justice. ICT has been recognised as a tool for acquiring knowledge and thereby empowerment, so to deprive any section of society of this opportunity would therefore deprive it of its dignity. Exclusion and inequality faced by women, is associated with capability deprivation, restricting their capability to enjoy the kind of life they have reason to value, e.g. to work outside their homes [7, 8]. This deprivation also affects the children of those who are excluded. For example, mothers with numeracy and literacy skills tend to have healthier children. There is also an economic argument favouring greater involvement by women in ICT.

The long-standing male dominance in ICT and information systems in general is reflected in the scant attention to gender issues in research related to these fields [9]. The gender focus has been limited despite the important gender issues arising when considering women as users, employees and entrepreneurs in this field, including the many women who work in call centres.

Noting that there had been insufficient attention to understanding the impacts of ICT on women and that few projects initiated by the International Telecommunication Union (ITU) which had taken into account the needs and perspectives of women, the 1998 World Telecommunication Development Conference (WTDC) resolved to establish a task force on gender issues [10]. To emphasise the importance of gender issues, this task force was converted into a the Standing Working Group on Gender Issues at the WTDC in 2002 [11]. This brought renewed emphasis on training and education for women in ICT, a theme that recurred at the WSIS, where training and education of women to motivate and promote “participation and active involvement of girls and women in the decision-making process of building the Information Society” [12, point 90d].

There are still disparities in favour of men, in the use of and benefits from ICT [13], despite the greater awareness created by the ITU and many other organisations and despite the recognition that ICT can facilitate achievement of the Millennium Development Goal (MDG) number 3, *to promote gender equality and empower women*, in different ways, e.g. as a tool for delivering literacy programmes specifically targeted to poor girls and women and for influencing public opinion on gender equality [14, 15]. Awareness raising is a necessary ingredient in any empowerment effort. International conferences have been held to explore how both of these uses of ICT can be achieved [16].

Target 11 of the MDGs, ‘ratio of women to men in wage employment in the non-agricultural sector’ is particularly relevant to the case of the ‘Village Phone’ initiative, in which ICT opened new doors for women to become entrepreneurs, thereby providing them with opportunities to change their socio-economic condition and overcome their oppression, social control and other humiliating features associated with being a woman in a male-dominated society.
Despite limited and sometimes questionable benefits of many ICT initiatives [17], new doors have nevertheless been opened for women to overcome some disadvantages in their lives, particularly where the initiative is associated with income earning capacity. Changes in their income levels through involvement in ICT, either as users or entrepreneurs, has the potential to transform into major changes in economic, cognitive and decision making powers of women. There are many examples of ICT being an important tool for women’s empowerment and where women are the primary drivers in using ICT for development purposes in their communities. There are also examples where, as in the case of the ‘Village Phone’, women derive income from ICT, whether directly, as sellers of ICT services, or indirectly, through other products and services that the ICT infrastructure has enabled.

Sometimes the ICT component comes as a natural extension of the activities of a women’s organisation, as was the case with the Self Employed Women’s Association (SEWA), which has been involved in many facets of ICT in India, including training poor women in the use of video cameras and audiovisual equipment and educating women via satellite communication about the importance of insurance [18-20]. In an endeavour to attract women to participate in telecentre activities, the Swaminathan Foundation requires that at least one woman is engaged in the management of each center. This strategy has resulted in many of the operators and volunteers in the MSSRF Village Knowledge Centres being women. Their involvement has contributed to increased influence and status, not only from working with the centres, but also from small enterprise activities associated with this involvement, such as production of paper and biopesticides [21-24]. Another example from India is the ‘Putting ICTs in the Hands of Women of Kanpur and “Chikan” Embroidery Workers of Lucknow’, which aimed at exploring whether ICTs can improve the capacity of women engaged in the informal sector to improve their sustainable livelihoods [14]. In a survey of 17 infoDev funded ICT4D projects, Batchelor et al. [14] included a number of projects that were designed to empower women in different ways, including the Brazilian ‘Strengthening Women’s Leadership in Community Development through Internet Radio’ and the African Abantu for Development project. Abantu, an NGO established by African women in Europe in 1991 and which entered into the ICT4D arena in 1999, has trained women’s groups in Kenya in basic software and Internet skills and brought together different sectors of the business community to produce gender-sensitive ICT policy recommendations. Other ICT4D initiatives in Africa include WOUGNET [25], a non-profit non-governmental organisation established in 2000 by several women organisations in Uganda to promote and support the use of ICTs and the African Gender Research in Africa into ICTs for Empowerment (GRACE) project. This project has now been expanded to North Africa and Asia [16]. Also in Uganda, Prahalad & Hammond [26] reported that centres run by the Women’s Information Resource Electronic Service provided female entrepreneurs with information on a range of issues, ranging from market prices to details on credit and trade support services. Preferring money over information, many of the did not initially value information as a resource, but were then taught how to use information to improve their businesses [27]. Africa is also home to the Digital Diaspora Initiative, an initiative supported by the United Nations Development Fund for Women [28] and African ICT entrepreneurs in the Diaspora. It aims at helping women in countries of origin use new ICT and create enabling environments for African women to influence all aspects of ICT use and policy.

Similar to the Bangladeshi ‘Village Phone’ programme, which is perhaps the best known ICT4D project involving women [29], many of these examples go beyond just providing women with access to ICTs. They are strategic in the sense that they go beyond issues of access and infrastructure, and aim at empowering women and addressing the unequal power relationships between men and women and erode existing hierarchies within societies in general. By including marginalised groups and helping to define their role as active participants in society, development goals can more easily be addressed. Projects of this nature are more effective in addressing poverty issues [30, 31]. But involvement by women in ICT is not a guarantee for empowerment and greater gender equality, not even when women are highly
educated. This was illustrated in a study of female engineers in India by Patel & Parmentier [32], who found that women were placed at the periphery and did not benefit from the perspective of improved socio-economic or political status, despite their professional work in the IT sector.

There is also a debate about the value of ICTs for developmental in general and for women’s empowerment in particular. Critics of ICTs point to the more pressing needs of women in developing countries for safe water, adequate food, improved health, and better education rather than the provision of access to ICTs. The counter argument is that health, water, food, education and ICT are not in opposition to each other. ICTs can be a tool to provide information on health and food, as well as a carrier of education for women and girls [33].

Researching ICT in terms of inequality in the gender dimension, especially as it relates to women and community empowerment has become a challenge for academicians, practitioners and international donor agencies, particularly with increasing focus on gender equality and women’s empowerment by donor countries. [2, 34-37]. While the potential of ICT for socio-economic development in general and empowerment in particular for different disadvantaged and marginalised groups, such as women the poor, disabled, and indigenous groups is recognized and addressed in many programmes, only a limited number of research publications on ICT impact assessments with focus on empowering these groups exists in the public domain. For example, the United Nations Development Program (UNDP) has provided assessment guidelines for ICT and gender initiatives in 25 UNDP country offices [38]. The assessments were based on a questionnaire at the organisational level, but did not include the individual level. Point 114 of the World Summit on the Information Society, Tunis Agenda [12] noted the launch, in June 2004, of the Partnership on Measuring ICT for Development, and its efforts to develop a common set of ICT indicators, including point 114 (d) specific gender-disaggregated indicators to measure the digital divide in its various dimensions. The Gender and Evaluation Methodology (GEM), developed by the Women’s Networking Support Programme of the Association for Progressive Communications as a tool to facilitate the process of learning about using ICTs for gender equality, is another tool focusing on assessing the impact of ICT programs or policies on women’s empowerment from a program, rather than an individual perspective. This methodology is different from the ‘Gender Empowerment Measure’, also known as GEM, which is used in the UNDP Human Development Reports to reflect gender inequalities and rank countries according to the level of female participation in political decision-making, access to professional opportunities and earning power [39].

Analysing the impact of ICT from the perspective of gender, enterprise and livelihoods, Heeks, et al. [40] described a multi-disciplinary and multi-method approach to studying gender issues for women in ICT enterprises. The International Telecommunications Union [41] has defined indicators to measure inputs, outputs and outcomes (impacts) at the organisational and national levels associated with achievement of the MDGs. The indicators for MDG 3 do not refer directly to empowerment. The closest is the outcome at the national level, which is defined as “positive changes in women’s status and employment based on ICTs” (p.29). Orbicom, an international network of UNESCO chairs, has attempted to measure the impact of ICT on gender equality from the social development perspective [42]. A subsequent Orbicom report by Huyer & Hafkin [13] aimed to provide a framework for data analysis to relating to measuring contributions by women to the knowledge society. Notwithstanding the importance of the many initiatives designed to measure the role of women in ICT and the various indices developed by different agencies to monitor the impact of ICT4D, this paper follows the suggestion by the ICT Task force that anecdotal evidence and profiling of success stories are useful complements to indexing efforts [15, p 88].

Following this brief overview of relevant body of work relating to the importance of ICT and its potential role in improving women’s quality of life, we now present the ICT project in
rural Bangladesh that forms the basis of our empirical study, the ‘Village Phone’. It is probably the best known ICT4D project and therefore does not require much introduction.

3. VILLAGE Phone: an initiative to empower rural women

Professor Yunus, one of the pioneers of the micro-credit concept and the 2006 Nobel Peace Prize Laureate together with Iqbal Quadir, the founder of Grameen Phone, developed the idea of bringing ‘ICT to the Poor’.

Their unique initiative is a self-employed income generating programme, that provides modern telecommunication services in rural Bangladesh, where the ‘Village Phone’ operators resell network services. These grassroots women entrepreneurs operate their businesses in rural villages where no telecommunications services previously existed; they offer the use of their phones to community members on a per-call basis. Offering services at affordable rates to customers, they earn enough to repay their loans and earn incomes that allow them to make investments in their children’s health, nutrition and education, and in other business ventures. More importantly, individuals living in rural communities gain access to affordable telecommunication services, linking them to their friends, family, and business contacts within Bangladesh and around the globe. Expanding access to the rural poor by providing rural telecommunications infrastructure through a sustainable business model, this programme has been praised as a unique and solid model that promotes development and poverty alleviation through the use of ICTs.

Despite facing interconnection problems with the incumbent Bangladesh Telegraph and Telephone Board during the early years of its operations, which started in 1997, the programme had grown to more than 260,000 ‘Village Phone’ operators in over 50,000 villages in 439 Upazilas (sub-districts) of the country by mid-2008. This initiative is acknowledged as a sustainable development tool by governments and development agencies such as the World Bank, the United Nations, the International Finance Corporation and USAID. Similar Village Phone projects are currently underway in Rwanda and Uganda. In a bid to provide Internet access and other communications services to rural people, Grameen Phone launched ‘Community Information Center’ (CIC) services in 2006. These are not addressed in this research, as no CIC had been deployed in Goma-Krisnokathi at the time when the research was conducted.

While there are references in the literature to the empowering and other beneficial impacts from a social perspective associated with the ‘Village Phone’ initiative on its female entrepreneurs as they generate their own income and participate in family decisions, these statements are in general not informed by in-depth studies of how these improvements emerge. It is important to understand the processes leading to empowerment, such as micro-credit schemes, are not always empowering. In a study of a micro-credit scheme in Nigeria, Izugbara noted that this had not improved the women’s ability to overcome, or even challenge constraints limiting women’s access to power or to escape from obstacles preventing them from leading lives they have reason to value.

4. Research Design

The methodology adopted in this research is based on an interpretive approach in the qualitative research tradition. The interpretive approach advocates the development of understanding of human behaviour by considering surrounding contexts. It is therefore a suitable framework when there is a need for explorative research to understand complex human behaviour. In this research the focus is on the participants’ perceptions, attitudes and experiences towards development. Previous studies have not adequately addressed these aspects with respect to impacts of ICT in the social context of rural areas in Bangladesh. The use of an interpretative methodology in the absence of primary data when theorising a problem is supported by Menou and Potvin’s statement, "One cannot overemphasize that the kind of data, especially those which are needed for building indicators..."
and the indicators themselves have to be selected from the beneficiaries perspective and with their participation, e.g. through a grounded theory approach”.

Primary data were collected from six (6) female operators of ‘Village Phone’ through focus group discussions and personal interviews. Participants were selected on the basis of their willingness to take part in interviews and the availability of the researcher’s time during the field visit to Goma-Krisnokathi. The most common characteristics of the six female operators are as follows:
1. they are married and are in the 30 year age range,
2. they have more than two years business experience, and
3. their average monthly income is less than USD 100.

The research findings are presented in a story telling fashion to identify emergent issues from interview transcripts of the six female ‘Polli Phone’ operators. Content analysis has been used to find the most important themes and issues from the field data [52]. Leximancer, a content analysis software was used for performing conceptual analysis of text data from our interview transcripts. This software package allows users to extract concepts and the relationships between these concepts from a text corpus. In addition to describing what is occurring, this software tool is useful for analysing reasons.

5. Goma- Krisnokathi VILLAGE: setting the context

Located in a remote area of Bangladesh, some 420 km south of Dhaka, the capital of Bangladesh, the Goma-Krisnokathi village is within the boundaries of the Barisal district. The area of the village is approximately 16 sq.km and it is surrounded by 3 rivers, and 3-4 canals. The village has only one land phone line. The population of approximately 6,000 lives in some 550 households. Figure 1 shows the study site and some common characteristics of the Goma-Krishnokathi village.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Goma-K Village</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>6,000 (approx)</td>
</tr>
<tr>
<td>Household</td>
<td>550 (approx)</td>
</tr>
<tr>
<td>Major occupation</td>
<td>Agriculture</td>
</tr>
<tr>
<td>Geographical condition</td>
<td>Traditional</td>
</tr>
<tr>
<td>Religion majority</td>
<td>Muslims (~ 60%)</td>
</tr>
<tr>
<td>Number of primary school</td>
<td>1</td>
</tr>
<tr>
<td>Number of secondary school</td>
<td>1</td>
</tr>
<tr>
<td>Average income</td>
<td>3,000 Taka per month or USD 43</td>
</tr>
</tbody>
</table>

Figure 1: Study site and some common characteristics of Goma-Krishnokathi village

With considerable traditional cultural influences in the village, it is common to find people who believe in superstition, including ghosts (jeen, pori, and Mazar). Although people, including women, are aware of their rights, the requirement for dowries is nevertheless a widespread social practice. Similar to other villages in Bangladesh, the extent of child labour is high.
6. Data analysis

To gain insight into the content of the interview transcripts, Leximancer was configured to map the document set consisting of interview transcripts. Figure 2 illustrates the important themes and the proximity of concepts in the cluster map that appeared in the text. The emergent concept groups are normally referred to as themes. Each thematic group comprises similar kinds of concepts that appeared in the text.

The brightness of a concept is related to its frequency and the brightness of links relate to how often two connected concepts co-occur closely within the text. Some of the most frequent concepts identified by Leximancer are ‘business’, ‘phone’, ‘Polla’ Phone’ and ‘family’.

Figure 2: Ranked concept list

Though Leximancer counts the concepts and their relationships, it is the responsibility of the researcher choice to select, merge, and/or delete concepts and themes related to the objectives of the research. Leximancer also allows the theme size to be changed, as per the researcher’s requirements. We grouped or merged some concepts into three groups using the centrality of concepts and the relatedness of concepts to each other within identifiable ‘chunks’. These groups are:


We now describe each group and their relationships with the concepts that appeared within the text.

1 Polli is the word for ‘village’ in the local language.
A. Economic progress

‘Polli Phone’ is an opportunity for rural women to initiate their own business in their localities. Where required, the female operator first gets a loan to purchase a handset and to finance infrastructure development within her area, if necessary. The ‘Village Phone’ operators can set up the business adjacent to their home. Overall, ‘Village Phone’ enables rural female to engage in income generating activities, as one operator stated:

Recently I engaged in a business concerning cellular phone. I obtained license from Grameen Phone company. My income increased from Tk.1,000 to Tk.6,000 per month.

The improvement in rural female economic or financial condition through the ‘Village/Polli Phone’ venture is not straightforward. We found some challenges – a conservative social structure in which conservative elements use social pressure in their attempts to hinder economic progress by women. This is demonstrated by the experiences of one of the operators:

People came to my shop to call their relatives and for business purposes. My business was running well, but after some days some people gave objection to my family mentioning that a single woman cannot operate business in the middle of the Bazar (market). I had a fear like this because our society is quite conservative for women.

However, this negative perception of the role of women is challenged by women themselves, as illustrated by another operator:

I motivate others to become more financially independent, and it makes them feel happy and proud. Look at me! I have proved that a female can also earn income like man. A female can do it as well, or sometime more successfully.

B. Decision making capacity

Since female operators have been contributing financially to their families, their importance, decision-making capacity and power in family affairs have increased, as stated in the following vignette, in which one operator talks about the impact on ‘Polli Phone’ operators in general:

It has significantly changed her economic condition and given her complete satisfaction and confidence, as she can now do something for her family and herself. Her decisions now get priority from her husband on every aspects of life, like children’s education and birth control, as she has proved herself to be successful in her business.

The operators are also becoming important persons at the village level, as stated by one operator, describing how she perceives the situation for ‘Village/Polli Phone’ operators:

She is being treated as a successful entrepreneur in the society and thus she plays an important role in its social activities.

C. Social progress

This research has confirmed earlier findings [46, 53] about the socio-cultural benefits of the ‘Village Phone’, i.e. that the female operators are now self-reliant and confident in their social progress, such as education and health. In general, although not well educated themselves, the female operators have become aware of the importance of education, hence they are giving high priority to sending their children to school. Further, they have become aware of different social issues that are conducive to their development. The following vignette indicates the social progress of an operator:

My level of knowledge, skill and awareness of the wider environment is drastically changed as I have to manage different people, have to go different places for business purposes and thus my bargaining and negotiating power has increased.

In summary, the ‘Village Phone’ business has improved the confidence of the female operators and has enabled them to be active citizens. This confidence has prepared them to speak out on a number of issues, including unethical conduct they may encounter and to join civil society and work with government agencies
7. Conclusion and future research

Using the ‘Village Phone’ as an example, the aim of this research was to highlight some impacts of ICT on rural women’s lives at an individual level. With the focus on women as operators, rather than users we have illustrated how economic and social progress and decision-making capacity are defined and perceived by the operators. Our data analysis through Leximancer has also linked the ‘Village Phone’ business with positive impacts in other areas, including empowerment in family relationships. As is illustrated in Figure 3, the centrality of ‘business’ in the text as a linkage with other concepts that we grouped in clusters defined as economic/social progress and decision making capacity, highlights the relationship between financial independence and the other impacts.

![Figure 3: ‘business’ as central focus of this research.](image)

This finding is consistent with the work of other researchers in this area, who have also found that ICT has potential for socio-economic progress in developing countries through addressing various developmental challenges, such as poverty alleviation [54-56]. The open-ended interviews enabled the women to express the benefits experienced by them in their own words, thereby complementing existing knowledge based on qualitative research on the gender dimension of ICT-led development in Bangladesh. We found, through a systematic analysis of women’s voices, that ICT in the form of the ‘Village Phone’ can act as a medium of economic and social progress for the operators of this business in rural areas, thereby playing an important role in poverty reduction for themselves, their children and their families. This means that it is tool in the virtuous circle whereby the decision-making capacity of rural women can contribute to economic progress, which in turn empowers women to make more decisions. However, the process is not straightforward; it remains a challenge to consider other social issues, such as how to overcome impediments in the form of conservative social attitudes and perceptions towards women in rural areas.

This research is explorative in nature; hence an interpretive research methodology was suitable.

However, while the limited scale and scope of the study gave insights into the women’s perceptions about some of the elements of empowerment, it did not manage to provide an in-
depth understanding of how the processes leading to greater empowerment work. In order to
do this, the study has to move from the exploratory stage into a larger scale study. It would be
very useful to build on this methodology and the initial findings to scale the research project
in several dimensions to more fully understand the processes associated with female
empowerment in the context of ICT. This would include operationalisation, through a
participatory methodology, of the concept of empowerment to take into account the women’s
perception of this concept and indicators they find useful to measure it. The dimensions for
further study would include a larger number of villages, incorporating villages where
Grameen Phone (authority of Village Phone project) has deployed community information
centres, so the study could address questions with respect to Internet as well as a mobile
phone business. Time is another dimension that would be useful to study with respect to how
the indicators and linkages between ICT and empowerment change over time, particularly as
the viability of the ‘Village Phone’ may diminish as an increasing number of villagers may
acquire their own cellular mobile telephone. Is the achieved empowerment sustainable
beyond the lifetime of the ‘Village Phone’ business?

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Gethok Tular in ICT4D: Defining the (Advanced) ‘D’ by Way of a Traditional Method

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Abstract: Gethok tular is a Javanese term referring to a traditional method of communication quite similar to what the world knows as word-of-mouth. Based on my observation on the penetration of the internet as a public platform for communication in Aceh, Indonesia, this paper suggests the method of *gethok tular* as a way to see the internet development in a culture. The study will consider the socioculture that embedded both the internet and gethok tular method. Instead of using an advanced theory, I herewith suggest the traditional point of view of gethok tular to observe development of the internet. The focus of my study will be of cyber culture, by way of anthropology.

Introduction

*Gethok Tular* is one of traditional communication methods in Java, Indonesia, believed to be rooted from Javanese ancestors. Some traditional stories say that when the authority in ancient times would like to announce news then one of the men would go to the village and gather villagers in public place and made his announcement. The villagers would then relay the news to those who did not show up in the gathering.

Although everybody knows what *gethok tular* means, no one these days seems to be very assured on what it really is or where it came from or how it started. No written references appear to be found. I posed the above questions to 18 (eighteen) Indonesians. Six are Javanese that I know bore high status in Javanese social culture, three anthropologists, one historian, and eight communication-experts. All agreed that *gethok tular* is similar to what the world knows as words-of-mouth but apart from that, the further explanations are differed. One of the Javanese said that *gethok tular* method was first created by long-ago Indonesian kingdoms who wanted to spread their royal ideologies and to acculturate the local inhabitants into the beliefs of the royal family. This was denied by another Javanese who believed that *gethok tular* is only a primitive communication method which is proven to work effectively even in today’s world.

One of the communication experts referred to a local dictionary saying *gethok tular* is indeed a communication method that spreads negative issues from one person to another in an unplanned but natural way. This is what people these days know as gossips. However, this is again unapproved by a historian who thought that *gethok tular* always brings positive issues and it is sometimes well-planned. Most Javanese supported this opinion.

To conclude, *gethok tular* is a traditional method of communication, known since centuries ago. It is functioned as news or information scatter which content is either positive or negative issues. The nature of this method is mostly unofficial. Local women who went door to door selling home-made healthy drinks might be the authorities’ unofficial spies who did their duties unofficially.
Theorizing Gethok Tular

Observing how the dissemination of *gethok tular* works, whether it is well-planed or unplanned, it appears that it runs similarly to what the world today knows as phone-tree where there is one person or one institution as the source who calls a handful of closest friends who relay the information to others in their crowds who then make further calls to let their closest relations know about the issue. The act doesn’t stop here. It keeps on going and creates a ‘snow-ball’ effect – the more it rolls, the bigger it becomes or, in this case, the more people make phone calls, the bigger the knowledgeable society becomes. Scrutinizing further, the action of the dissemination of information in phone-trees is similar to what the world today calls word-of-mouth. The Word-of-Mouth Marketing Association wrote on their homepage\(^1\) that this method works best in the closest circle of people. One believes what others say when it comes from the person he/she trusts or idolizes. There is no need to force others to use the products if they know that people they trust or they look up to have succeeded in using them.

The method of using closest circle for further communication is also seen on Immanuel Wallerstein\(^2\) works when he discussed the world political economy. He suggested World System Strategy in which he introduced the terms “core”, “semi-periphery” and “periphery” to relate or to position the society structure. The cores are those with the most efficient (economic) systems and greatest access to (natural) resources, and thus the greatest (economic) power, creating dependency of the periphery to the core. The peripheries are the ones who support the core with cheap capital and labors. They hope that someday they might also become the core society. When resources and labor flow from periphery to core, the core’s finished goods flows to the periphery also. The semi-periphery is like middle class that acts as a periphery to the core, but a core to the periphery. They serve to keep the hope of ascending the world-system’s social ladder alive in the peripheral cultures, and perpetuate the core’s capitalist ideology and the core-periphery relationship.

By words of Word-of-Mouth method or the *gethok tular*, I could say that Wallerstein sees that the semi-periphery is bridging the core and the periphery. Therefore I say that the core reaches the closest one on its link which is the semi-periphery to communicate further to the periphery.

On the other hand, Ulf Hannerz\(^3\) does not see the world system as such a harsh, dominant, and hegemonic over the weak. His conception of the world-system (or the ‘global ecumene’ as he calls it) is more diverse with a set of cultural relationship, not only a materialist economic relationship as in Wallerstein’s view. For Hannerz, the core does not only export their culture and ideology, but at the same time they absorb some parts of culture from the periphery and integrate them into their own.

In this paper, I would like to borrow Wallerstein’s term “core”, “semi-periphery” and “periphery” for this discussion. And although there are some points that I disagree to both in the concepts of Wallerstein and of Hannerz, I can see similar results under different basis. It would indeed be hard for the core to develop the periphery but unlike Wallerstein’s point, in my case, it is because the latter were not the closest circle of the core. It is easier for the core to approach the semi-periphery first and let them relay the knowledge into the periphery. I believe that this is what work best as the marginalized community in the periphery would therefore not consider the arriving knowledge like the news on TV: you can see them but you can’t touch them and therefore they are not yours.

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**Gethok Tular and the Internet**

Javanese people believe that it is the nature of human being to have the will and the need to relay information to others. People tend to have a need on making contact with others. This is what actually *gethok tular* is. In a very different space and time, Manuel Castells¹ calls this as network, the fundamental pattern of life.

Castells’ network consists of a set of interconnected nodes which do not have any center. They are just nodes in a society, powered by microelectronics-based information and communication technologies. There are organizational arrangements of humans in it, relating the production, consumption, reproduction, experience, and power that are expressed in meaningful communication coded by culture. The importance of a node doesn’t stem from its specific features but from its ability to contribute to the network’s goal, as nodes are components of networks and as such function as one.

Networks cooperate or compete with each other. Cooperation is based on the ability to communicate between networks that depends on the existence of codes of translation and inter-operability between the networks (protocols of communication) and on access to connection points (switches). Competition depends on the ability to outperform other networks by superior efficiency in performance or in cooperation capacity. Competition may also take a destructive form by disrupting the switchers of competing networks and/or interfering with their communication protocols. Again, as mentioned above, networks constitute the fundamental pattern of life. Wherever we see life, we see networks.

The actors that Paula Uimonen² called Internet Pioneers, which I consider here as the core society, are the primary carriers of *gethok tular*. They have the ‘spirit of the Internet’ to share their knowledge to others. Holding Uimonen’s suggestion that the most distinguishing features of networks is that they are decentralized, exemplified by the individualized basis of the Internet, translates into a more vertical form of social organization than that of hierarchical structures, I agree that networks have completely no structural ranking. Their dynamic character makes networks easily traverse boundaries. And combining their decentralized and dynamic natures, networks follow the principle of flow rather than structure.

In *gethok tular*, the flow goes from the tech-savvy as core society to the ‘less-savvy’ as the semi-periphery society then on to the ‘unknowledgeable’ as the periphery society. I believe that it is wise for the tech-savvy to first gain the trust of inhabitants of the ‘less-savvy’, teach them well, and let them be their broker to touch the ‘unknowledgeable’.

Here, I refer to Hannerz’s³ concept on ‘brokering’. A broker has a particular ability to facilitate contacts between networks that have difficulties on reaching one another. It is where a man-in-between bridges different nodes, bridges the communication that goes from the sender to the receiver at the other end. This role is an important node in the network. In fact, brokering is the primary means to connect different networks and playing this role requires strategic plan to reach one another. In the case of *gethok tular*, the ‘less-savvy’ group or the semi-periphery community that here runs as the broker has the ability of understanding both outsiders and insiders’ culture and habit.

In transferring knowledge of the Internet to the periphery, the core society engages with some brokers to pull the *gethok tular* to run as they want it to. And like Uimonen⁵ had observed, my findings also tell me that this brokering includes the inner workings of state apparatus that often make a good use of their strategic position. The different understandings of the advantage of the Internet are therefore negotiated.

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¹ Castells. 1996.
² Uimonen. 2003.
³ ibid.
⁴ Hannerz. 1980.
⁵ Uimonen. 2003.
**Aceh, Internet, and Gethok Tular**

**Aceh in Brief**

Aceh is located in the northern tip of Sumatra Island, one of the five big islands of Indonesia. Indonesia has the largest Moslem population in the world but Aceh is the only province in Indonesia which applies the Islamic law in governing the region. In 1959, Government of Indonesia (GoI) granted a ‘special region’ status, allowing a higher-than-usual official Indonesian respect for Islamic law and custom. However, this grant had not followed by appropriate action. In managing the wealth of Aceh natural resources, income flowed out of the region to the center, and outsiders – especially from Java – were perceived as receiving better employment opportunities and the economic benefits of industrialization than did the resident Acehnese. Because of this, separatists started to cause unrest. They who sought to establish an independent Islamic state combined their religious and nationalist appeal with the exploitation of social and economic pressures. The Gerakan Aceh Merdeka (GAM – Free Aceh Movement) emerged. They have fought since the 1970s for having Aceh as an independent and Islamic state. And since 1976, more than 10-thousand people have died in sporadic fighting between the GAM and GoI.

In 1991, GoI put Aceh under Operational Military status. Special permission from the Indonesian army was necessary for one to travel to Aceh. As of late 1996, GoI claimed that GAM had been eliminated but the truth is that GAM still existed, fought with underground activities. GoI discovered several caches of foreign arms and incidents that resulted in the arrest of suspected rebels who were imprisoned and threatened with torture. Criminal suspects continued to be shot and killed by police in suspicious circumstances and disappearances. Extrajudicial executions of alleged political opponents occurred often.

Since 2000, highly secretive negotiations between the two sides have been held in Geneva, Switzerland. However, chances of salvaging the peace process in Indonesia's Aceh Province seemed remote. In 2003, President Megawati Sukarnoputri declared a six month period of martial law. The Indonesian army launched an offensive, brought 35,000 troops to the Aceh region, which represented the largest such deployment of Indonesian troops since the occupation of East Timor in 1975.

On 26 December 2004, Indian Ocean earthquake and tsunami swamped the northern and western coastal areas of Sumatra. Nearly all the casualties and damage took place within the province of Aceh. The country’s National Disaster Relief Coordination Agency noted 126,915 dead and 37,063 missing persons. United Nation estimated that 655,000 people were homeless and sheltering in scattered refugee camps across the province.

Following the needs to rebuild the region, GAM signed a peace agreement with GoI in 15 August 2005. The implementation of various aspects set out in its Memorandum of Understanding was established under the monitoring of European Union (EU) and Association of South-East Asia Nations (ASEAN). Besides this political aid, there were numbers of Non-Governmental Organizations (NGO), both local and international, offered their assistance in rebuilding the region from scratch again, including those who were interested in putting up networking-towers to connect Aceh to the global network.

On 11 December 2006, Aceh held its first direct elections. In an unprecedented act, the Indonesian government allowed separatist parties in the province to run. Aceh was the first and only province in Indonesia to have such an authorization. On 8 February 2007, Irwandi Yusuf, a former rebel leader, became the governor of Aceh, winning the local regional election as an independent candidate (non-party).

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1 Mostly cited from http://www.globalsecurity.org/military/world/para/aceh.htm
Field framework

From March 2006 to January 2007 (on and off), I did my PhD fieldwork in Indonesia. I spent seven months in Banda Aceh, the capital of Aceh province. During that period, I stayed three months continuously with members of the AirPutih Foundation, a domestic NGO who arrived in Aceh four days after the tsunami with only one goal to achieve: supporting the acceleration of information distribution to be able to mediate aid-parties to do better and faster assistance to urgent emergency needs. By staying with them, I obtained information about the difficulties of gaining local trust and about how they dealt with these difficulties of transforming the ideas of IT into a concrete reality.

I also managed to interview the authorities on both sides, those who were controlling IT flows and those who were watching and preserving the local customs and Islamic traditions in society. In addition, I gathered information from the grass root level in the community about how they felt and how they ran their daily lives under the military rule and civil war before the tsunami and under the international observation after the tsunami.

During the seven months period, while observing the internet penetration into the community, I followed the implementation of the peace agreement set out after the tsunami which was signed by the GoI and the Acehnese guerilla troops Free Aceh Movement (GAM). I also observed the local elections for a governor and other local authorities as well as the making and the social adaptation of new local legal regulations which were discussed and adjusted to national law.

Gethok Tular in the field

AirPutih Foundation mostly consisted of Javanese male young people (age 25-30) who came originally from Malang, East Java. Almost all of them graduated from Brawijaya University, from various non-IT departments. Nevertheless, although their education background had nothing to do with IT, they considered Internet a favorite toy to play with. They learnt about building it up by browsing the information on the internet itself and posed their doubts to those who knew best such as founder of Indonesian Linux community, I Made Wirnyana\(^1\), or father of Indonesian IT, Onno Purbo\(^2\). Eagerly and intensely learning the toy, they became familiar with it, if not to say they quite mastered it.

The Foundation itself was actually born only two days after the tsunami hit Aceh in 2004, when these young people, who considered themselves ‘ICT voluntary-based community’, had an agreement to take a leap under one umbrella to assist their fellow Indonesians in Aceh. Two days after they were founded, four persons were sent to Banda Aceh with no money and no appropriate equipment but again, one main goal to achieve: supporting the acceleration of information distribution to be able to mediate aid-parties to do better and faster assistance to urgent emergency needs.

It appeared that their vision received plenty of enthusiasm both domestically and internationally. So in between their hands-on assistance on carrying dead-bodies to mass cemetery, they were able to gather not only information on the previous local Internet use but also some donated equipment to get the work done.

Broking the goodwill of other national and international institutions in rebuilding the devastated Aceh, the foundation then became the core society (or core community in this case) who provided internet knowledge to the first layer of local inhabitants in Aceh: the Acehnese who already had previous contacts with outsiders such as the local government and the local university students.

Twelve days after their first arrival, meeting the emergency requirements, AirPutih managed to build five Media Centers to bridge the lost-and-found information. Under their arrangement, Cisco International handed their products, together with Hewlett Packard, Organisasi Radio Amatir Indonesia (ORARI – Amateur Radio Organization of Indonesia),

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\(^1\) [http://nakula.rvs.uni-bielefeld.de/~made/](http://nakula.rvs.uni-bielefeld.de/~made/)

\(^2\) [http://onno.vlsm.org/](http://onno.vlsm.org/)
PT Telekomunikasi Indonesia (Telkom – Indonesian Telecommunication), Departemen Komunikasi dan Informasi Republik Indonesia (DepKomInfo – Indonesian Ministry of Communication and Information), Asosiasi Penyelenggara Jasa Internet Indonesia (APJII – Indonesian Internet Service Provider Association), etc. Later the list also included Badan Rekonstruksi dan Rehabilitasi Aceh dan Nias (BRR – Aceh and Nias Reconstruction and Rehabilitation Agency), special body that was created by Indonesian government to be responsible in organizing all the aids for Aceh (and Nias, another island close by, which was victimized by later smaller nature disaster).

AirPutih members had only few amount of pocket money enough to live the day, but their clear purpose to support the acceleration of information distribution in Aceh and their ability to manage the situation under pressure had given them a high reputation. After a while, they were deeply satisfied with VSAT connection they finally had and later ran free WiFi around the governor office.

At first, AirPutih only aimed the distribution of the information for the emergency purpose but when their reputation of good work and open management was known quite widely, they surely needed assistance to communicate their Internet skills further because as outsiders they had not enough appropriate knowledge of local customs.

Two years past, AirPutih still had their base in Banda Aceh. They grew bigger as other members came up to help. Imron Fauzi, age 27 at the time and dropped out from Law Department in Brawijaya University, coordinated Banda Aceh office during my first visit. He was replaced by Okta Setiawan¹, age 29 and graduated from the same department as Imron, when Imron was called to coordinate Jakarta’s office. Coming from middle-low social background, both eagerly flew to Banda Aceh to serve the devastated province, grateful for the Rp. 500,000 monthly salary (about $ 60) from the foundation.

Under their coordination, AirPutih threw free regular courses in Banda Aceh office to educate university students or others who were willing to learn about computer and internet. Besides these courses, while continuing Imron’s coordination on having WiFi at local authority offices in 23 districts in Aceh, Okta’s coordination also teamed up with one of Deutsche Gesellschaft für Technische Zusammenarbeit (German GTZ) projects to educate employees of Zainul Abidin hospital on computers and the internet. In short, AirPutih transferred their computer and internet knowledge not only by waiting people’s interest showing up on their offer but also reaching out to them. Most of these pupils, especially the university students, became their valuable volunteers.

While AirPutih had been a broker for GTZ to transfer their aid to the hospital of Zainul Abidin, GTZ could also be read as AirPutih’s broker to transfer their computer and internet knowledge to the hospital.

In another case, it is also interesting to note the efforts of AirPutih to put governmental offices of Aceh on WiFi. When progress was seen everywhere, the provincial government understood the importance of Internet use. Experiencing good works with AirPutih, they teamed up with BRR to gain advantage of AirPutih expertise again to make Aceh become the first province in Indonesia on having WiFi in all local authorities in 23 districts in its province.

Having troops of volunteers now, AirPutih team was dispatched to 23 districts to first gather information about the possibility of putting up the hardware – space for tower, servers, etc. – the network point, even financial matter. The team also needed to discuss the objective and the future of the project. Local volunteers were involved. They assisted to persuade the local authorities in local way. Nevertheless, Bireuen team came back with quite a bad news for the whole team.

Team leader Heru Nugroho (27, Javanese) reported that Bireuen district authority rejected the idea of having internet connection in his area. It appeared that they had bad

¹ Okta Setiawan is now 33, earns about $300 as AirPutih coordinator for Banda Aceh, married to a local girl (29) who used to hang out with AirPutih and provide them with useful information. The girl lost her previous fiancée in the tsunami disaster.
experience in the past. There were rumors about a cyber-café where one of the customers clicked on a porn-site. The cyber-café was forced to close down and the customer was whipped out in public. Bireuen was indeed one of the districts where strong Muslims belief and tradition were held high. The district head didn’t see the advantage of having Internet connection in their area. More information on the net seemed even to have frightened him of losing the local identity. The talk about firewall and other filtering programs did not change his mind. Greater global exposure by the Internet does not lead to greater understanding and appreciation locally.

In difficult condition like this, AirPutih – including the volunteers – eased the day by walking out for about 100 meters to the left of the office, to an open street café, having coffee and serious but easy chats with other members to discuss the issue, often with laptop on the table, checking this and that online by the WiFi network they reached from their office.

When all possible things they could think of to penetrate the local authorities’ mind did not seem work, AirPutih decided to take in the higher layer of their broker: the provincial authority. And as the deadline quickly approaching, the provincial authority made a fast move. They issued an ‘order’ letter for the local government to put up VSAT tower and had a WiFi in the office. The top-down power of bureaucracy worked well. AirPutih managed to have governmental offices online, not only in Bireuen but in the whole Aceh province. Now besides the civil servants in the office, journalists or even just a traveler could sit somewhere in the backyard of a governmental office to enjoy the luxury of WiFi connection and sipping the famous Acehnese coffee.

AirPutih continued their set up by transferring their internet knowledge to the locals. At first they only came by to do the maintenance of what they put up. However, later on AirPutih handled trainings of trainer for those who were willing to learn about computer and the internet, and spread the knowledge around the local neighborhood. It was quite a long endurance for AirPutih but they finally made their good marks.

**Conclusion**

Word-of-mouth concept might internationally be the same thing but the socioculture that embed *gethok tular* has local meaning added to it. As experienced by AirPutih, a strong Moslem belief and tradition might cut off the ball from rolling further. The unofficial approach that is usually used in *gethok tular* did not seem to work well in such a case. The connection stops when the volunteers’ knowledge about local culture and customs even enhanced AirPutih to stay away from the local authority. The volunteers appeared to be a weak broker. They have broken the link when their ability to connect the core to the periphery has failed. The core (AirPutih) then goes to the higher layer of brokering (provincial government) to win the negotiation with the local authority. This particular broker has used their hierarchical power to make the ball rolls again.

Uimonen says that network on the net does have no structural ranking. However, the observation related here tells us that – traversing boundaries from online to the offline – in order to make *gethok tular* run well, sometimes one need to include hierarchical structure in its consideration. In another word, when the brokering involves state apparatus, the knowledge transfer goes easier from the core to the periphery. That is how this application of *gethok tular* works, from the closest circle of the core then on to the farthest community in the periphery.

In the case study, the socioculture of the surrounding society embedded *gethok tular*. As a comment to what Wallerstein and Hannerz mentioned as flow of power and benefit, I can say that Wallerstein’s suggestion fits more into my case than Hannerz’s. The latter sees the flow of power and benefit as omnidirectional where the core not only exports their culture and ideology but also absorbs new pieces of culture from the periphery.

My experience agrees more with Wallerstein’s opinion that flow of power and benefit is unidirectional. However, if he sees that the core acquiring something from the periphery and giving nothing back in real but ideology, I can tell that the results of my observation is quite
the opposite. AirPutih as the core received almost nothing in return from the periphery. It might be because the local has a too strong Muslims beliefs and traditions that AirPutih doesn’t really feel comfortable with. It might also because AirPutih, too, has a very high pride of their own culture that collides with local pride.

Nevertheless, gethok tular can help us observing the development of internet (including the communication gap between societies), enriched by the embedding socioculture.

References


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Mapping the Information System Context in Organizations

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Abstract: The existing Information Systems (IS) context studies are not only focused on producing theories, frameworks, or methods to observe the working environment, but more on the technical and economical aspects of developing IS. The operating environment varies from organization to organization between countries, and also from one site to another within a country. Yet many frameworks that guide organizational strategies and development assume a homogenous environment and exclude the questions of culture and context. Also successful transfer of new technologies into organizations requires an understanding of micro-level beliefs, norms, and actions within the framework of professional, organizational, national and international macrostructures.

This paper presents three context maps, which could be used as tools in the research of socio-technical, non-measurable area of IS, in different organizational environments and cultures. The models should be culture-ignorant in the sense that they do not promote any specific cultural view, but, surprisingly, at the same time culture-aware in order to make explicit the cultural features existing in any specific IS context. The frameworks could be used in IS development, implementation, and research, both in IS education and by IS professionals.

1 Introduction

1.1 What are Information Systems?

Information systems (IS) are social-technical systems which include the technology and the people, the whole context where the system is. However, IS is often understood to cover only the technology such as equipment, methods and practices, and this can cause technical bias in implementation because the focus on human resources is inadequate, especially in developing countries (Jacucci et al. 2006). However, the material and human resources are together the IS, and according to Manuel Castells (2004, p. 6) “the boundaries between human life and machine life are blurred”. Furthermore, the ISs are always systems of power, since the “news”, the information, are chosen, condensed, filtered, and manipulated by a host of complex mechanism ruling the IS (Walsham 2000), on different levels such as the working group, the department of an organization, on the head of organization, etc. Furthermore, the recipient will be, or not, influenced by the information (DeLone et McLean 1992). Information system is on its basis a kind of a political system, it is system of knowledge sharing and control (Huysman et Wulf 2006). But our time is no particular “information age” in history –information and knowledge have been essential to all societies through history, only the means may have been changed (c.f. Castells 2004). Nowadays, the computers and other electrical devices play increasing role in information systems, but the change from manual “pencil-paper” system to electronic system is not very simple due to many different reasons.
However, large reason for the problems is, that IS is seen a purely technological system, and also too often as a silver bullet to solve all problems in the organization. The key area of the development is seen to be the technology itself, and all the other aspects of surrounding organization society and culture are ignored. This same attitude seems to be quite predominating largely also in the development policy, as William Easterly (2007) claims the development experts: “[These] experts see poverty as a purely technological problem, to be solved by engineering and the natural sciences, ignoring messy social sciences such economics, politics, and sociology.” This can be seen also as a (non-ideal) meta-model of the Information and Communication Technology (ICT) development in developing countries too.

1.2 What is the use of IS development for Development?

What do the poorest of the poor benefit from the development of ICT or IS? They are hardly literate, they live in villages with no stable electricity, and the computers seem to be light-years away from their world. Furthermore, many people in the labour-intensive environment feel the ICT solutions as an enemy, as they are threatened that computers will take their jobs. However, information and knowledge can be seen as the key factors for power and wealth (Castells 2004), and information flows and access to information are important concepts when talking about equality, could ICT increase equality in access to information? Could ICT be solution for urban catastrophe, could it give the services and opportunities would also to rural areas, could this reduce the attraction of big cities, to help the young and wealthy people to stay in their villages?

The agriculture is the key for development, says Danielson (2008a): “Agricultural growth reduces poverty more than manufacturing growth”, what use could a farmer in a developing country (DC) have with the ICT and what is the connection to the IS context framework? Could farmers of certain area build up a network organization to support for their shared goal? Farmers live on the rural area, which is in the DC environment the most challenging, they are most isolated, and the infrastructure is poor, at least for the traditional PC-based western solutions. What could they use from ISD?

However, the traditional personal computers (PC) are not the only means of ICT, the IS/ICT local solutions designed to the context would be quite purposeful. For instance, in Manhinça, Mozambique, farmers use the local telecenter for information sharing. Their farmer’s network works informing the telencenter “clerk” e.g. where to sell what, and on what prices, and this will be told in the local radio, which is working in the telecenter. They can then gather the goods for market from many families for one partner, who takes them to be sold. Furthermore, the farmers can send hot questions to the clerk, who collects them, and then they arrange an expert from government to answer these questions in a radio programme (Manhinça 2005). This all is possible without the farmers having PCs or electricity. Mobile telephones already reaches out to more than half the population of Africa, and 80% of DC countries population have access to radio (Heeks 2008).

How should then ISs be planned and implemented? The answer is simple: In a way, that they would be accessible, usable, purposeful, and sustainable for the people using them. This means, that not only the working environment, but the whole cultural context should be taken account. Then again, how to build IS filling these criteria is another problem. The model presented in this paper, is aimed to be one little step towards context aware Human Centered IS Development. The problems are concerned on the DC context, but the same problems exist everywhere, where IS are developed, only the DC context is more vulnerable, and very often also dependent on external donors.

I am not even going to try define the concept of development here, many sociologists have done it from different viewpoints (c.f. Danielsson 2008; Thomas 2000), and I can rely on them. In fact, I even can see some similar features in reported problems in development as a socio-political phenomena and IS/ICT development. Though the theories of development
have changed during the time\(^1\), in ICT for development (ICT4D) Heeks (2008) recognizes also different phases: ICT4D 0.0: the first digital computer in Kolkata 1956; ICT4D 1.0: The Internet and the Millenium goals 1990’s; ICT4D 2.0: mobile device and other opportunities of ICT vs. traditional PC/Internet-route 2000’s.

Structure of this paper is the following: section 2 provides a brief discussion based on literature about human aspects of IS, individual, organization, and the special needs and problems of ISD in development countries. In section 3 the context maps and methodology are described from the initial framework of context maps to the resultant framework. In section 4 is a short discussion on the applicability of this framework and the further elaboration of it.

2 Organizational IS

2.1 Individual view to organization

The people, individuals in different roles, are essential part of the organizational environment: the very same physical space is a different environment with different people in it; the people create the environment; events and interactions leave their imprints over time, which influences the present contexts (Hernes 2004). All the people do have a slightly different picture of the organization they are working in. Eriksen (2001, p. 73) displays social structure as a matrix emptied of humans, the totality of duties, rights, division of labour, norms, social control etc., and this kind of matrix could describe organization structure. The national culture and history influences the organization, the habits of work and the management practises (Okunoye 2003), the cooperation and transactions within the organization is flavoured by the values of each individual, everyone has her/his own mindset; values they cherish, (Leal et Shipley 2002). These values may differ notably in different cultures, but generally common to all human beings is the need to be part of a community (Walsham 2000), the need for a role in the system around them (Clegg 2000). Not having a job and a place in the system is often seen to be the deepest imaginable exclusion (Leal et Shipley 2004), the situation where none wants to be in. Accordingly, it can even be claimed, that to have an identity individuals need to identify themselves through a process whereby individuals see themselves as one with another person or group of people (Nahapiet et Ghoshal 1998).

However, to achieve successful output for the organization, the individuals have to be, at least on some level, motivated and happy with the organization. Yet, each member of the organization understands the nature and the purpose of their organization differently (Leal et Shipley 2004), if there is no clear guidelines and goal, and poor understanding of the system may cause some uncertainty, which again affects to the motivation and involvement.

2.2 Different organizations

Organization is a social system, an organized entity, where individuals are supposed to act towards shared goal. It may have many different purposes, and it does also have quite a number of definitions, depending on the viewpoint it is discussed. Nahapiet et Ghoshal’s (1998) definition emphasizes organizations as a producers of social capital: “Organizations are institutional settings conductive to the development of social capital”. Avgerou (2003 a, p. 36) defines organizations as “historically produced social systems, whose formal structures and processes are sustained by systems of shared meanings”. Organizations are defined as artifacts, collectives of people who are working together for some common purpose (c.f. Spender 1996; Baskerville et Pries-Heje 2001).

\(^1\) 1960’s physical capacity; capital, 1970’s human capacity, education; 1980’s liberalization, uncontrolled markets; 1990’s Institutional capacity, quality of government; 2000’s Social capital (Danielsson 2008a, Danielsson 2008b)
The narrow description to organization may consider only some productive or administrative unit with clear structure and borders. Thus, organization is seen quite complex system of socio-technical networks (Ciborra 2004, p. 64), man made ecosystems, which has their own ecology where people with different roles and backgrounds share their skills and views to reach common organizational target (Clegg 2000). Thus, organizations are interrelated systems of behaviour that are independent. (Harris 2002 p. 36), the individuals are working in an entity consisting of interdependent or coordinated parts that are formed into a whole with predetermined goals (Baskerville et Pries-Heje 2001). However, organization can be seen wider, particularly the IS in organization: communication, including access to databases and eLibraries, is possible for all globally, at least in theory. After Castells (2004) social networks are one type of organizations, and “Digital networks are global, as they know no boundaries in their capacity to reconfigure themselves”. Furthermore, the digital networks can be seen as information systems, the boundaries of IS or organization are indeed vague.

Though ISs are everywhere around us, organizations are places, where they can be more easily seen. Concepts such as “Information block” or “Information bottleneck” are created in organization management, and this kind of features can be most easily studied within organization. Furthermore, in some definitions the organization can even be understood as synonymous to Information System.

2.3 Special problems in developing countries and the failures of Western engineers, the Developing view

The Information systems development is quite a risky area everywhere, but the developing countries, especially rural areas, are seen to be the most difficult places for ISD. The rural areas in DC are too different from Western engineering world, that the word “impossible” is often mentioned within the discussions about “doing IS to DC”. The infrastructure certainly is one of the major problems, but many failures could have been avoided, if the different context, including e.g. working conventions and culture, has been taken into account already in planning the IS.

Then again, there really are problems which are outside of foreign engineers mind. One big problem is, that funding may be donor based, and this often means, that the donor dictates the rules: donors’ accepted solutions may only be used. For instance, in Vreedenburg public hospital in South Africa rural area, the doctor of the hospital was frustrated for their healthcare software system: this hospital was small, not high-tech equipped and had totally different needs for IS than the system they had, designed for big Western hospital. In fact, the purposeful solution for the Vreedenburg hospital would have been quite a lot cheaper, they could even use free open source system (which the doctor was already familiar with) but they were not allowed to choose (Vreedenburg 2005).

If in the development policy the big organizations, such as International Monetary Fund, World Bank, and United Nations, dictate the rules (cf. Easterly 2007), in IS development these same instances make the meta rules, but also in implementation level there are certain companies such as Nokia, Microsoft, IBM, and HP, to mention some, whose products may be the project’s only choice, no matter how it is sustained.

However, even if the solutions are chosen by the local, they often end up with imported software, tools, and knowledge. People are not aware of the possibility of solutions adapted to the working culture and context (professional and environmental). Whatever causes for failures is asserted, at the end of the day, the ultimate reason for the failures is ignoring the context of the system, being blind to the real needs and working habits and conventions and seeing only the technical environment, but not the whole socio-technical context of IS.

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1 This happens also in Western countries: in schools is implemented the same system as in banks; there is no awareness, that it is possible to get tailored systems.
3 Context maps in IS development

Understanding the context is essential when discussing about the socio-technical systems, such as information systems or educational system. The concept of context is huge and very difficult to define or explain, hence the framework of context maps is aimed to be a tool to help understanding the context. After Heeks (2008) the successful IT projects are led by “hybrids” that span the technical and organizational. However, these hybrids are quite rare, and this context map is aimed to help anyone to expand their hybrid viewpoint. It is aimed for IS professionals to be used in developing and implementation of ISs, and for IS education, to be used for mapping the IS contexts in research and teaching. The map would help to separate and divide different items in the IS context, to classify and divide different components/items in the IS, for specifying what kind of expertise is needed in that point on the map. For instance, if the item/problem is on the socio-political category, it is not probable that it can be changed inside the organization, but inside the organization it is possible to find suitable strategies to adjust the situation, and even try to benefit from it.

This is phenomenological research of sociotechnical contexts, which aims to find essential features in IS context and build up a set of maps. This is not actually interpretive research because we are not interpreting the results per se. Rather, the aim is to identify similar and different factors, not to evaluate whether they are good or bad. Nor is this connected to contextual design, which is a user centred approach to the design of ICT systems, which intends to obtain a deep understanding of the work inside the system. The material is collected from many different kinds of organizations in western and developing countries and from their IS users in different levels, including the senior management to the field level.

The framework consists of three different maps: the analysis levels of contexts, the scopes of contexts, and the categories within contexts. These maps can be used together or separately, they are not any methodology but rather tools to be used to outline the studied context.

3.1 Initial framework

One of the theoretical starting points in the beginning of this study was the 2X4 IS analysis level model by Korpela et al. (2001). It is used to limit the view and choose the level of the analysis. Originally, it was designed for the analysis of levels of work activities, but it is also usable when analyzing other IS features, such as levels of knowledge or decision making. In this case, the model helped to focus the level of this research. The most essential is the organizational level because that is the determinant for the IS, but the primary material should be gathered on as many levels as possible to obtain the picture of which kind of situations people use IS and what is their context. Figure 1 displays the modified model. The original idea remains the same, and only the visual picture of this has changed, and Figure 1 includes also the global level, which is not pictured in the original. The global level network is not only the cooperation of big institutions, but also reaches to the individual level, and thus is very important when detecting information systems cultural aspects, according to Castells (2004, p. 39): “The culture of the global network society is a culture of protocols of communication between different cultures on the basis”.

To outline the character of the IS context, it was studied on many fields of science. Among quite a number of different context definitions, the anthropologist’s definition of three context levels – cultural, historical, and immediate context (Tapaninen 2005) – seemed to be very appropriate. With this definition, the bowl model of contexts scopes (Figure 2) was built; it pictures context as water in a bowl where no lines can exactly be drawn between the levels. However, at the bottom of the three anthropological levels of contexts, we have added nature, which is quite essential from the view of ISD. For example, the solutions in +38°C must be different than in -38°C temperature climate.
<table>
<thead>
<tr>
<th>Global level</th>
<th>Unit (Intra viewpoint)</th>
<th>Relations between units (Inter viewpoint)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Societal level</td>
<td></td>
<td>Country</td>
</tr>
<tr>
<td>Organizational level</td>
<td>Organization or autonomous part of an organization (e.g., hospital)</td>
<td>Co-operation between separate organizations (e.g., the national health system)</td>
</tr>
<tr>
<td>Group, activity level</td>
<td>Activity entity that produces a whole, operative unit</td>
<td>Activity-group-interacting with each other (e.g., some polyclinic)</td>
</tr>
<tr>
<td>Individual level</td>
<td>Individual, person</td>
<td>Groups of individuals (e.g., women, men, nurses, officers)</td>
</tr>
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**Figure 1:** The levels of IS analysis (Tiithonen et al. 2006; modified from Korpela et al. 2001)

**Figure 2:** The scopes of context (Tiithonen et al. 2006)
Nature is the environment that must exist before any kind of culture can appear. Where humans made culture, cultural context exists. Cultural context can be understood as the set of values and beliefs that inform and motivate people’s behaviour (Castells 2004). Above cultural context is the historical context, which refers to all of the historical events that marked its cultural context. The innermost ‘top’ context is the immediate context, which is the entire physical and social environment, its actions and interactions, the actors and roles, and everything that surrounds the moment. The immediate context in the use of IS is not studied as a separated feature surrounded by stable elements. On the contrary, all the scopes of the contexts in their different forms are influencing dynamic change to the immediate context.

One remarkable source of secondary data was the situation analysis reports that we received from our HISP (2004, Health Information Systems Programme, University of Oslo) partners in South Africa, which were conducted in different health care (HC) organizations in order to map their information systems. With the help of these reports, the picture of the research area began to take form, yet all the existing literal material is focused on some other reason than describing context; it can only help to create some guidelines, not work as a research material itself.

Several environmental categories of factors have an influence on the context of IS. In the beginning, we delineated five main categories: socio-political environment, infrastructure, organization culture, economy, and human resources. The selection of these categories is based on the findings in literature (c.f. Ciborra 2004, Lai et al. 2003, Molla et al. 2005, Mosse 2004, Soriyan 2004), and our own work and research experiences in information systems. The nature and the priority of these have elaborated along with the research. These categories are illustrated as sectors on the contextual scopes (Figure 3), and the free space between them describes the other areas or categories that exist but are not in our interests.

![Figure 3: The categories of context (Tiihonen et al. 2006)](image)

On this basis the analysis of the nature of IS context was started, and the research of the elusive concept of IS context began to take form. The primary data collection was conceived within the boundaries of these frames and is described in the following section.
3.2 Primary data collected to refine the model

The objective of this research is to study information system use, so the primary data from the IS users is compulsory. To achieve as diverse data material as possible, the material should be gathered in different western and SSA countries, from as many as possible organizational IS, and from different levels of the organization and from various types of organizations. The resources to gather the material were limited; no resources were available for a longer stay in Africa or to travel there often. Therefore, the methods to collect primary data in this research were mainly by interview and conversation. The primary data is collected from Finland, South Africa, and Mozambique during the years of 2005 and 2006.

The interviews started in October of 2005 in Kuopio University Hospital, Finland. Our INDEHELTA partners at the South African institutions of Cape Town University and Cape Peninsula University of Technology and at the Mozambique institution of Edouardo Mondlane University arranged opportunities to conduct interviews in their countries. In November of 2005, we had conducted 12 interviews altogether. Some of these were group interviews; the number of interviewees is altogether 24. The interviews continued in Cape Town where we met IS users, system developers, and administrative people in private and in public HC organizations. Then we went to rural area health care organizations and conducted interviews in Vreedenburg private and public hospitals. After that, we travelled to Mozambique where we made interviews in Manhiça telecentro, Manhiça Health Research Centre, Central Processing Centre CDP and the Bank of Mozambique. In April of 2006, the interviews continued in Finland where we met some home care nurses and their superiors in a public HC organization in Sotkamo, Kainuu in the northern Finland rural area.

3.3 Second phase of the framework

Based on the literature review, secondary data and the interviews the IS context is illustrated again in Figure 4: the contextual categories and their relationships. All the contexts of the bowl model influence to all these categories. Although the names of some categories have changed slightly, the original idea has remained quite constant. Instead of economy and infrastructure, is used more extensive terms for financial and physical resources, and instead of organization culture the organization as a whole where IS is an important component.

![Figure 4: The categories of society which influence the IS context inside organizations](image-url)
In Figure 4, the bottom is the socio-political environment, which is the basis for everything. It is the basis of action and transaction in society, and it provides possibilities for the existence of sustainable social, technical, and economical activities. If the socio-political environment is not stable, the other categories still can and do exist, but their opportunities to develop are significantly weaker than in a stable environment.

Next, financial resources and physical resources are on the second level. They are in close relationship with each other. High infrastructure is needed to stimulate development in the economy, and economical resources are requisite to obtain and maintain high infrastructure and technical development.

Human resources are on the third level, which is the core of development resources. Important parts of human resources are the knowledge itself in different forms and the knowledge as a social capital. The relationship of human resources to other categories is quite clear; actually no other category can exist without human resources. Thus, financial and physical resources create potentiality to develop human resources, whereas the human resources are inevitable to maintain and develop financial and physical resources and the socio-political environment. On the other hand, the power of society or state largely depends on the individuals, beliefs of people, on their capacity to accept or resist rules (Castells 2004).

Finally, on the top of Figure 4 is the organization, the immediate environment of IS, the IS context. All the action and interaction of other categories is realized in the organization, and organizations need every other element in the figure to be able to exist, according to Castells (2004, p. 22): “…organizations, and institutions that still make up most of the material environment of people’s lives”. Additionally, different kinds of organization are the core of sustainable, stable, and developing society. Every organization have an information system to continue communication for action and transaction, information is needed everywhere in the organization.

4 Discussion

As there were no exact theories or models of this area, the research had to begin from a scratch: what is the IS context? The research has been predominantly gathering and testing the suitable material, and building the relations and priorities, than strict analysis. Consequently the resulting framework is more indicative than an exact method.

The framework of the context maps has shown some positive aspects as well as some imperfections. The framework puts some already familiar factors in new light, and this supports one of the objectives of the framework: how to find the “obvious things”, the ordinariness in the information system. Consequently, the framework may help to find and classify some factors, but it does not give unambiguous results. To the fundamental question what is IS context we do not have exact answer, but yet we have been able to picture the form of it by identifying and interrelating the most pertinent elements of it and their relations and value to the IS users.

This framework map model is for the IS and ICT education for teachers, researchers, and students, and for IS/ICT professionals to help mapping the socio-technical context they are studying for ISD. To date, we have experience how it suits IS/ICT research and education. We think that this model would also be useful in other fields of science mapping social environment. However, some modification will presumably be required – the majority of the gathered primary data is not yet analysed. Thus, the revised framework presented here is only the second version of the context maps – more versions will come in the future.

The framework of context maps is free for anyone to try and adapt. I would be happy to get feedback and discuss about the results.
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Is e-learning promoting social capital?

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Abstract: Hannerz said that Culture is “socially organized meanings and meaningful forms”. In this respective, e-learning is a fundamental part of culture. Users can be an active citizen by e-learning possibilities, because e-learning can empower them and teach them recognize and make many choices. One way e-learning can empower users is by presenting citizenship opportunity. E-learning has many attributes that make this possible, indirectly and it can have content that teach citizenship directly. This article investigates the use of e-learning by voluntary learners who are free from timetable of attendance at a formal class or other learning institutions. It is important to know, does e-learning promote poor people’s capabilities through education aimed at reducing inequalities? Generally, does e-learning develop societies? The analysis shows that e-learning plays a vital role in promoting social capital when many other means of communication and expression are lacking in a society.

Introduction

I will argue that education should be evaluated as a part of culture. As Hannerz said, culture is “socially organized meanings and meaningful forms” (lecture notes, Paula Uimonen 19 Sep 2008). With relation to this, learning processes constitute a part of culture. In addition, I want to emphasize that technology has facilitated these processes and in contemporary learning processes, technologies are an essential part of learning. Technologies are used to compensate deficits of learning such as age or time constraints. According to the Commission on technology and adult learning (2001:4) “E-learning can be defined as instructional content or learning experiences delivered or enabled by electronic technology”. E-learning is used for multiple purposes and audiences. The e-learning company Isoph (2004:3) found that nonprofit organizations and associations used e-learning for the following purposes:

“– 67 percent use e-learning for staff training.
– 52 percent use e-learning for public workshops.
– 34 percent use e-learning for volunteer training.
– 34 percent use e-learning for training for affiliated organizations or chapters.
– 24 percent use e-learning for advocacy and issue education for donors or the general public.”

Thus, e-learning is useful for increasing the level of knowledge of work, school or university and so on. However, e-learning is also good for knowing various cultures, life styles, types and methods of relations. In this article I am concentrating on the use of e-learning to voluntary learners who are free from timetable of attendance at a formal class or other learning institutions. It is important to know, does e-learning promote poor people’s
capabilities through education aimed at reducing inequalities? Generally, does e-learning develop societies? Here, ‘social capital’ is a key word. I will survey e-learning’s ability to make relation between various groups of people through cultural codes and hence prompting social capital.

In the following, I direct attention to:
1. Relation between citizenship and social capital.
2. Relation between citizenship and empowerment.
3. E-learning as a mechanism of empowerment.
4. The ways in which e-learning promotes citizenship.

Citizenship and social capital

The term of social capital “was initially proposed by Lyda J. Hanifan in 1916 in his study on the function of communities” (Su, Lee and Tsai, 2005:93). “Social capital concerns the norms and values people hold that result in, and are the result of, collective and socially negotiated ties and relationships. It is integrally related to other forms of capital, such as human (skills and qualifications), economic (wealth), cultural (modes of thinking) and symbolic (prestige and personal qualities)” (Edwards, 2002). Robert Putnam in 1993 defined social capital as “features of social organization, such as trust, norms, and networks, that can be improve the efficiency of society by facilitating coordinate actions” (cited from Gal, 2001). Putnam (2000) indicates social capital is “a cross-disciplinary concept generally referring to the benefits of social networks, including problem solving related to mutual interests”. In this definition, knowledge and information have presence. Problem solving related to mutual interests requires knowing about problem and being able to understand interests. E-learning can provide this possibility to we can understand various interests, their power and weakness and hence it promotes our selections for problem solving. According to Su, Lee & Tsai (2005:94) “knowledge is involved concepts, beliefs and information used for solving problems”. Some place ‘information’ and ‘knowledge’ in the category of cultural capital.

People who study social capital pay attention to relationships and networks. These mean communication between persons who constitute networks and relationships. Information and knowledge constitute the core of communication, because the message is rooted in them. It is necessary to refer to Beuchelt and others (2006) who define social capital “as networks plus resources”. They mean resources as credit or information. Bourdieu (1986) identifies the value of social capital. According to Davies (ONS, 2001:8) Bourdieu suggests neo-Marxist perspective and places greater emphasis on access to resources and issues of power in society. Baum in 2000 (ONS, 2001:8) “suggests that Bourdieu emphasized the role played by different forms of capital in the reproduction of unequal power relations”. Resulting, I suggest communication as a system which consists of core plus networks. Its core contains knowledge, information, beliefs and concepts that are culture specific. Networks are agents and means that transform the core. Communication can cause a social action. In this regard, it promotes social capital of society.

“According to Coleman, social capital can take on three forms; firstly obligations and expectations which depend on the trustworthiness of the social environment, secondly the capacity of information to flow through the social structure in order to provide a basis for action and thirdly the presence of norms accompanied by effective sanctions” (ONS, 2008:8). Second form has close relation with communication system. For this system networks are as important as core. Communication system without networks is deficit. Providing networks in communication system is more difficult than providing core. Networks should constitute themselves and an outer agent cannot be successful to provide networks. Agents of network are citizens and they are engine to form networks. Because of this, changing citizens to active agents and participant of communication process is difficult. I think persuading and obliging the citizens is blind turning of communication process that promotes social capital.
Wendy Stone in her study investigated the relationship between citizenship and social capital in 2001. She focused on the role of family to identify family circumstances associated with active life. Stone (2001:11) shows civic engagement as an indicator of social network because it is directly related to its key components (trust and reciprocity). Then, social capital is defined as an individual attribute and social attribute too. But, the common item, in both types is active and participant agency in society. Therefore, participation looms large in the debate about social capital. This is what differentiates citizenship with other models of being in society. As Faulks (2000:4) indicates “a key defining characteristic of citizenship, and what differentiates it most from mere subjecthood, is an ethic of participation. Citizenship is an active rather than passive status”.

It’s seen that activity and participation are key elements both for social capital and citizenship. Generally, it is held that there are two approaches on citizenship: liberal and republican approach. Here, it is necessary that infer to types of citizenship. There are two traditions: liberal and republican. “The liberal idea of the citizen is that of autonomous, private, independent individuals whose participation in the public sphere is fairly ‘thin’, aside from voting. The liberal tradition emphasizes the importance of negative liberties or ‘freedoms from’. By protecting the private sphere from undue interference, a ‘good society’ is achieved by maximizing individuals’ private choices. The civic republican tradition on the other hand, involves more positive conceptions of ‘freedoms to’ and civic responsibility. Civic republicanism is a ‘thicker’ version of democracy which obliges citizens to participate actively, engage with public matters and use the public sphere to further the public good. Communitarian thinkers emphasize the obligation of each individual citizen to actively contribute to the collective good of their communities” (Khoo, 2007). Republican tradition is rooted in ancient era. It “embedded in the classical republics of Greece and Rome, emphasizing loyalty towards the homeland and the predominance of civic duties as its main principles” (Zichron-Yaakov, 2007:5). Crick (2000:97) describes these types, too. He writes in liberal version “civic liberties are a framework of law to protect individuals against the state” and republican version that “civic liberties are the positive means by which citizens may influence affairs of state”. As one can see, participation and activity are in both traditions. But in the thicker version of citizenship, i.e. republican, they have top levels. But the question remains: How can communication persuade citizens? Promoting social capital is conditional on persuading citizens to be participant.

Generally, the more citizens are active and participant, the more social capital. Then citizenship is related to social capital. Effective mechanisms of this relationship need to be demonstrated. In this article, I point to one mechanism, that is, e-learning. But it is necessary to know the reason of affectivity of citizenship to the promotion of social capital. In the following, I discuss this issue.

**Citizenship as empowerment**

“Empowerment refers broadly to the expansion of freedom of choice and action to shape their own lives” (Narayan, 2006:4). People can choose and change their lives when they can control over resources and decisions. Controlling is possible when people involve governance process. Faulks (2000:5) believes governance refers to two things:

“1. Create and maintain social order.
   2. Distribute material and cultural resources.”

Cultural resources play a large role in shaping the development of individual minds and individuals’ thoughts serve to maintain or to alter the cultural values. Participation is a cultural attribute. In other words, people in a few countries participate in public life. This depends on two heads of society’s agencies, i.e. state and people. State – in any model of government – has power. Hence, variety in models of government is depending on people’s
power. The more people involvement in the governance process, the more the mode of
government becomes democratic. The more people participate in producing of resources, the
more roles they have in the distribution of resources. As I described in last section, resource
is core of communication process (message) that contain knowledge and information. One
way to involve in producing of resource is using ones’ own knowledge and information to
constitute resource of communication. Participation in the production of resources is related
to human capabilities. “Human capabilities include good health, education and productive or
other life-enhancing skills” (Narayan, 2006:10).

People like to have top human capabilities. Some of them like to participate to acquiring
these capabilities. Most people do not think it is their task to participate in public affairs.
Most of them think it is government’s task to solve any problem and give them any thing they
want. In this respect, they forget government has intrinsic potential to dominate them. This
article studies participation as a mechanism that promotes social capital and decline state
influence in people life. In these terms, people can manage many aspects of their life because
they engage with their cultural characteristics that form their knowledge. It is supposed that
if core of communication is formed with people knowledge – their values, beliefs, wishes and
so on – probability of people participation increases.

Wells and Claxton (2002:3) write “as people work, play and solve problems together, so
their spontaneous ways of thinking, talking and acting embody an accumulated set of cultural
values and beliefs that have been constructed and refined over previous generation”. Humans
in our era struggle with increasing unprecedented problems that for their solving need
collaborative actions and endeavors, needs to empower with increasing social capital i.e. “the
norms and networks that enable collective action, allows poor people to increase their access
to resources” (Narayan, 2006:11).

Empowerment can occur in two ways: the fist way is through the key role played by
artifacts. In other word, for problem solving, we use the mental and physical tools in the
forms of physical and technological objects and the meaning-making tools. The later that are
semiotic artifacts “mediate communicative and reflective action” (Wells & Claxton, 2002:4)
and here we will focus this. Wells and Claxton follow “all joint activity requires such tools in
order to coordinate participants’ actions and to construct and pass on their understanding of
the principles involved” (ibid). Language is one of these tools, “for it is through discourse
that shared meaning is made and experience structured and organized as knowledge” (ibid).

This leads to the second way. “Since action is mediated by semiotic as well as material
tools, participation in the various modes of discourse that organize and interpret action not
only provides the context for the learning of language and other semiotic systems, but it also
inducts learners into the culture’s ways of making sense of experience ends relationships, and
its aesthetic and moral values” (ibid). This way is appropriate to involve in governance
processes, because humans can play roles in the culture’s dominant ways of thinking and
reasoning by this.

For participation citizens not only need to understand the norms and networks that enable
participation for public affairs (social capital) but they “accompanied by bridging social
capital in order to generate social movements that can bring about structural change”

At present, we understand relations between citizenship, social capital, and
empowerment. Now we should survey a mechanism which could empower people by
bonding citizenship’s relations. It is evident that such a mechanism can promote social
capital. This mechanism names e-learning.

E-learning: mechanism of empowerment

For knowing how e-learning empowers people, we should respond to the question: How does
e-learning increase the level of participation? Perhaps the answer is: Because learning is
associated with involvement in the community. However, this is a most simple and a most
complex answer. Learning acts in semiotics level. It forms values and attitudes that have important effects in participation.

Above, I tried to show cultural motives and supplies of participation as the elements of social capital. Here it is time to refer to social capital’s dimensions. Nahapiet and Ghoshal “categorized social capital into three dimensions: structural, relational and cognitive” (Su, Lee and Tsai, 2005:94). “The structural dimension concerns social interaction, ties and networked ties of organizations and their members; the relational dimension places emphasis on trust and trustworthiness. The most important elements of the cognitive dimension are shared norms, shared codes and shared language codes” (ibid).

Three relations on social capital intertwine. For participation, people should communicate together, firstly. Communication is a complex process that many factors, such as psychology, family, attitudes, wishes, background and etc, play a role to how an audience receive the content of the message. Really, any sender of message can be hopeful to audience receive his/her message but for these factors, it is not obvious that receivers receive such content that is the goal of sender. This is a blind turning of the communication process. In spite of this limitation of communication, we find ourselves in situations in which we wish to know or learn something. Really, we want to enter in a learning communicative process. Or perhaps, in our walking in virtual space, we find an opportunity to learning. However, in our era e-learning provides an opportunity to selection; virtual space provides selection options to us. This opportunity can promote our participation rate, but this is only a probability.

As mentioned above, Bourdieu emphasized the role played by different forms of capital in the reproduction of unequal power relations. In Bourdieu’s perspective social capital plays a role in the reproduction of unequal power relations at every level – from family to global. The importance of empowerment lies in its possibility to reduce inequality, on the other hand. Petesch, Smulovitz & Walton (2006:40) focus their attention to this and says that “of particular relevance for empowerment are inequalities that are produced by relations between different groups, through unequal social interactions and associated processes of socialization”. They introduce four key elements that can change unequal power relations; “access to information, inclusion and participation, social accountability and local organizational capacity” (Narayan, 2006:4). These elements give ability to people to participate in, negotiate with, influence, and control relations that affect their lives. E-learning can play role in all of elements, because e-learning has arbitrary attribute and the learner tries to gain the knowledge s/he desire, and develop some skills and qualities that are appropriate for her/his ends.

**E-learning can promote social capital**

According to above, one thing that promotes social capital is e-learning. As Crick (2000:97) says, much educational practice still falls under the liberal paradigm of citizenship. However, I focus my attention to republican paradigm that considers public affairs. In this tradition, citizen is active as well as good. It means, citizen both respects the law and participate in problem solving and makes demands on state to pay attention to her/him.

As I mentioned previously, e-learning is covering many different types of learning that use of ICTs. The role of e-learning to promoting social capital is depending on both skills of e-learning (which learner learns them during the course) and content of course that is trained.

Clarke (2004:121-145) introduces e-learning skills:

<table>
<thead>
<tr>
<th>time management</th>
<th>coping with stress</th>
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<tbody>
<tr>
<td>acceptance of responsibility</td>
<td>motivation</td>
</tr>
<tr>
<td>planning</td>
<td>reflection</td>
</tr>
<tr>
<td>self-assessment</td>
<td>research skills</td>
</tr>
<tr>
<td>problem solving</td>
<td></td>
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</tbody>
</table>
A key factor to start e-learning is communicating with other learners by e-mail, chat rooms etc. Time management in e-learning is based on the freedom it gives to the learner to learn. Latent dimension of timetable is the responsibility that the learner feels to learn and spend time (or other things) on it. Following these features in every day life, we develop our communicative skills as well as spending time (or other things) on focusing on public affairs in news or any thing in society. For problem solving in e-learning, it is necessary to knowing methods of suitable use of ICT, identifying the problem, analyzing the evidences, reviewing possible solutions and applying experiences. All of these are necessary to identify and solve problems in public affairs.

More freedom to study in e-learning, distinction the goal, and having plan fit for coping with stress. Engagement in public affairs can cause to stress, too. The capability of communication and identifying the goal and acting by plan can provide the needed self-esteem for participation.

People can hope to achieve better situation by undertaking an e-learning course. If they achieve better situation after e-learning course, they can be encouraged to strive for achieving other better situations. Perhaps this achievement motivates them to engage in other cases, such as public affairs.

The most important learning skill is reflection. Clarke (2004:143) believes reflection “will help you gain a new insight into yourself and the subjects you are studying”. It is evident that one can use this skill in other situations of life, too. Reflection develops mental ability and perception of environment as a general. As a citizen, one should reflect on experiences, events, issues, rights, responsibilities and other affairs of society (cultural, political, economical, etc) to participate. In e-learning, reflection is an opportunity for people to bring their knowledge and information in to the core of communication. In other word, message in e-learning communicative process have items of people characters, their values and beliefs and so forth. This process is slow but it can influence in resources of power. This constitutes the other character of e-learning.

Other important character of e-learning to promote public engagement and participation as social capital depends on the contents of e-learning. In this case, content is rooted in the approach to citizenship and its needs. It means liberal or republican approach. Republican content of e-learning focuses on public affairs and is related to public culture (people knowledge, generally). This can increase public attachment for promoting participation and in this way, promoting social capital.

The survival of the citizenship requires new generations of engaged citizens. E-learning can play a role in increasing the possibility of participation both by skills which develops and by its content, too. In the latter, content of e-learning directly involves citizenship conditions and principles.

**Concluding**

In this article, I try to articulate if e-learning can promote social capital. It should say, this is a probability and it is possible. E-learning citizenship is simple in theory, but it is complex in practice. Practically, it means participation and engagement for limiting government dominance on personal and private sphere. The communicative process in e-learning has a core that is a resource of power. E-learning provides an opportunity for learner to send feedback and content of message change according to public attachment. This describes close relation between social capital and e-learning. Simultaneously, these empower people and give them different choices and ability to select.

On the other hand, although social capital and e-learning are interweaved, e-learning can play initiator role and provide contexts to form and supply social capital, because of its lower limitations especially in societies that are far from democracy and republican tradition.

Promoting social capital is the processual understanding of public culture. This understanding has a role in mobility of people for problem solving because they know problem as their own problem. Its promoting needs “to keep culture going, people as actors
and networks of actors have to invent culture, reflect on it, experiment with it, remember it, debate it, and pass it on” (Hannerz, 1997:5). E-learning plays a vital role in promoting this understanding when many other means are lacking in a society.

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An analysis of how underlying ideas of development are reflected in education and possible roles for ICT

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Abstract: This paper presents a review of development theories and their impact on educational ideas. Most contemporary development agendas include strong statements about the need for education. Education is said to be a key for development, but what development is and what kind of education is needed for development is rarely, if ever, defined or analyzed. Different ideas on development are closely related to which kind of education, and which pedagogies, are promoted. There is a difference if education is seen to be needed for capacity-building to, e.g., enter a new global economy or if it is needed to liberate developing countries from western ideals. By building on a literature study this paper identifies in what way education plays a role for different kinds of ‘developments’. This paper will contribute with a categorization of different development ideas and how they are related to different goals for education and it will also, based on this categorization, discuss alternative educational initiatives for ICT4D. This paper is thus relevant for both research and practice by making the discussion of ‘education for development’ more sophisticated.

Introduction

This paper is positioned within the research field ICT4D (Information and Communication Technologies for Development) and is part of a study on how e-learning can make a difference in development. The dissemination of education is always said to be a major key for development in developing countries (Bada & Madon, 2006; UNDP, 2006; WSIS, 2008), but what kind of education and what kind of development is sought after is rarely discussed. There are many different forms of education and many different notions of what development is and these ideas need to be made explicit. For anyone interested in ICT4D it is essential to understand the development context (Prakash & De’, 2007) and for anyone believing that education is the key for development it is crucial to analyze the relation between different ideas on what development is and what kind of education is needed for that particular kind of development.

The notion of ‘development’ or ‘a developing country’ as opposed to ‘a developed country’ is complicated and controversial. The terminology used for ‘developing countries’ (i.e. the objects of development) are many and has changed over the years. Historically (from the 19th century to the 1940s) the terms to describe these countries and regions have been rather cruel such as colonies, territories (most of these countries having been under political control of Europe), primitive, backward or undeveloped. Less condescending terms emerged after World War II when these countries were described as underdeveloped, less developed or developing - the last at least indicating that it is not a permanent condition (Barke & O’Hare, 1991). Other common terms used are ‘north – south’, ‘the third world’, ‘Least Developed Countries’ (LDCs), ‘transitional countries’ and ‘emerging economies’. No matter what term
used, they are all based on a notion that we can classify a country in a more or less ‘developed’ state. The measure for this ‘development state’ varies and will be elaborated further on.

Education is consistently said to be one of the most important factors for development (UNDP, 2005; UNESCO, 2005; WSIS, 2005) and the interest in using Information and Communication Technologies (ICTs) for dissemination of education is growing. ICTs are believed to have huge potentials for governments struggling to meet a growing demand for education while facing an escalating shortage of teachers (UNESCO, 2006). Education and ICTs are thus important, but important for what kind of development? This question leads us to the topic for the present study, namely: How are underlying beliefs about what development is related to educational ideas?

Method

In order to achieve a comprehensive charting of development theories and education ideals connected to these theories a literature search was undertaken. The first step was to identify different ideas on what development is and for this purpose the study took its starting point in the book “Theories of development” (Peet, 1999). This book serves as the ground for categorizations between ‘traditional’ and ‘alternative’ theories of development. For further elaborations of these theories and in order to get information about the educational role for development a literature search was undertaken.

Two main methods were employed for this literature search. The first was to use Örebro University’s academic search engine Elin@örebro which covers several academic databases such as ABI/Inform, Blackwell Synergy, Ebsco, ScienceDirect, SpringerLink and Wiley. The second was to consult Google Scholar (http://scholar.google.com/) which covers more publications but is less structured and provides also more low quality material. Initial search terms used were: “development”, “theories”, “education” and thereafter, as the search progressed, more directed searches were made including search words such as “colonial education”, “libertarian education” and “Marxism and education”. All words were used in different combinations and papers and books were initially selected based on title and abstract. The sources were then considered in more detail and selected based on relevance and quality.

The paper is organized as follows: Next section presents a review of different development theories, based on a dichotomization between traditional and alternative theories. Thereafter the role of education for each strand is discussed. The final outcome is thus a mapping of how different educational ideas are grounded in different theories of development, followed by a discussion on the implications for the field of ICT4D.

Traditional development theories

Traditional western development theories

The traditional development theories mainly stem from the so-called ‘West’ (Europe and later USA and Australia), and have its roots in the expansion of Europe from the mercantile phase to the industrial phase and later the information phase. The main idea is that the West is better than the rest of the world and that development thus means that methods of the West should be copied. West is considered to be superior because they have managed to expand (via colonies and advanced technology) and because they, via different economic systems, has become richer than the other parts of the world. The West is thus the role model.

There are two major ideas at play here; one is that of evolutionism and the second is that of modern market systems. The evolutionary ideas of development say that societies evolve from primitive to more mature societies, and people from barbarians to civilians. The dominating economic theories are grounded in liberalism as it emerged during the
Enlightenment. In 1776 Adam Smith’s book “An Inquiry into the Nature and Causes of the Wealth of Nations” laid the foundation of free market economies based on three main ideas: the division of labour (specialization), the pursuit of self interest (selfishness as an economic drive), and freedom of trade. Market economy should not be regulated by the state but by an “invincible hand” (i.e. the individual in maximising his own revenue also maximizes the revenue for the society as a whole) (Peet, 1999, pp. 25-26). These liberal economic theories where slightly altered after the depression in 1930’s (after which it was believed that governments should intervene a little bit in the economy), but later also revived during the 1960’s in what is referred to as Neo-liberalism. Neo-liberalism is basically built on the same ideas from the Enlightenment (capitalist efficiency, state interventions should be kept at a minimum etc.) and has dominated the development agenda for quite some time now (Peet, 1999, pp. 48-53).

Traditional Marxist development theories

Marxism has something of a separate role between the traditional development theories and the alternatives. It is alternative since it is not based on the capitalist principles and beliefs in free trade and in bringing inequalities between classes and gender into focus. But it is sharing with the traditional theories the same assumptions about the potential of science and technologies for development and also the “one-solution-for-all”-idea by totally ignoring complexity. The evolutionary ideas of development (that societies evolve from primitive to more mature societies) are also found in Marx’ historical descriptions on the progress of societies from feudalism to capitalism and finally communism. Critical thinking about development did, however, emerge from the neo-Marxist thinkers from the late 60’s to 80’s (Peet, 1999, p. 123). In their “dependency theory” they describe Europe’s advanced progress as a result of its brutal methods of conquering, killing and colonizing which in turn created a centre of power and wealth (Europe) with all other parts of the world in the periphery, highly dependent on the centre (Peet, 1999, pp. 107-111).

Still, economic growth was the ideal, whether in the capitalist or the Soviet model. In using measures such as GNP per capita as the objective for development one has made the rich countries the norm for development and it therefore follows that the economic and political methods used by rich should be copied. Economic growth (i.e. development) is also seen to be happening in stages (from traditional and immature to advanced), and development is believed to be generalizable in space and time, and can also be planned and administered from developed countries.

Traditional development theories and education

The idea that Europeans are more mature and advanced and therefore the role model has affected how education is designed and delivered. If West is the norm then the forms of education (classroom-based with teacher in centre) and content of education (western values and beliefs) should be imitated and copied. To take a historical example we find Thomas Babington Macaulay, a British politician who served the Supreme Council of India between 1834 and 1838, to well demonstrate the ideas of western supremacy in education:

“I have read translations of the most celebrated Arabic and Sanscrit works. I have conversed both here and at home with men distinguished by their proficiency in the Eastern tongues. I am quite ready to take the Oriental learning at the valuation of the Orientalists themselves. I have never found one among them who could deny that a single shelf of a good European library was worth the whole native literature of India and Arabia. The intrinsic superiority of the Western literature is, indeed, fully admitted by those members of the Committee who support the Oriental plan of education.” (Macaulay, 1835, para. 4)
The colonial era’s education policies aimed at imposing western cultures and to control the “subjects”. Because the education system was usually designed for a small number of people (targeted toward positions in the colonial administrations) the strategy was to structure people to the western culture and values through means of intermediaries:

“It is impossible for us, with our limited means, to attempt to educate the body of the people. We must at present do our best to form a class who may be interpreters between us and the millions whom we govern; a class of persons, Indian in blood and colour, but English in taste, in opinions, in morals, and in intellect.” (Macaulay, 1835, para. 10)

Colonial education has mainly been a tool for making colonial rule easier by making the colonized people conform to the culture and traditions of the colonizers (Altbach & Kelly, 1978; Viswanathan, 1997). Another agenda was to convert the ‘heathens’ to Christianity. Most education aimed at development was conducted by Christian missionaries, which then is a form of both cultural and religious imperialism intertwined. The rationality and logic of the West should be adopted at the same time as the subjects religious beliefs would be “perfected through Christianity at the end of their so-called ‘evolution’” (Bellenoit, 2007, p. 371)

The heritage from the colonial time is still visible in most developing countries where the education systems in Sri Lanka and Bangladesh, for instance, derive from the British one. Where Sri Lankan students before the time of colonization used to go for temple studies they still today, 60 years after independence go to classrooms and take their O- and A-levels according to the British system. The traditional theories of development have also impacted the way education is designed and delivered in more recent times. With the introduction of modern ICTs (Information and Communication Technologies) and an increased globalization, the western impact is probably even higher than during the colonial era. Most Internet based educations (formal and informal) come with inherited western values and the majority of Learning Management Systems are American products. Not only is the content based on western problems and issues, but the design is also western. The lack of localized content and design in e-learning educations have proven to be a challenge for many students in developing countries (Andersson, 2008; Friesner & Hart, 2004; Reeves & Reeves, 1997) and much research show that localisation is of benefit for the students (Eastmond, 2000; Pagram & Pagram, 2006; Usun, 2004):

“Attempts to import courses from abroad have not worked out in Asian LDCs because of language, culture, and other differences from the local environment” (Eastmond, 2000, p. 102)

Another colonial legacy is seen in how strong the intellectual dependency in most developing countries is. Intellectuals of the old colonies have been trained according to the western research agenda thereby incorporating the methods and philosophies of science of the West. Furthermore, researchers of the West have long had monopoly on the raw data of the colonized countries (through research funds and better opportunities to get published in highly reputed journals) making the third world dependent on the West for information about themselves (Peet, 1999, pp. 137-138). Escobar (Escobar, 1995) describes, rather spitefully, how researchers with an:

“unprecedented will to know everything about the Third World flourished unhindered, growing like a virus. Like the landing of the Allies in Normandy, the Third World

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1 Still today the expression Macaulayism refers to people in old colonies that adopt the Western culture as a lifestyle, and is seen to be unfaithful the native country and its heritage (Wikipedia 2008b)
witnessed a massive landing of experts, each in charge of investigating, measuring, and theorizing about this or that little aspect of Third World societies” (Escobar, 1995, p. 45)

Some scholars from the third world have of course opposed the western domination and called for an ‘indigenization’ of the whole academic discourse by arguing that theories and knowledge should draw on, and emerge from, “culturally and historically specific experiences” (Peet, 1999, p. 138). The impact of these ideas does, however, seem to be small considering how research in these countries is undertaken. The western academic discourse still dominates academia in developing countries. However, the critique still fed the ideas of ‘development from below’ and participatory research methods were increasingly brought to the fore. The people to be ‘developed’ should at least be part of the design and implementation of the research. The objective of the research should be decided by the objects of the interventions and stem from a genuine need from the same. For most development agencies (at least Scandinavian) this is today a prerequisite for allocating any research funds, but in practice it has been hard to realize. Whereas most research applications do originate from the developing country in question, still the need is often identified after discussions with a western counterpart. Furthermore, the supposedly beneficiaries of the intervention (poor, rural) are rarely the ones writing the proposals, but rather a rich, well educated middle class in these countries:

“But development had little to do with the desires of the ‘target populations’. […] Requests for aid came from unrepresentative governments rather than from the people themselves” (Peet, 1999, p. 153)

Alternative development theories

The term ‘development’ is controversial, complex and political (Sundén & Wicander, 2007) and its underlying motives have frequently been questioned and scrutinized during the last decades. The critique of development has mainly been concerned about how it has been a top-down process and how western ideals are forced on developing countries with the underlying assumption that the best would be if these countries evolved into modern western societies:

“the ethnocentric assumption that the traditional society should change to the modern one, that everyone should adopt the Western capitalist viewpoint, and that all people are acquisitive rational economic human beings. Little credit is given to the traditional society, or the ways in which it functions.” (Barke & O’Hare, 1991, p. 55)

The development theories described in the previous sections (western and Marxist) all contained highly generalized ideas on systems for development. The theories were supposed to work as master-plans which could explain and predict development during any historic event, in any country and under any circumstances. The philosophies underlying these structures have been that of human reason, logic and rational behaviour as the driving forces for social progress and development.

The main problem with such theories, from a global perspective, is that this logic or reason is supposed to be the same for all people, all times and all circumstances. During the late 70’s and early 80’s these theories were increasingly challenged by theorists arguing that things change more “spontaneously from a far more anarchic world than structuralism had suggested” (Peet, 1999, p. 124) and there was a strong sense of disillusionment with the western development and modernity agenda, as well as with socialism and capitalism. Peet
holds Foucault as one of the main thinkers of the alternative theories. Foucault criticized the
Enlightenment ideas on rationality because they were culturally specific (i.e. European) and
because the values of autonomy, freedom and human rights were highly normative and
disciplining on people’s identities. He revealed these values and ideas as being part of a
discourse in order to decide the “truth” about what can be said and thought about something

The use of economic growth as the only measure of development has thus been
questioned and a wider approach to development is gaining ground. Social and welfare
criteria (education, literacy, hunger and malnutrition, life expectancy, infant mortality, gender
empowerment and so forth) have been included:

“Human development is about much more than the rise or fall of national
incomes. It is about creating an environment in which people can develop their
full potential and lead productive, creative lives in accord with their needs and
interest” (UNDP, 2007, p. 19)

By using the human development measure the picture gets more nuanced. As an example, if
we look at the variable gender empowerment, we can see that a country such as Sri Lanka is
much more developed in this regard than India and South Africa, which are otherwise richer
countries in pure economic terms (WorldBank, 2007). The Sri Lankan women are more
literate and more often owners or directors of companies and businesses than their Indian and
South African counterparts.

The Indian economist and Nobel Prize winner Amartya Sen was also one of the first to
criticize the use of GNP as a measure for development (criticism mainly targeted at the World
Bank) and he introduces the notion of ‘freedom’ (freedom to have an influence on your own
life) as a measure of development instead. Development is here seen “as a process of
expanding the real freedom that people enjoy” (Sen, 1999, p.3). He sees freedom as both the
means and ends for development and the main ‘freedoms’ in question are: political freedoms,
economic facilities, social opportunities, transparency guarantees and protective security. Sen
emphasises that it is important to have this broader view to development in order to not only
take measures in one field hoping that it would also lead to progress in other fields:

“A broad approach of this kind permits simultaneous appreciation of the vital
roles, in the process of development, of many different institutions, including
markets and market-related organizations, governments and local authorities,
political parties and other civic institutions, educational arrangements and
opportunities of open dialogue and debate (including the role of the media and
other means of communication).” (Sen, 1999, p.9)

There are many post-development theories and they are all diverse, but with the mutual
standpoint of criticism against the Western notions of development. They propose
alternatives based on small-scaleness, cultural pluralism, decentralization and grass-root
empowerment.

The theories of post- and anti-development show how old colonies when gaining
independence (in the nineteenth and twentieth centuries) are still economically dependent on
their former suppressors (i.e. the West) and how it has been preserved through indebtedness and
trade barriers in order to be able to continue exploiting these countries (Barke & O’Hare,
1991; Escobar, 1995). They describe how the motives for starting up a development agenda
can be capitalist enterprises still in need for raw material (and later on cheap labour) from the
new independent states of Africa and Asia. One of the most famous critics of development,
Escobar (Escobar, 1995), goes as far as to say that it is the western interventions that causes
famines and debt crisis etc. Escobar means that the so-called developing countries should be
much better off if we had not intervened in the name of aid and development and keeps us responsible for multiplying underdevelopment by trying to erase poverty:

“Underdevelopment became the subject of political technologies that sought to erase it from the face of the Earth but that ended up, instead, multiplying it to infinity” (Escobar, 1995, p.52).

Other alternative development theories have emerged from a feminist tradition where all different strands have a mutual standpoint in a criticism of traditional development theories. The criticism is not only targeted at the total exclusion of women in the development agendas, but also to the dominant western, capitalist view on development. The socialist feminism builds on and elaborates ideas from Marx and adds the reproduction (human beings) as an equally important part of human existence as production (material and goods). They also point to other inequalities than that of class that needs to be addressed in development, such as gender, race and ethnicity. Feminist theorists have also, by simply including women into the unit of analysis, pointed to other neglected areas of development such as the informal sector (i.e. labour neither taxed nor monitored by the government). The need to incorporate women in the development process started to gain grounds and today there are hardly any donor- or development agencies that do not have “women empowerment” on the agenda. Other feminist theories on development are concerned with the feminist epistemology. The Enlightenment’s notion of rationality that came to influence both capitalism and the western notion of development is argued to be based on the man as the ideal. Emotions and feelings were ascribed to be undesired, female, characteristics (Peet, 1999, pp. 166-179).

Many feminist theorists on development also opposed the “universality” of solutions as prescribed by the traditional development theories (the master plans that would solve all problems) by acknowledging that women and patriarchies are different. Although believing that women suffer under male oppression all over the world, the nature of this oppression is not the same. In this way the feminist theories on development argues for alternative, located and situated, approaches to development.

**Alternative development theories and education**

Critical development thinkers brought focus to the “other side of rational modernity […] and its disciplinary institutions” (Peet, 1999, p. 126) of which schools is seen as a leading institution. Education is thus central for the alternative development thinkers as well.

Amartya Sen (Sen, 1999) defined development as the extent to which people have control over their own lives and when he talks about equal right to education he draws both on the ‘freedom’ notion (the freedom to live the life you chose) by seeing education as an enabler to live the life you chose and on the human development measure where education is an enabler for people to ‘develop their full potential and lead productive, creative lives’. In a speech to the Commonwealth education conference Sen, argues for the need for basic education due to its opportunity to give people choices. He is not talking about economic growth, but about choices and securities:

“The most basic issue relates to the elementary fact that illiteracy and innumeracy are forms of insecurity in themselves. Not to be able to read or write or count or communicate is a tremendous deprivation. The extreme case of insecurity is the certainty of deprivation, and the absence of any chance of avoiding that fate.” (Sen, 2003, para. 5)
As for the content of the education he argues for mind-opening approaches and against fundamentalist schools because he is afraid that they will narrow children’s horizons:

“Shakespeare talked about the fact that ‘some men are born great, some achieve greatness, and some have greatness thrust upon them.’ In the schooling of children, we have to make sure that we do not have smallness thrust upon the young.” (Sen, 2003, para. 27)

This openness obviously goes against any copying of western norms. Furthermore, this study has identified two major pedagogical pioneers that have seriously influenced more local and pluralistic education initiatives. The first one is Paulo Freire who in his “Pedagogy of the oppressed” (Freire, 2006) argues for a humanist or libertarian pedagogy where communication and critical thinking are the central concepts:

“Yet only through communication can human life hold meaning, the teachers thinking is authenticated only by the authenticity of the students thinking. The teacher cannot think for the students, nor can she impose her thought on them. Authentic thinking, thinking that is concerned about reality, does not take place in ivory tower isolation, but only in communication” (Freire, 2006, p. 77)

Freire opposes the traditional educational setting which he describes to have a narrative character where the teacher is a narrating subject and the students are patient listening objects. He opposes a setting where students mechanically record and memorize repeated phrases, restricted to receiving and storing spoon-fed information. In this kind of setting the students are not seen as being with the world but merely in the world as spectators and not as re-creators of the world. The students are seen as having an empty mind which is open for reception of the reality from the world outside, and the teacher’s role is to regulate how the world enters into the mind of the individuals.

Freire’s mission is to expose social and political contradictions thereby removing the power of the oppressors (Freire, 2006) and his thought are therefore highly relevant for countries where the inhabitants have been oppressed by colonizers, or by the modern West for that matter. Libertarian pedagogy has two stages: the oppressed unveil the oppressed world and through praxis commit themselves to transforming it; in the transformed world the pedagogy stops belonging to the oppressors and becomes the pedagogy of all the people in the process of permanent liberation (Freire, 2006, p. 54). For this to be possible the education needs to move towards a more humanistic and liberating pedagogy based on communication and liberation. Through communication and dialogue the teachers not only educate the oppressed but also are educated by them and the teaching methods can no longer be used as a method to manipulate the students. Freire’s idea is that the learning environment should work as a centre for participation where the students and teachers dialogue together to change or challenge the structures that constitutes oppression, inequality and regression (Maralee, 1998).

A second influential theorist from the alternative strand is Ivan Illich. Illich was an Austrian philosopher and anarchist social critic that did not like the ideas on development he found dominating the development discourse during his work as a priest in Puerto Rico and South America during the 50’s and 60’s. He opposed all forms of liberal pitying of the poor and “conservative imperiousness” (Wikipedia, 2008) and criticized the effects of modern development. He started questioning his own role as an educational leader. In his book Deschooling Society (Illich, 1971) he criticizes the way education is practised in ‘modern’ economies and questions the value of extending obligatory schooling to all people. In the same way he argues that classroom attendance removes children from the everyday world and he argues for learning in a deschooled milieu. His vision of learning for development is
informal, self-directed education through “educational webs which heighten the opportunity for each one to transform each moment of his living into one of learning, sharing, and caring.” (Illich, 1971, p. 2).

When reading his vision about informal learning, life-long learning and educational webs modern uses of Internet immediately comes to mind: web 2.0, wikis, e-learning 2.0 and open educational platforms for informal learning (educational repositories to YouTube).

**ICT4D and education**

Definitions of the ‘D’ in ICT4D will of course vary depending on who is asked. According to many scholars in the field the traditional theories of development still pervades in ICT4D. It seems that our European understanding of development is still dominating, an understanding that says that development is about liberal democracy and economic growth (Unwin, 2009, p. 7). Critical studies on ICT4D has shown the field to have a technologically deterministic approach (Granqvist, 2006) when in reality the connection between the “ICT intervention and achieved developmental benefits are both hard to predict and to realize” (Johansson-Hedberg, 2007, p. 5). The use of ICTs for development has thus been very controversial and there are many accounts on failed ICT4D projects in the meaning that they rarely lead to any social or economic development (Avgerou & Walsham, 2000).

On the other hand, there are signs that the debate is changing from the question of ‘if’ ICTs should be used to ‘how’ they should be used for development (Sein & Harindranth, 2004; Walsham, Robey, & Sahay, 2007). The field of ICT4D is slowly moving away from traditional theories of development. Measuring development solely in economic terms is increasingly contested. The field is gaining inspiration from new development measures such as quality of life, human development and freedom to make choices in your own life. The perspective of human development is today said to be the most appropriate for studying the role of ICT in development (Sein & Harindranth, 2004) and to be more in line with the research field of ICT4D:

> “ICT4D should not principally be about achieving economic growth, but should rather be a moral agenda concerned with enabling equality of access to information and thereby helping to reduce global inequalities of opportunity at a range of scale” (Unwin, 2009, p.1).

In the field of e-learning for development some criticism has been put forward concerning the outreach of the projects – the ambition to disseminate education to rural areas and among the poorer parts of the population has not always been fulfilled (Andersson, Grönlund, & Hedström, 2005). In a large survey on distance education in south Asia it was found that the distance education in the poorer parts of Asia basically only reaches urban, middle-class men:

> “Students are mostly urban, male, middle class, have substantial prior learning, and are white collar workers. Provisions for and ease of access to those who do not fall within this newly privileged group are minimal, and where they exist, support for learning to them is almost none” (Dhanarajan, 2001, p. 63).

Many of these problems relate to the particular concern for ICT4D – the unequal distribution of technologies and all the inequalities relevant to understanding differences in their use – usually referred to the Digital Divide (Johansson-Hedberg, 2007; Walsham et al., 2007). In this way, the introduction of technologies is a ‘two-edged sword’ where the technologies’ ability to enforce power structures (enabling the rich to retain their positions of economic, social and political power) must also be considered (Unwin, 2009, p. 2).
Apart from outreach there is also the possibility for e-learning implementations to change the traditional didactic educational cultures imposed by the colonizers. E-learning has the ability to enable a more constructivist, learner-centred learning where learners act independently and think critically (Andersson, in press; Andersson, Hedström, & Grönlund, in press). Table 1 summarizes the discussions in this and the previous sections.

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<thead>
<tr>
<th>Traditional development theories</th>
<th>Impact on education</th>
<th>Possible roles for ICT4D</th>
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<tbody>
<tr>
<td>Methods of the West should be copied</td>
<td>Colonial education</td>
<td>Outreach of education, Education for all</td>
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<tr>
<td>Development from above</td>
<td>Missionary education</td>
<td>Help to be developed in the western sense</td>
</tr>
<tr>
<td>Development can be generalized in space and time</td>
<td>Western values and beliefs should be imitated and copied</td>
<td>Make educational opportunities equal</td>
</tr>
<tr>
<td>Development can be planned and administered from developed countries</td>
<td>Internet-based educations with inherited western values can/should be exported</td>
<td>Prepare for a globalized world</td>
</tr>
<tr>
<td>An evolutionary view on development</td>
<td>Western Learning Management Systems can/should be used</td>
<td>Technical skills that facilitate participation in the contemporary world. (Sen, 2003)</td>
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<td>Development = economic growth</td>
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<td>Localization of (western) content and design</td>
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</tr>
<tr>
<td>Small-scaleness</td>
<td>Communication</td>
<td>Informal learning, life-long learning and educational webs on Internet</td>
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<tr>
<td>Cultural pluralism</td>
<td>Critical thinking</td>
<td>Locally developed applications</td>
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<tr>
<td>Gender perspective</td>
<td>Learner-centred learning</td>
<td>Emancipatory pedagogics</td>
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<td>Decentralization</td>
<td>Informal, self-directed education</td>
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<td>Grass-root empowerment</td>
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**Conclusion**

This study set out to investigate how underlying beliefs about development is related to different educational ideals. By connecting different theories of development to the education promoted within each paradigm this paper has shown that traditional theories of development have a focus on copying and imitating the education of the West. The aim with education is thus to indoctrinate the subjects of development to the western, economically successful, ways of thinking. The alternative theories on development (who oppose the traditional ways of development), on the other hand, promote more informal educations, where learning methods and technologies are indigenously designed and often with the aim of becoming aware and critical of the oppressive forces they are under (whether the oppressor is a teacher, an institution or the old colonizers). Within the research field of ICT4D there are many different views on what development is and the educational initiatives undertaken will therefore vary. The aim with this study was to show that depending on which kind of education is supported it will also reflect a view on what development is – and then, in return, impact on what kind of development takes place. In this way the contribution of this paper is to make sure that development agencies make rational and transparent choices, for the reason
of not believing that any education initiative by default leads to the kind of development desired.

References


Education for Development – Realizing the Millennium Development Goals

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Abstract: The overall research question for the paper is “How does the Millennium Development Goal, to provide universal primary education, contribute to the development of societies?” The author argues that for education to lead to development it may not be enough to just provide access to education, but the educational structure also has to change. Just providing education is often not enough and if the goal is to promote a change, societies need to be restructured and not just reproduced. Relating the goals of MDG to theories of development and in particular education’s role in development the author concludes that even though the MDG is commendable and needed it is not enough. More focus has to be on changing the structure of education in developing countries, not just reinforcing existing educational systems by providing more resources.

1. Introduction

“Education is the most powerful weapon you can use to change the world,” according to a much cited statement by Nelson Mandela (http://thinkexist.com/). However, depending on how development is viewed the structure of the education provided can have different aims. If e.g. the goal is to increase the income of people an education that promotes high employability in skillful labor may be correct. If the goal, on the other hand, is to promote human development other strategies might be preferred (even though the two do not exclude each other). There is currently no consensus on how development should be viewed and the perspective an organization has on development can have a huge impact on strategy selected for the organization’s provision of education. Traditionally development is defined in economic terms (i.e. dealing with economic growth and poverty alleviation). This view has, however, been questioned and a more holistic approach to development has taken shape, including issues such as enlarging people’s choices (Peet, 1999) and to increase peoples ability to take control over their own lives (Sen, 1999). Independent of the view of development many see education as a major key for development (Bada & Madon, 2006; Soriyan, Mursu, Akinde, & Korpela, 2001; UNDP, 2006; UNESCO, 2008; WSIS, 2008) and in the United Nations declaration of human rights from 1948 it is declared:

“All human shall enjoy the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit” (UN, 1948, article 26).

This goal has further been elaborated and one aim (Goal 2) in the MDG is to provide universal primary education for all by the year 2015 (UN, 2008a; UNESCO, 2008). The MDGs are broken down into eight different objectives covering policies for partnerships, sustainable environmental development, poverty elimination, universal primary education etc. and even though all goals have specific targets they are not pursued in isolation.
Education is seen as a prerequisite to achieve several other goals. Education in developing countries is, however, a major challenge (Dhanarajan, 2001; Evans, 2005; Grönlund, Andersson, & Hedström, 2005; Heeks, 2002; Rajesh, 2003). One problem with education in many developing countries is how education is delivered, many educational systems display a transmission ideology where teachers are believed to possess all knowledge and students are expected to memorize and repeat what the teacher is saying (Anderson, 2008; Andersson & Hatakka, Forthcoming). This is problematic as it does not encourage critical thinking or gives students the opportunity to challenge the current structures.

In this paper the MDG Goal 2 (“achieve universal primary education”) is evaluated in terms of a) the plan for setting the goal in action, and b) how the plans relate to development and education for development.

2. Method

The overall research question for the study is: “How does the Millennium Development Goal, to provide universal primary education, contribute to the development of societies?” In order to answer this question, three sub-questions must be answered:

1) What does development mean?
2) How does education relate to development?
3) How does the MDG, to provide universal primary education, relate to development and education for development?

The paper does not provide an original contribution, the contribution is rather that existing knowledge on education and development is related to the goals put forth by the UN in the MDGs. This contribution is important as much effort is put into realizing the MDGs and if the goal of the MDGs is development, the goals must be assessed and evaluated based on existing theories on how development take place.

This paper is a literature review on how education can contribute to development and how the MDG, provide universal primary education, relates to existing knowledge on development theories and more specifically education for development. The starting point for the literature review is established literature on development theories (e.g. Peet and Sen) and education (e.g. Freire, Garrison and Anderson etc.). This review defines development as well as investigates how and what type of education best contributes to development. Taking that definition as the starting point, a second literature review and analysis is done covering reports, policy documents etc. from UN organizations working to achieve universal primary education. The starting point for the literature review on MDG is the UNs MDG website where all UN partners working with MDG are listed (http://www.un.org/millenniumgoals/). Each website has been visited and all policy documents and reports relating to universal primary education have been included in the study. Goals and plans for the implementation of MDG are thereafter related to the concept of education for development.

3. Development

The traditional way of measuring development is in economic terms, development is in many people’s eyes the same as poverty alleviation. The World Bank, for instance, measures if people are poor or not based on their income (less then 1$/day is considered poor). Even though economy is one important aspect of development it does give a very limited picture. Peet (1999) argues that there are two ways to view development: in its strong sense development is the use of “productive resources of society to improve the living conditions of the poorest people” and in its weaker sense it stands for “more of everything for everyone in the context of a lot more for a few”. According to Peet development differs from economic growth as it also pays attention to other factors like the condition of production, human welfare etc. So even if economic growth is one aspect of development, societal, and cultural
progress is two other aspects that need to be considered. The concept of “more of everything for everyone” has also been criticized by e.g. Schumacher (1973) who speak of “enoughness”, meaning there has to be a point where people have enough money. Money in itself is not the end result; it is rather a tool to achieve human freedom. ‘Development’ can take place in many areas of a society but rural development has shown to be the most important factor on a country’s development as measured by the effect. Rural growth lowers both urban and rural poverty via secondary effects such as people getting a reason to stay in the rural areas instead of moving into often overpopulated cities (Danielson, 2001; Ravallion & Datt, 1999).

What is clear is that there is no consensus about how development should be measured and what exactly it means (Simon, 1997), but if development should take place a lot of different factors need to be considered. Development should enlarge people’s choices (Peet, 1999), nurture a culture of tolerance and peace (Albright, 2005), increase peoples ability to take control over their own lives (Sen, 1999) and expose social and political contradictions thereby removing the power of oppressors (Freire, 1970). Development should aim to create a positive change in people’s everyday life situations (Grönlund, Andersson, & Hatakka, 2008). In this view of development education takes a very central role. Since there is no consensus on what development means it is highly relevant for researchers to define how they view development and what they mean with development projects. The concept of development has also shifted with time, the post world war II development paradigm was characterized by a homogeneous view of third world countries, an unconditional belief in the makeability of society and the importance of nation states. This view has later been revised and is now characterized by a more context-sensitive view and a higher belief in local government and in the civil society (Schuurman, 2000). This paper uses Simon’s definition of development:

“[…]human development is the process of enhancing individual and collective quality of life in a manner that satisfy basic needs (as a minimum), is environmentally, socially and economically sustainable and is empowering in the sense that the people concerned have a substantial degree of control over the process through access to the means of accumulating social powers.” (Simon, 1997, p185)

Measuring only one variable – whether it is economy, access to schools, healthcare etc. – gives a very limited picture. All factors are important and just focusing on one variable is not enough. Giving young people access to schools will not work if parents can not afford to send their children to school (e.g. they need them to work, can not afford books etc.), raising peoples income will not lead to development if basic services like healthcare, education etc. are not developed in parallel.

3.1 Education for Development

Providing education opportunities for all, independent on ethnicity, gender etc., is a first and very important step to give people the opportunity to make a positive change in their lives. There is a realization that education enhances investments made in most aspects of a development effort. Getting access to education has shown to have a positive effect on poor farmers’ income as it increases their agricultural production with 25% with only four years of schooling (Barke & O’Hare, 1991). It also has an effect on other development factors, e.g. several studies has shown that infant and child mortality and malnutrition is lower if the mothers are educated. In Bangladesh e.g. underweight among children is decreased by one third with only 1-5 years of education for the mothers (Deolalikar, 2005). Providing education has an effect on social measures as well as economical and income measures. Just providing education and not addressing the quality of the education and the way knowledge is taught can, however, be misleading. The input to education is often described in terms of teacher/student ratio, number of text books etc. and the output is often discussed in
economical terms (i.e. how education can lead to increased income) (Birdsall, Levine, & Ibrahim, 2005). Education is, hence, often seen as something quantifiable where improved economy is the desired outcome. Birdsall et al (2005) mean that if a social reproduction should take place [that contribute to development] the whole process of teaching must be addressed, what is taught, who is taught and how people are taught. According to Freire (1970, 1997) education can be used as a tool by the oppressors to reinforce their control and to manipulate students, i.e. reinforcing existing power structures. The importance of interactivity in education is well documented, and there are two broad traditions of education, the traditional “transmission” education and the “interactive” education (Andersson & Hatakka, Forthcoming). Interactivity or co-construction of knowledge is important if deep learning should take place (Anderson, 2008; Garrison & Anderson, 2003). In many developing countries, however, the culture of education is very authoritarian and the education belongs to the traditional education system which undermines a more learner-centred approach to education (Burn & Thongprasert, 2005; Pagram & Pagram, 2006; Usun, 2004).

Freire (1970) means that in the traditional education system the teacher’s role is to fill the students with the teacher’s narrating content, making the students mechanically record and memorize repeated phrases. Teachers can choose what the students should learn and can via their interpretations fill students with whatever knowledge they see fit. Freire refer to this as the banking concept of education. In the banking education the student’s possibilities to act are restricted to receiving, filling and storing spoon-feed information. There are a number of practices that symbolize the banking concept, e.g.:

- the teacher teaches and the students are taught;
- the teacher knows everything and the students know nothing;
- the teacher thinks and the students are taught about;
- the teacher talks and the students listen – meekly;
- the teacher chooses the program content, and the students adapt to it.

In the banking concept students are not seen as being with the world but merely in the world as a spectator and not as a re-creator of the world. Students are seen as having an empty mind which is open for reception of the reality from the world outside, and the teacher’s role is to regulate how the world enters into the mind of the students.

As an opposite of the banking concept Freire talks about libertarian pedagogy where communication and critical thinking instead are key concepts. Freire means that it is only via communication that human life can hold meaning. With communication teachers can no longer manipulate students since the teachers’ thinking is authenticated by the students’ thinking. “The teacher cannot think for the students, nor can she impose her thought on them.” (Freire, 1997, p77). Libertarian pedagogy has two stages: the oppressed unveil the oppressed world and through praxis commit themselves to transform it; in the transformed world the pedagogy no longer belongs to the oppressors and becomes the pedagogy of all the people in the process of permanent liberation (Freire, 1970, p54). For this to be possible the education needs to move way from the banking concept to a more humanistic and liberating pedagogy based on communication and liberation. The teaching methods can no longer be used as a method to manipulate the students, and those truly committed to liberation must abandon the banking concept and start seeing the students as human beings. The teachers should have a helping role and they should – instead of telling students how the world is organized – provide instructional support from their position of greater content knowledge (Vygotsky, 1978). The classroom should work as a centre for participation where the students and teachers dialogue together to change or challenge the structures that constitutes oppression, inequality and regression (Maralee, 1998).

According to Sen (2003) there are several ways in which education can help in development. In its most basic form the lack of education in itself is a form of insecurity. A
certainty of deprivation and the absence of opportunities to avoid that fate can be helped by education. Education helps development on many levels according to Sen, apart from making people more secure it also close income gaps by making the poorest able to take more qualified jobs, thereby, indirectly, removing income poverty; it can help with gender issues as women can get educated to learn their legal rights, and education can help women to get a job; it can help with health problems as it can make people more aware of dangers etc. Education will help expand human freedom and give people the ability to make their own choices in their everyday life:

“...the arrangements that society makes for education, health care and so on, which influence the individuals substantive freedom to live better. Those facilities are important not only for the conduct of private lives, but also for more effective participation in economic and political activities.” (Sen, 1999, p39)

Following the above discussion, if development should take place education will play an important role. Not just the provision of education but perhaps at least as important, the access to education that helps people to break free from their oppressors and an education that gives people choices and opportunities in their everyday life. Education in itself is a human right and a vital part to people’s ability to live the lives they choose and value. Education gives people the ability to organize themselves and take part in society and in politics which in term can lead to peoples ability to hold the government accountable for their actions (Birdsall, Levine, & Ibrahim, 2005). For education to lead to this the transmission pedagogy will not suffice since it then is the oppressors that decide what the students should learn (memorize). Teacher’s interpretations are transferred to the students, hence, reinforcing the current power structure.

4. Millennium Development Goals

In the MDG from year 2000 the international community pledged to:

“spare no efforts to free our fellow men, women and children from the abject and dehumanizing condition of extreme poverty.” (UN, 2008b, p3)

Eight goals have been set – Goal 1: Eradicate extreme poverty and hunger; Goal 2: Achieve universal primary education; Goal 3: Promote gender equality and empower women; Goal 4: Reduce child mortality; Goal 5: Improve maternal health; Goal 6: Combat HIV/AIDS, malaria and other diseases; Goal 7: Ensure environmental sustainability; Goal 8: Develop a global partnership for development.

Each goal has at least one target and a number of indicators to measure its success. Judging from the list of goals it is clear that UN has taken a very holistic approach to development addressing both economic measures as well as factors for capacity building.

“The Millennium Development Goals are the world’s time-bound and quantified targets for addressing extreme poverty in its many dimensions—income poverty, hunger, disease, lack of adequate shelter, and exclusion—while promoting gender equality, education, and environmental sustainability. They are also basic human rights—the rights of each person on the planet to health, education, shelter, and security as pledged in the Universal Declaration of Human Rights and the UN Millennium Declaration.” (UN, 2005, p1)

Most UN organizations work towards realizing the goals in one way or another, some target a specific goal while others deal with several. Most of the goals are also interlinked, e.g. achieving universal primary education can have positive effects on combating diseases, promoting gender equality etc. In general education is seen as a key input if the other goals are to be realized (Birdsall, Levine, & Ibrahim, 2005).
4.1 Universal Primary Education

The goal specifically targeting education is Goal 2: Achieve universal primary education. The goal has one specific target and 3 indicators as tabulated in Table 1.

<table>
<thead>
<tr>
<th>Target 2.A: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling</th>
<th>2.1 Net enrolment ratio in primary education</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2 Proportion of pupils starting grade 1 who reach last grade of primary education</td>
<td>2.3 Literacy rate of 15-24 year-olds, women and men</td>
</tr>
</tbody>
</table>

Even though a lot of efforts to achieve the goal has started there is a risk that many countries will fall short of the goal by 2015 (Birdsall, Levine, & Ibrahim, 2005). There is also a variety between regions on how far they have reached, e.g. northern Africa has achieved a high enrolment of school students whereas sub-Saharan Africa has a low enrolment (UN, 2008d). Getting people into school is, however, just a first step. A report from UNESCO (2004) shows that even though enrolment has increased, many children drop out of school before completing the fifth grade (e.g. in Africa only 51% of the enrolled children complete the primary education). There are also several groups of children that are especially hard to reach, e.g. children from ethnic minorities, children in conflict areas etc. (Birdsall, Levine, & Ibrahim, 2005). Even though many reports show a lot of problems and pitfalls that needs to be overcome there are also reports of many successes, many countries in South America (e.g. Chile and Uruguay) and Asia (e.g. China, Sri Lanka and Singapore) have already achieved universal primary education (Birdsall, Levine, & Ibrahim, 2005). So even though there are a lot that needs to be done, there is at least some light at the end of the tunnel regarding the enrolment of students.

Getting young children to school is not just an effort to expand the number of schools, educate more teachers etc. and even though efforts like that are needed it is not enough. Building schools and educating teachers will not work if parents can not afford to send their children to school. The cost for households to send their children to school is a major obstacle for the poor (UNESCO, 2007). There are two ways which this can be addressed: the income of the poorest needs to be raised so they can afford to send their children to school; the cost for parents to send children to school needs to be reduced, e.g. by eliminating school fees. Household income has also shown to have an effect on the completion rate of children (Birdsall, Levine, & Ibrahim, 2005) and in gender disparities; girls from poor households have a very low completion and enrolment rate (Bruns, Mingat, & Rakotomalala, 2003; Filmer, 1999). There has also shown to be a difference in enrolment and completion rates between urban and rural areas. Children in urban areas have a higher enrolment rate and they also perform better in school (Filmer, 1999). The gender gap is also apparent between urban and rural areas when it comes to completion, in some countries the completion rates among girls in rural areas is as low as 15% (Bruns, Mingat, & Rakotomalala, 2003).

4.2 Quality in Education

Going through the reports and statements about Goal 2 from the different UN organizations it is clear that the main focus is on providing education, the quality of the education provided is secondary, at best. That is not to say that quality is overlooked all together though. There is awareness that teacher-centred education needs to be replaced with a more student-centred education. One of the key principles put forward by the educational task force is that the focus needs to shift from teaching to learning:

“Even systems with modest standards can keep squarely focused on the teaching-learning process. This includes recruiting teachers based on content mastery; training teachers for “student-centered” or active learning instruction, not frontal teaching; measuring student
learning outcomes (and giving teachers the same tests); designing good-quality curricula (in terms of both content and values), books, and materials, and producing them in a cost-effective manner; using local language instruction for the first three to four years of schooling; implementing inexpensive but effective models of in-service teacher training (master teachers, pedagogical advisers, rural teacher self-help networks); and creating performance incentives for teachers that are linked to school and student performance.” (Birdsall, Levine, & Ibrahim, 2005, p4)

UNESCO (together with their partners) also sees a need to increase the quality of education:

“Improving educational quality: Being in school or in an adult learning programme will not have positive impact unless it is of high quality and leads to usable knowledge and competencies.” (UNESCO, 2007, p2)

The ‘quality’ mentioned here is related to in terms such as access to school material and clean and safe environment for the children etc. UNESCO does, however, also recognize that the pedagogy used in education needs to be improved (UNESCO, 2007, p 48). What they mean by moving to a more effective pedagogy is, however, not elaborated.

The mentioning of quality in terms of a new pedagogy, more self-sufficient learners, more critical thinking among the learners etc. are hard to find in the MDG documentations and plans. When UN organizations do speak of quality it is almost always refereed to in terms of quantifiable measures or as a means to get parents to send children to school (i.e. if the quality of education is not high enough parents will not see the benefit of sending their children to school).

5. Reflections on MDGs, Universal Primary Education, and Development

As previously mentioned, UN has a holistic approach to development and put education in the front as an enabler for many other development efforts. Even though increased access to primary education is the main goal, UN also recognizes that if education should lead to economic and social development the quality of education needs to be increased. Countries need to improve both access to education as well as the quality of the education provided (Birdsall, Levine, & Ibrahim, 2005).

Getting children into school has many dimensions and challenges which cannot be addressed separately. Building more schools and training more teachers are needed but not enough. Children from poor or rural households have a lower enrolment rate and perform worse than children from richer urban households. Parents cannot afford to send their children to school and they cannot support their children if they enrol. Raising the income of the poorest can thus play a major role in getting children to school and to support them once they are enrolled. Another issue addressed by MDG is that parents will not send their children to school if the quality is low. The quality MDG speak of most often relates to quantifiable measures like number of books in school, number of people able to read and write after the primary education etc. Quality of education in terms of educational structure, pedagogy etc., are neglected and one reason for that is that it requires a much greater effort then just adding more resources to expand existing school systems. Changing the educational culture of a country is more difficult then just adding resources to provide education to the masses (Grönlund, Andersson, & Hatakka, 2008).

Relating the MDGs to the concept of development it is clear that UN has a very holistic approach to development. The eight goals together address basic needs such as healthcare and education. The goals address empowerment and social powers as the goals deal with education, gender equality etc. When it comes to education for development I have above argued that just providing education is often not enough. If development should take place the students need to learn skills and ‘knowledges’ that empower them and help them in their
everyday lives. This is something that requires that many educational organizations in
developing countries change their educational structure from a transmitting structure to a
more interactive structure. In the MDG this is hardly addressed at all, the focus is on
increasing access to education. Increasing access to education can, of course, have an effect
on development. People with at least primary education are more productive (Barke &
O’Hare, 1991) and a society with educated people is a prerequisite to both economic and
social development. The implication of focusing to much on access and not enough on
quality is, however, that instead of producing students with a critical mind that can help
change the structures of a society they instead produce students that reproduce existing power
structures, not contributing to a change.

6. Conclusion and Discussion
Hardly anyone questions the need for education if development should take place, but how
the education should be delivered is not as clear. UN in its MDG emphasizes the need to
achieve universal primary education, a goal that not only is an aim in itself but also a means
to achieve other goals (e.g. gender equality, health care and poverty reduction). As previous
studies have shown, access to even basic education (i.e. primary education) has an effect on
peoples income, infant mortality etc. So education can have a positive effect on several levels
of development. Looking at the MDG goal more in detail reveals a very quantitative approach
to development which is manifested in the goals indicators, 1) net enrolment ratio in primary
education, 2) proportion of pupils starting grade one who reach last grade of primary
education, and 3) literacy rate of 15-24 year-olds women and men. The indicators are
important measure points but the quality in education is neglected. The education task force
talks about student-centred learning but does not address how the shift from teacher-centred
to student-centred should take place or what implications it has for the countries educational
structure. It can be argued that the literacy rate, the number of pupils that stay in school etc.
are measures of quality, but just quantifying how many people that can read or how many
students that stay in school do not necessarily measure development.

Going back to Birdsall et al. (2005) statement that the whole process of education needs
to be considered (i.e. what is taught, who is taught and how people are taught) it is clear that
MDG has a focus on who is taught, i.e. providing education for everyone. Independent of
what view one has on education and pedagogy – whether it is Freire’s concept of banking and
libertarian pedagogy, Anderson’s view on constructivism, etc. – the pedagogy needs to be
addressed.

The need for interactivity in education gets more and more attention in development
articles and literature, and there is a lot of projects started all over the world that aim to
transform the traditional educational structure into a more interactive and effective
educational structure. There is, however, a risk that countries and international organizations
in their strive to achieve the MDG neglect the importance of not only getting students into
school but also to transform the educational system so that enrolled students can gain full
advantage of their education, and in the end help in the development of their country.

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Investigating Universal Access from a Human Development Perspective

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Abstract: To ensure that the rural poor also benefit from Information and Communication Technology (ICT), governments in developing countries have employed the universal access policy to provide affordable access to communication facilities, within reasonable distances and an affordable cost. While universal access (UA) is one of the development initiatives aiming to improve the day-to-day lives of people in marginalized communities, little is known about the extent to which UA has catered for and contributed towards human development. This paper addresses this gap by considering human development in terms of Sen’s capability approach which emphasizes the creation of opportunities and freedoms for people to live the lives they value. It specifically reports investigations of Uganda’s universal access fund – the Rural Communications Development Fund (RCDF) which has registered a lot of success in as far as meeting its infrastructure targets is concerned. The study established that rural communications development has evolved from infrastructure deployment to service delivery. The apparent next level is the need for a human development approach which provides a beneficiaries’ perspective to universal access deployment, one that explicitly considers the beneficiaries' needs and values.

1. Introduction

Universal Access, broadly defined in this paper as the provision of convenient and affordable access to communication facilities by people in marginalized communities, is a key policy objective in developing countries. While several universal access efforts have registered success in as far as infrastructure deployment is concerned, there is still limited evidence on how the infrastructure has benefited the rural poor in terms of human development. This indeed comes as no surprise, because the initial conception of universal access was based on the simplistic assumption that the provision of the means of access at affordable cost would lead directly to economic benefit and human development. The policy formulation and strategy implementation consequently tended to treat the target beneficiaries as passive spectators rather than active players, running contrary to accepted development theories. This creates the environment for apparent implementation success that however fails to achieve the underlying policy objective. This kind of failure is an example of the role development theories play in the effective delivery of development initiatives. Prakash & De’ (2007) also established that a land reform project in India that was aimed at improving access to cultivation land by farmers within the community ended by actually marginalizing the smaller farmers because they could not participate in the markets. This was because the policy adopted neoliberal tendencies, increasing efficiency in the land markets by computerizing and centralizing the issuance of land records, and therefore effectively created investment opportunities for transnational companies.

Particularly the current quest for approaches to enable the rural poor benefit from Information and Communication Technologies (ICT) brings to bear the notion of human
development. Human development, proposed by Sen’s Capability approach as a process of expanding people’s capabilities or choices\(^1\), provides for the explicit consideration and focus on the intended beneficiaries. Furthermore it is increasingly argued that failure of ICT4D initiatives in terms of none or limited use is attributed to the limited conception or understanding of the development the initiative aims to achieve or improve (Prakash & De’, 2007). This gives the human development concept a central role in the meaningful design and implementation of universal access funds in order to benefit people in rural communities in developing countries.

This paper investigates the extent to which Universal Access Funds have taken cognisance of the human development concept. This is achieved through a general review of literature and discussion of the human development concept and universal access funds in sections two and three respectively. Sections four through six present the case of UAF in Uganda, from policy to infrastructure implementation and actual use as well as achieved benefits by the intended recipients. Then section seven discusses the UAF in Uganda in relation to human development and in conclusion section eight makes suggestions for human development-centered universal access implementation. It is assumed that this will facilitate an understanding of the varied impacts and assist governments in planning or revisiting the universal access/service policies to benefit their intended beneficiaries.

2. Human Development Concept – Capability Approach (CA)

The introduction of ‘human development’ presents a paradigm shift in development thinking whose prominence arose from the introduction of the United Nations human development report in 1990. Unlike approaches which emphasize development as the raise of income or economic growth, human development adopts a multi-dimensional, pluralistic perspective which also considers the value of other aspects like health and education to one’s life (Akca et al., 2007; Kuonqui, 2006). Furthermore, human development is people-centered and reiterates the importance of human beings as both a means and an end, unlike earlier approaches that regarded human beings as means of production and economic growth (Akca et al., 2007). The concept was greatly enthused by Amartya Sen’s works in welfare economics, social choices, poverty but most specifically his Capability Approach (Sen 1979, 1985, 1999). This is particularly evident from the definition it adopts – expansion of capabilities or choices that people value. In addition researchers and practitioners are actively involved in the human development and capability association applying the capability approach to human development research and practice\(^2\). In affirmation Kuonqui (2006) and Muro & Tridico (2008) point out that while human development is an advocacy instrument, the capability approach provides its analytical basis; an aspect that this section adopts in proposing an evaluative space to investigate the influence of universal access on people’s lives.

The three core concepts central to the capability approach are functionings, capability and agency. Functionings are the “things one values doing or being” (Akca et al., 2007 pp 75), which comprise an individual or group’s well-being once achieved. Capability or capability set on the other hand is about the potential functionings, ‘opportunities’, also referred to as the freedom one has to achieve a life one values or has reason to value (Akca et al., 2007 pp 87). The approach further highlights the important influence of contextual factors on the conversion of commodities into functionings and opportunities. For example in addition to providing infrastructure it is worth establishing whether the intended beneficiaries have the relevant skill to exploit the infrastructure, and how this affects the opportunities they can derive from the infrastructure. Sen further points out that besides providing opportunities, agency – a person’s ability to pursue and realize goals in relation to their personal needs and aspirations – is essential for development. From this perspective beneficiaries are actively


\(^2\) http://www.capabilityapproach.com/
involved (participate) in the development process explicitly addressing empowerment and sustainability which are central concerns to human development. It is evident here that the capability approach shares the general concern that failure to design, implement and evaluate development programmes from the beneficiaries’ point of view can result into failure (Schischka et al., 2008).

According to Sen enhancing people’s freedom through the provision of capabilities/opportunities to live the lives they value is the main objective, both as a means and as an end to development (Akca et al., 2007). Given the multidimensional characteristic, Sen particularly proposes five interrelated instrumental freedoms valuable both as means and ends of development: economic facilities, political freedoms, social opportunities, transparency guarantees, and protective security (Akca et al., 2007). These are described as follows: Political freedoms enable citizens to exercise their political rights like participating in setting the agenda for political discussions. Economic facilities are the freedoms citizens enjoy through the exploitation of available economic resources and entitlements. Social opportunities involve making facilities available to citizens for health, education, and infrastructure that allow them to live healthily and participate in economic and political activities. Transparency guarantees refers to the basic trust that citizens enjoy in their day-to-day transactions. Protective security is a measure of protection from basic deprivations such as poverty or unemployment or protection from natural disasters (Akca et al., 2007; De’, 2006 pp 322). Consequently, from a human development perspective, an initiative which aims to enhance people’s lives should contribute to the realization of the above freedoms by individuals within a given society among other things.

3. Universal Service and Access

Both Universal Service (US) and Universal Access (UA) are policy objectives which originated from the need for universality in the provision of telecommunication services. While universal service emphasizes ‘everyone’ in terms of the availability of connectivity to public telecommunication networks by individual households nation-wide, universal access focuses on ‘everywhere’ by referring to shared, communal access to publicly provided ICT facilities and services (Dymond & Oestmann, 2004; Intven & Tetault, 2000). Central to both concepts is the availability, affordability and sometimes the quality of services of telecommunication infrastructure and services (Verhoest, 2000). Fundamentally the ultimate goal of UA strategies is US, achievable with universal access either as a precursor to or a subcomponent of universal service. As a precursor, UA in terms of the availability of easily accessible telecommunication and ICT services at affordable costs on a communal or shared-basis implies that everyone has been catered for even at household level. On the other hand UA as a subcomponent of US means that US can in certain instances precede the achievement of universal access; an aspect that has also been referred to as leap-frogging. This is most evident in the growth and penetration of mobile telephony in the developing countries which has enabled individuals (and even households) to acquire mobile phones in places where publicly accessible services are not possible or not yet in place.

Similar to affordability and availability, UA and US is also conceptualized in terms of the “access gaps” basing on two overlapping dimensions: poverty and isolation (Navas-Sabater et al., 2002). This model has especially been influential in defining, implementing and determining the funding approaches to universal access. In this respect two access gaps exist: the market efficiency gap (MEG) and true access gap (TAG). MEG refers to the difference between the achievable level of service penetration given restrictive market conditions, and the level of service penetration expected under optimal market conditions (Navas-Sabater et al., 2002). Addressing this gap aims to provide services for especially the urban poor who cannot afford private facilities which involves setting favorable market-oriented policies for the private sector (operators and entrepreneurs) to provide and profit from telecommunication services. On the other hand the true access gap is a result of both poverty and isolation, typical of a rural community. This context is considered not commercially viable which
requires special interventions in form of incentives such as subsidies to encourage service providers from two approaches: either one-off grants for deployment of infrastructure through Public-private partnerships aimed to reduce capital investment, or vouchers to proprietors to enable them meet the cost during a transitional period. These subsidies are sourced from development partners and levies from national and private telecommunications operators.

It is clear from the discussion so far that the current UA strategies and approaches have limited consideration of human development in as far as multidimensional and people-centered aspects are concerned. First, poverty in this context is one-dimensional perceived only in terms of an individual’s or community’s disposable income, unlike the pluralistic Capability Approach which considers all instrumental freedoms. This has resulted into the misconception that the rural poor cannot afford ICT services, one of the major guiding principles in designing UA. Secondly, while UA targets the rural poor, it is evident from the discussion above that focus is more on creating efficient markets and conditions for the service providers rather than meaningful services for the target beneficiaries. Additionally, the target beneficiaries seldom participate in the UA policy and strategic planning process. As a result UA is mostly limited to infrastructure provision and little on content which would preferably depend on people’s information needs. It is important to underscore that while the rural poor might not know the social, economic and political opportunities that they could obtain from ICT, they know what they need and value in life. A human development approach to universal access would therefore attempt to address this gap which would subsequently ensure the ownership and sustainability of such facilities. The general assumption put across and one that will be further tested through the investigation of UA in Uganda in the subsequent sections is that approaching universal access from strategies that do not explicitly consider a people-centered, human-development perspective will result into failure and limited benefits of the intervention to rural development.

4. Methodology
The aim of this paper is to establish the extent to which human development in terms of life’s opportunities that people value – an inherent goal to development initiatives has been catered for in universal access implementation and use. To meet this objective, an empirical study was conducted to investigate UA policy and implementation in Uganda. This study involved two aspects: a) a desktop study of strategies, policy documents, review reports as well as online resources on UA implementation in Uganda; and b) field visits to two rural internet access points that had benefited from the universal access fund. Informal, semi-structured interviews were conducted with randomly selected users who were using the facilities at the time of visiting. The interviews sought to ascertain the general perception of the services from the users’ standpoint and the extent and purpose of usage. Interviews were also conducted with the facility managers to establish the purpose and process through which the services were implemented. It is worth pointing out that while universal access involves the provision of a number of ICT services, the field visit specifically focused on the internet facilities on the assumption that anyone who found value in using internet had good knowledge of other basic ICTs like payphones. The section that follows provides an account of the UA strategies, implementation and status in Uganda, followed by findings from the field visits.

5. Universal Access Policies and Strategies in Uganda
Given that UA specifically targets the rural communities, in Uganda universal access is referred to as Rural Communications Development (RCD). The RCD policy (RCDP) was developed by the national telecommunications regulatory body, the Uganda Communications Commission (UCC) in 2001. According to the RCDP whose implementation did not start until 2003, RCD initially aimed “to ensure that basic communication services of acceptable quality [were] accessible, at affordable prices, and at reasonable distances, by all people in
Uganda (UCC, 2001 pp. 7)”. To address the availability and accessibility challenge, the policy prioritized the provision of public telephony and postal services in each sub-county as well as Internet points of presence with at least one public Internet café in all districts. The policy further explicitly considered aspects like awareness and literacy which would affect utilization by supporting the setup of training centers and developing web portals for each district. To ensure affordability, RCDP and UCC advocated for the promotion of competition among service providers as a means of reducing tariffs.

Furthermore the general principles upon which the RCD Fund (RCDF) was established include: assisting areas where commercial services were not feasible, providing basic communication services and leveraging investment rather than provide all solutions. In addition funding is accessed through competitive bidding and the fund is contributed to by service operators (UCC, 2001 pp. 7-8). Besides the 1% levy on operators’ gross annual revenues, financial support has been obtained from development agencies such as the World Bank and the International Telecommunications Union (ITU). With an overall aim of long-term sustainability of services, funds are competitively awarded through ‘smart subsidy’ – a one-time start-up incentive to the interested bidders (UCC, 2005a). Bidders are further required to demonstrate the potential to sustain RCD initiatives after the start-up subsidy period expires.

After a series of telecommunication sector performance reviews, recommendations for revision in the overall sector policy were made in 2005 to explicitly adopt a human development perspective (UCC, 2005b). This was borne from the realization that after the initial regulatory period there was a low level of ICT penetration and accessibility was still evident nation-wide, as well as the need for a holistic approach towards national development. From a human development perspective, the new policy recommendations generally expressed the need to target sector-specific ICT goals. Universal access was defined by the following question: “What infrastructure and services must be in place (where and when) in order to enable the human development plans and objectives of the different sectors?”(UCC, 2005b pp 87) The new objectives were defined in terms of infrastructure to provide accessibility and availability throughout the country to a minimum of a voice and data network point by the year 2010 in terms of institutional and public data and voice access points and ensuring affordability by the marginalized populations through various pricing approaches (UCC, 2005b pp 90 - 91).

The policy further stresses the need for relevant, timely and accurate content to meet people’s information needs and alludes to the need for creating awareness and the introduction of ICT skills to enable people exploit ICT beyond social benefits. Although these recommendations have not been formally adopted, they are currently guiding RCD implementations. To date RCDF has registered successful infrastructure deployment actually meeting its targets way before the set deadlines (RCDF, 2007; UCC, 2005b). It is also being used as a best practice for universal access deployment in other developing regions (e.g. Dymond & Oestmann, 2004). To provide sufficient ground for a critique on the extent to which the RCD policies and strategies incorporated human development concerns, the next section discusses the perceptions of RCDF from the beneficiaries’ perspective.

6. Field Study Findings - RCDF from the Beneficiaries’ Perspective

With the overall aim of establishing how people in the target communities perceived the RCD services, field visits were conducted at two sites: Nangabo vocational training institute and Busoga Rural Open Source and Development Initiative (BROSDI) in February 2008. In total 13 participants were interviewed at both sites; at Nangabo vocational institute the principal, 2 teachers and 2 students were interviewed, while the manager and 7 users were interviewed at BROSDI.
6.1 Nangabo Vocational Training Institute

The vocational training institute is located in Nangabo sub county 14km north of the capital city. The community is classified as rural consisting of about nine villages and 12,000 households. While some residents commute to the city for work, the major activity is subsistence farming. In addition to the vocational training institute the sub county has a number of both primary and secondary schools. As a result the community is mostly semi-literate, with an elementary ability to read and write.

The institute has a total of 60 students undertaking courses in nursery school teaching, catering, tailoring, fabric weaving and design and basic computer training for those who can afford an extra fee. The main purpose for incorporating computer facilities at the institute was to provide computer literacy to the students and community. The facilities which were initially set up in 2000 currently comprise 23 standalone computers, a photocopier and printer. Only one of the computers has Internet access. The computers have mostly been donations from friends, RCDF and Uganda Telecom Ltd (one of the telecommunications service providers).

It is worth noting that at the time of this field visit students were just reporting back to school, as such only 2 students were available for interviewing. The Principal reported that facilities were mostly used by students at the institute, those within the community and schools. The use of facilities was limited to basic secretarial services like: a) basic training in typing, sending email, and search/find information on the Internet; b) typing, printing and photocopying exams for schools within the community; c) writing and printing letters; d) some (literate) members of the community use the internet and e) conducting courses and workshops for tutors to obtain basic training in computing. For purposes of financial sustainability, users from the community were charged UGX 1000 (USD 0.52), while students enrolled at the institute paid UGX 40,000 (USD 21) to get trained in computer skills per school term (three months).

The integrated and creative use of ICT to assist in instruction delivery or enhance the quality of the study programmes was rather limited. For instance, the Principal pointed out that computers were only used to do assignments in computing, as such computer facilities were an add-on rather than a support to the existing services. While the majority of users (both tutors and students) were not aware of this possibility, use by those who were aware was affected by the slow internet connection and power outages. The facilities were actually not in use at the time of visiting due to a power failure in addition to the institute not having any power backups. In addition, some of the students did not use email because they had no one to communicate to, while others could not afford the extra USD 21 to benefit from the training. Obtaining technical support and maintenance of the equipment was also a great challenge, although the institute was obtaining free support and maintenance from a firm in town.

6.2 Busoga Rural Open Source and Development Initiative (BROSDI)

BROSDI1 headquarters are located in Baitambogwe sub county Mayuge district in Eastern Uganda, on the shores of Lake Victoria, about 145km from the capital city. The community setting is typically rural, characterized by fishing and subsistence farming as the major economic activities. Mayuge is a new district that was curved of Iganga District in 2000. It has since had several initiatives geared towards social and economic development such as developing the road network, training farmers in income generating activities and sensitization on responsible fishing practices. The district has about 137 government aided primary schools, a few private secondary schools and hardly any tertiary institutions.

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According to the district website the literacy rate was at 45% in 2005 and schools were faced with high drop out rates\(^1\).

BROSDI is one of the development initiatives that were setup to improve the lives of people in the surrounding communities through the provision and sharing of information relevant to their livelihoods. The center comprises a computer lab, resource library and farming demonstration sites. The aim of setting up the computer facilities was to enhance the traditional communication and information sharing practices through the use of ICT. The computer lab has 12 networked computers all connected to the Internet. The manager reported that access to Internet was free for the first 30 minutes after which a user was required to pay for extra time and as a result approximately 30 people used the computer facilities daily. However this increase in use was registered only after users were granted free access to the services. The facilities were mostly used in the afternoons after farmers had come back from the fields. In addition to the day-to-day running of the facilities, the manager was also responsible for basic maintenance and conducting the training sessions. On realizing the potential benefit of the facility to people’s lives, BROSDI devised various means to ensure a constant cash flow like sourcing funding through other projects, and requiring university students and working middle class pay for services. Furthermore to cater for both the literate and illiterate within the community, BROSDI was working with the Ubuntu\(^2\) to acquire a browser in one of the local languages.

Interviewed users pointed out that they used the facilities for: training; searching for information on the Internet; blogging, text messaging using the Web 2.0 tools; watching movies/clips; reading local, international and sports news; communicating with family and friends through email. The center was also has registered members and works with extension farmers who collect and disseminate information on farming/agricultural practices, health etc through the BROSDI websites. Furthermore, a secondary school student pointed out that he conducted some research though this was minimal. Apart from the ICT related activities, the center also conducts other activities like: youth workshops on health related matters; education programs for children in upper primary classes over the weekends; farmers also occasionally meet at the center to share information in relation to good farming practices e.g. a local technique in fighting crop pests.

In terms of the general impact of the center on people’s day-to-day lives, participants pointed out that by using the services they were able to save on transport costs and time, some students acquired scholarships through the information they obtained from the Internet, farmers obtained valuable information on improving their produce as well as a general improvement in primary students’ performance within the community. Despite the registered benefits there were still some challenges that constrained use: electricity power outages and fuel expenses in using generator power backup, users had to walk long distances to the community center since it was the only one within the area then and the slow connectivity especially frustrates the students.

7. Discussion

This section seeks to analyse and discuss the extent to which the RCD policies, strategies as well as implementation in Uganda are designed from a human development perspective. It further establishes how the RCD efforts have benefited the rural population from a human development perspective. This is based on the premise that approaching rural communications development from a human development perspective, both as a multi-dimensional and people-centered concept is the optimal option to ensure meaningful deployment of ICT in the rural communities.

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\(^1\) http://www.mayuge.go.ug
\(^2\) http://www.ubuntu.com/
7.2 Rural Communications Development Policy and Strategies in relation to Human Development

From a strategic standpoint, Uganda appreciates the connection between human development and rural communications development. However, while the approach at policy level was improved – i.e. relating rollout requirement to the macro human development plans, it is still deficient in that it did not take an explicit human development approach. The overall driver was service delivery, rather than response to the micro-level development needs of communities. In actual fact the significant difference between the old and new policy objectives is pinning infrastructure deployment to specific sectors; however affordability, relevant content and creating awareness remained essential in both deployment phases. In relation to CA’s conception of human development, the new RCD policy is limited in as far as the active role of the target beneficiaries is concerned. This may be based on the assumption that people in rural communities are not aware of the ICT potential towards their day-to-day lives. While this may be true, people in these communities know their needs which should be the basis of ensuring the provision of relevant ICT services. For example the district web portals whose target was to meet the information needs of the communities remain under-utilized because the information provided does not address the needs of the people in the different communities. However this information is more relevant to potential investors interested in obtaining demographic characteristics of the different districts. This is typical of a top-down approach to ICT service provision which affects ownership and the eventual sustainability of ICT services in the target communities.

Furthermore, it is evident that the deployment of universal access (RCD) involves several stakeholder groups with differing implementation goals which sometimes affects the nature and quality of service. While the government (i.e. regulator) as the visionary whose goals as expressed by policy may to some extent target the welfare of the rural population, the implementers (proprietors, service providers, operators) have varied goals and expectations determining the nature of services they deliver to the target beneficiaries. For instance while RCD considered the need for ICT literacy and awareness at policy level, most of the facilities set up as training centres to address this need quickly converted to commercial internet cafes. Although policy requires proprietors to exhibit financial sustainability of services, a similar caveat on the nature and quality of services delivered would assist in ensuring that the set goals are followed through to service delivery.

Finally, studies and anecdotal evidence show that the rural population is willing to pay for ICT services even in places where they appear not to be commercially viable once people appreciate their inherent value (Kivunike et al., 2009; Shirley et al., 2002). Evidently, while affordability is a key determinant of accessibility and utilization of ICT services, there is a need to emphasize the relevance, exposing the value of the ICT to people’s needs. A good example is the mobile phone whose penetration and use are on the increase due to its ease of use and clear benefits, despite the high tariffs. Therefore while market favorable strategies to ensure affordable services like competition, privatization etc have been proven to expand accessibility and improve service quality; it is imperative that policy explicitly caters for the value of ICT services towards the target beneficiaries. This will encourage acceptance and use which in turn addresses the affordability-sustainability challenges.

It is important to underscore that in the Ugandan context the implementation of the RCD programme from a human development perspective is still in its infancy to evaluate performance. However assessing performance of the initial RCD phase is vital as baseline and means of policy refinement of the new RCD programme as discussed in the following section.
7.2 Rural Communications Development Implementations in relation to Human Development

It is clear from the Nangabo vocational training institute case approaching RCD from a non-human development perspective is a potential source of failure. First, although the aim in setting up the computer facilities was to serve both the Institute and the Community, the target beneficiaries were not consulted on the nature and purposes of services. As a result the acquired facilities did not explicitly meet the needs of either beneficiary. Furthermore, the lack of skilled personnel and knowledge of how ICT could integrated to support the institute’s programmes meant that the facilities were alienated from the study programmes and could not be effectively used in this respect. Subsequently this under-utilization has affected the sustainability, ownership and expansion of facilities. Furthermore, the requirement for students enrolled at the institute to pay an extra fee so as to acquire basic computer skills is source of inequalities among those who can afford and those who cannot afford. On the affirmative though the acquired skills expand people’s capabilities giving them the possibility to obtain ICT-related jobs.

In contrast, the approach adopted by BROSDI is characteristic of a human development approach. The proprietors in this case adopted an approach that considered contextual influences on ICT use in addition to ensuring a multi-dimensional influence on people’s lives. This is apparent in the partnership with Ubuntu to develop a browser in the local languages catering for those who did not know English and providing activities for both the young and old in the community etc. It is further evident in this context that the proprietors realised that ICT in isolation cannot benefit its target beneficiaries and it was therefore introduced to facilitate already existing information sharing activities. The centre further adopted a people-centered approach to service provision which was based on the needs of the community. For instance, weekend classes for primary school going children were introduced after realizing that the district had poor performances as well as high drop out rates. Furthermore, the ability to produce and share content through websites and discussion forums has empowered farmers with various skills. These aspects coupled with free Internet access and various funds generation activities account for both the social and financial sustainability as well as local ownership of the facilities. This further confirms the premise that indeed a human development perspective is essential for the effective deployment of rural communications development. A down-side to BROSDI’s approach is cited in offering free services which is not sustainable on the long term. Furthermore, while the centre found it appropriate to translate the browser in the local languages, the majority of the content is still in English which will also limit use by those who do not know English.

On the other hand though both cases differed in the approach to service delivery, full exploitation of facilities was limited by the slow internet connectivity. Furthermore it can be deduced from the findings in both cases that the rural poor still require an incentive to exploit ICT for their well-being. For instance, although BROSDI tailored their services to the needs of the community, they still had to provide a free slot to encourage people to appreciate and use the service. As one of the interviewees rightly pointed out; “using ICT to leverage development requires innovative approaches which will make the technology relevant for the needs of the rural poor”.

8. Conclusion

Admittedly, the analysis and conclusions drawn in this paper are based on a literature survey of policy documents and only two case studies. Therefore the findings might not be generalizable to Rural Communication Development nation-wide, but they should nevertheless provide valuable insight for further deployments. It is manifest from the above discussion that the universal access efforts in Uganda have evolved from basic infrastructure to service delivery. The apparent next level is adopting a beneficiaries’ perspective to RCD deployment by explicitly focusing on the beneficiaries’ needs and values. In this respect RCD
efforts should always focus on answering the question, *development for whom?* Similarly and in addition to ensuring affordability, efforts should go into empowering citizens to establish the potential ICT benefits to their day-to-day lives. Second is the need to bridge the gap between policy and implementation, because while policy considers aspects of human development, implementation adopts varied approaches which affect the nature of the services delivered. This can all be summed up by a quote from Olukoshi (2007) cited in (Prakash & De’, 2007pp. 276): “The desire for technical solutions to development problems should not take on a life of its own where we forget that development is about people and what they think and how they feel matters”.

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The invisible hand of the market or the visible hand of the state – How to reach universal access?

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Abstract: In order to facilitate adoption, extension, and expansion of mobile telephony it is important to get the policy, industry, and regulatory framework right. There are different opinions and different strategies of how to reach universal access. Some favour a far-reaching liberalization, and some an extended regulation, including levying, to be successful. This paper will illuminate these different strategies from a development theory perspective with focus on economic development theories in a historical perspective.

Introduction

This paper belongs to the field of ICT4D or, in other words, the field of ICT for development. As such it brings together research from multiple disciplines such as Information Systems and development theories. Most research in ICT4D focuses on the ICT part and less on ‘D’. This paper will combine research on ICT with development theories.

The field of ICT4D can be seen as an outcome of the World Summit on the Information Society (WSIS) in Geneva 2003 and in Tunis 2005 with ITU1, UNDP2 and UNESCO3 as driving agents.

The point of departure for this paper is literally ‘ICT4D’: ICT is considered to be a tool with which to achieve development goals in developing countries. It is a normative approach as it claims that ICT, including mobile phones, has positive effects for development. ICT includes a range of technologies such as computers and Internet as well as radios and mobile telephony. The mobile phone growth has been enormous during the last decade. Fifty per cent of the 6.5 billion people in the world can now use a mobile. (Donner 2006; Heeks & Jagun 2007) This development would have been unimaginable a decade ago before the turn of the millennium century.

Policy and institutions can influence adoption and extension and expansion of mobile telephony. It is important to get the policy, industry, and regulatory framework right. Governments and regulators e.g. allocate spectrum, they structure competition, and they may liberalise and privatise new and existing markets.

The change in the telecommunications sector is characterized by a number of trends in economical policies reflecting the technological advances in the domestic supply of telephony services. Cohen and Southwood (2004) list the following trends:

- effective regulation,
- deregulation,

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1 International Telecommunication Union
2 United Nations Development Program
3 United Nations Educational, Scientific and Cultural Organization
• telecom market liberalization,
• privatization, and
• competition

But there is not a consensus in the use of these economical policies. Different authors and reports have different opinions and propose different strategies of how to extend and expand mobile telephony and how to reach universal access. Some favour a far reaching liberalization, and some an extended regulation, including levying, to be successful.

Outline

This paper will illuminate these different strategies of how to extend and expand mobile telephony and how to reach universal access. The discussion will be made from the perspective of development theory with focus on theories of economic development in a historical perspective.

This paper is structured in a number of sections starting by describing the method employed, followed by a section on ‘Development and ICT’. Further, the different strategies mentioned above will be discussed in the sections, A Pro-liberalisation Strategy Pro Universal Access, and A Regulated Liberalization Strategy Pro Universal Access. The paper ends with a concluding section.

Method

This paper is a part of a thesis work within the area of Mobile Telephony for Development, ‘M4D’. Furthermore, this paper is an examination paper in a graduate course on development theories. The part concerning mobile telephony, the ICT part of M4D, is built on reports and research on M4D from academia, aid organisations, and private business. The part concerning development theories, the D part, will use Theories of Development by Richard Peet (1999) as the main reference, as this book belongs to the main reading at the graduate course. Peet surveys leading theories and models of economic and social development, both conventional and critical ones. He is critical to neo-liberal market-driven economic growth and aspires to a critical modernist developmentalism.

Development and ICT

‘Development’ is to be understood as something ‘positive’: it has positive connotations and it can be interpreted as a desirable change in society. ‘Development’ can also be interpreted as a metaphor to explain the difference between the Western world and the rest; as a process to reach something desired, as a process of catching up, as progress towards Western standards of society (Smekal 2008). Further, ‘development’ entails a complex whole of interrelated economic, social, and cultural process and progress. This approach incorporate that technological improvements create growth and development (Peet 1999). ‘Technological improvement’ could be interpreted as including ICT and mobile telephony.

Development has during the last couple of centuries implied liberation through technological achievements. Peet (1999) states that this approach can further be seen as an expression for a capitalistic modernity view where progression and advancement are measured as economic growth. In this perspective is an increase in products/goods and services synonymous to ‘development’. Effectivity and efficiency as well as the word modernizing are expressions for this perspective on development. The capitalistic view on development occur during history in different ‘versions’ depending on the era: modernisation theory, neoclassical economics, and neo-liberalism. But the different appearances of this view has the same basic idea that competition and technological improvements at a free market creates growth and by that development (ibid). A proposal from UNDP (1998 in Peet 1999) that poor countries should ‘leapfrog’ over the industrial revolution to use modern efficient technologies could be seen as a manifestation of this view on technology.
The general applicability of ICT is acknowledged everywhere. But ICT per se is not ‘good’ or ‘bad’; instead it is the use of ICT that can have good as well as bad effects on a society. ICT in itself has no value; instead it must be seen as a tool to be used for different purposes. It can be assumed that long-term use of ICT have positive long time effects on a society, both on national level as well as on individual level. In other words: ICT has an effect of ‘bringing’ (facilitating) development, in line with the discussion above.

A Pro-liberalisation Strategy for Universal Access

To reach universal access to mobile technology several reports claim the need of deregulation, liberalization, privatization and competition. The (important) role of regulatory structures, particularly liberalisation, to increase mobile penetration, is mentioned by Donner (2008).

Liberalisation is a theme in several studies about regulatory work, e.g. the liberalisation of telecommunications network in Ghana (Frempong & Atubra 2001) and the liberalisation of the wireless spectrum in Guatemala (Ibarguen 2003).

Enhanced competition affects mobile penetration in developing countries in general according to the World Bank (2006 as referred in UNCTAD 2008). Higher levels of mobile penetration are seen in competitive markets according to Varoudakis and Rossotto (2004). The mobile sector gain over the fixed-line is due to new investments and the competitive nature of mobile market, according to a report from UNCTAD (2008). The same report states that competition contributes to lower access costs and introduces innovations. The geographic coverage increases most in countries where the major international operators compete, says Hesselmark (2007). The expanded coverage is due to private investments, which both respond to and drive customer demand, together with liberalization by the governments of the telecom market, concludes the trade association GSMA (GSMA 2007).

New government polices and appropriate regulatory policies coupled with technological developments have helped to contribute to the rapid expansion of ICT services including mobile telephony in the Philippines since 1993, according to Mendes et al. (2007). Contributing factors mentioned by Alampay et al. 2003 (in Mendes et al 2007) and Mendes et al. (2007) are:

- Liberalization of the sector by breaking up monopoly in 1990
- Privatization and competition
- Introduces more players and service providers
- Competition spurring innovations of strategies for expanding the market and the variety of services
- Expanding public calling offices

Improved penetration rates and prices adjusted towards global level in Africa may be influenced by enhanced competiveness as measured by the number of operators (UNCTAD 2008). Kelly (2007) states that a key indicator of government policy is the number of operators allowed in the market. He compares Ethiopia with a monopoly and a mobile penetration of less than 1 with Somalia with an unregulated market and a penetration of above 6.²

It is relevant to compare mobile penetration with the penetration of fixed-line telephony. Is it competitiveness in itself that has the desired effect, or has it (also) something to do with the technology? Wallsten (2001) claims that competition among mobile providers in Africa has had a greater impact on overall telephone penetration than privatisation of landline providers. However, competition from mobile service can also improve landline availability as shown by Hamilton (2003 in Donner 2008) in a study from 23 African nations.

¹ Mobile penetration: Number of subscribers per 100 inhabitants
A major driving force behind the rapid growth of mobile use in Africa has been the improved supply of services which has been achieved by issuing licenses to a large number of entrant providers (UNCTAD 2008). Tanzania is, e.g., considered to have a favourable regulatory environment which has fuelled rapid advancements in connectivity, according to Sheriff (2007).

So, how can this pro-liberalisation strategy be understood from a development theory perspective with focus on economic development theories in a historical perspective?

The pro-liberalisation view has its origin in Britain during the late 17th century where there emerged ideas about a (free) market economy within and partly opposed to the mercantilist system (Peet 1999). These ideas were based on a number of principles e.g. “…potential harmony between individual self-interest and the public interest without state intervention…” (ibid: 21) and on a belief “…in the freedom of the self-seeking yet responsible, enlightened individuals, discipline by equally modern institutions, principally the market.” (ibid: 23) These ideas can be seen as a step from mercantilism towards modern capitalism and derived from notions developed during the French Enlightenment. The Enlightenment notions of the use of the human and scientific mind for development entail human emancipation through e.g. liberation from the variation of nature through advanced technology. The liberal ideas include an ideal of unlimited progress and a continuous process. (ibid) Further, it has an evolutionistic and a stage model view in line with Darwinism and Marxism.

Adam Smith and his Wealth of Nations, published 1776, regarded the market as the driving force for invention and innovation. Smith can be considered to be the farther of liberalism, the classical liberalism. Free trade would lead to efficient allocation of resources. Over the long run, free competition would force prices towards a just level. Self-regulating markets were the ‘invisible hand of the market’. The most famous so-called classical economists John Stuart Mill (1806-1873) in his major work, Principles of Political Economy from 1848, argues that the principles of competition were the bases of economic laws that could be given universal validity (ibid). The practice of non-governmental intervention in the economy, the so-called laissez-faire principle, should be the general role according to Mill (ibid). Peet states the Darwinian notion of survival of the fittest was applied to human societies and as such legitimised laissez-faire, market systems, and private ownership. The classical economists had a positivistic approach to development and to social sciences. And also a rationalistic approach in line with Hegel’s (1770-1831) view and with Marx (1818-1883) who stated that competition forced the adoption of new technologies and innovative types of organisations (ibid).

The laissez-faire principle was highlighted in the late 1970s as a neo-liberalistic policy, including a neoclassical economy which opposed to state intervention and Keynesianism (ibid). Peet states that new classical economics assumes that privatisation and markets can solve all problems. These ideas were expressed in the Washington Consensus including policy recommendations e.g. financial and trade liberalisation, privatisation, and deregulation in that government should abolish regulations restricting competition (ibid: 52). After the debt crisis during the late 1970s and early 1980s the World Bank in 1985 was warning that ‘retreat from liberalisation’ would slow economic growth. Structural adjustment programs (SAP) were introduced including reductions in public spending and institutional reforms centred on market liberalisation and privatisation.

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1 Presented in the 1850s. Darwin was inspired by Malthus work, An Essay on the Principle of Population (1798), which he did not read until 1838 according to notes made by Darwin himself (see The Autobiography of Charles Darwin 1809-1882, 1958 p. 120, edited by Barlow Nora). Thus, Darwin was inspired by discussions in economics.
A Regulated Liberalization Strategy for Universal Access

At the same time there are researchers and reports that are less confident that liberalisation and competition will be sufficient to ensure universal access. Instead they favour a more regulated liberalisation to reach universal access.

The strategy is a mix-model of market and non-market forces. There are different solutions concerning 'the right mix' of market and non-market forces to solve the problem of universal access. (Donner 2008) The right policies must be in place according to Kelly (2007), a mix of less government, i.e. more liberalization and competition, and more government, viz. regulation and licensing requirements.

There is a need to distinguish between gaps in market efficiency, which can be improved through liberalisation, and gaps in access which impacts populations and regions which the market will not serve without specific mandates or incentives from the government (Dymond & Oestmann 2003 in Donner 2008). This is also highlighted in a report from the World Bank Global ICT Department (2005).

Kelly (2007) discusses the problem of universal access and divides it into the two gaps just mentioned, i.e., a market gap and an access gap. The market gap measures how many more people could be reached if markets were functioning efficiently. According to a World Bank study (2007) in 24 SSA countries found that 57 per cent of people were within range of a mobile signal. By improving the efficiency of existing markets a further 40 per cent of the population could be served with US$3.0 billion market-led investment by 2015. Kelly (2007) concludes that research shows that it will be possible to almost double current levels of penetration before services become uneconomic to provide for the operators.

The remaining 3 per cent, the people who live in areas outside the range of commercially-viable mobile service provision, would require government intervention through a subsidy a US$2.1 billion to close the access gap, to reach a universal service level (Kelly 2007). How, then, should one find the funding for this?

Several developing countries have established universal service funds (USF) which levy contributions from mobile and fixed operators to subsidize telecommunication in rural areas. Thanks in part to the Universal Service Obligations (USO) India can experience a rapid rollout of mobile networks in rural area, according to a Nokia-sponsored report (Sood 2006). GSMA (2007) argues that the USF of total US4.4 billion should be used for mobile coverage rollout as this is the lowest cost access technology and the most efficient way to extend access to telecommunications. (Mendes et al. 2007)

A mixed model, a semi-open market, is also one of the success factors in the Philippines as stated by Alampay (Alampay et al. 2003; Alampay 2006 in Mendes et al 2007). The government imposed mandatory service obligations to international gateway facility providers and mobile operators to roll-out telephone land lines under a service area scheme putting up 300,000 to 400,000 landlines at a ratio of 1 line in a rural area to every 10 in an urban area. A semi-open market is also the solution as the rapid growth in southern Africa is explained by the concentration of mobile networks in the hands of a few major operators (Curwen & Whalley 2005).

This regulated liberalisation strategy can be said to have it roots in mercantilism lasting from 13th century to the early 19th as a total system of ideas, politics, institutions and economic practices (Peet 1999). Mercantilism aimed at increase national power and to control trade. Governments should take responsibility for maintaining employment and relieving poverty by fiscal and monetary policies. States should foster development through internal improvements such as transportation and through internal and external regulations. John Maynard Keynes (1883-1946) and economic growth theory established the legitimacy of state intervention into market economies achieving growth decided on the basis of social policy, the so-called ‘visible hand of the state’ (ibid). The state as an institution was needed and the state has to take responsibility. The international conference held at Bretton Woods, New Hampshire (USA) in 1944, established e.g. the World Bank and there was an understanding that Keynesian principles should be extended to developing countries (Singer
1992 in Peet 1999). However, in this movement it was understood that global economic regulations should be “…directed by the rich, the powerful and the European.” (Peet 1999). A developmental economics emerged during the 1950s with the result of a hybrid version including e.g. in part neo-classical and in part Keynesianism. Market mechanisms were seen to be ineffective, unreliable, or irrelevant to development countries and there was a need to using state planning (Peet 1999). The fall of Soviet Union including the Soviet model, meant that the belief in ‘the demanding hand’, that is, the belief that that the state should direct the economy, was dropped in the development discourse and left a field dominated by neoliberalism (ibid).

The mix-approach could be said to be inspired by neo-classical economist’s ideas. For example, the French economist Leon Walras (1837-1910) stated that competitive markets maximised total utility but at the same time he favoured state intervention (Peet 1999). Neoliberalism was advocated by Jeffrey Sachs in Poland during the 1990s including economic liberalisation, and privatisation. But Sachs also advocated a public investment program mainly for infrastructure as a complement. The World Bank shifted in the late 1980s and early 1990s to a revised neoliberal model focusing market-friendly state intervention.

Conclusions

This paper has illuminated two different strategies of how to reach universal access to mobile technology, one that favours a far-reaching liberalization and the other that supports extended regulation, including levying. A historical overview has been given to these strategies emanating from economic development theories within the development theory discourse. It is shown that both strategies have a long history dating back to the 17th and 13th century respectively. The pro-liberalisation strand could be defined as the ‘invisible hand of the market’ in accordance to Adam Smith view from 1770’s while the pro-regulation strand focuses on the ‘visible hand of the state’ in line with Keynes economic policy from the 1930’s.

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Participatory Design Approach: The missing link in user adoption of the new health information system

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Abstract: The computer has become an integral part of healthcare delivery by accelerating organizational and provider-patient communication as well as providing tools for improvements in the quality of care. However, the failure rate for information systems implementation in healthcare organizations will pose a great challenge in the area. In this paper, we aim to discuss user adoption of the new health information system in healthcare organization. In this study, we review the literature in order to illustrate previous studies that present failures in implementing new IT-based systems in healthcare settings. Next, we discuss and apply theory to interpret the results. The results demonstrate some important aspects in the implementation of new health information system such as considering user involvement in the design and implementation phase of the system, taking into consideration and differentiating the different professional needs when developing the system, user training methods, and to consider work routine changes due to implementation of the new system. Our findings show that evaluations of health IT-based systems seem to have not been successfully implemented in a number of cases, and have failed to demonstrate improvements in patient care, operating costs savings, and improvements in productivity. This study shows that, in fact, we have not learned from the past. It can be concluded that the application of a participatory design approach in health IT-based systems may be fruitful for the organization. The involvement of the end users in the design and implementation process will allow for the collection of their ideas, thus benefitting the developing system.

Introduction

The computer has become an integral part of healthcare delivery by accelerating organizational and provider-patient communication as well as providing tools for improvements in the quality of care (1). However, the failure rate for information systems implementation in healthcare organizations will pose a great challenge in the area (2). This is in part because the big efforts that policy and decision makers do for implementation of those system such as huge investment (3). In particular, the majority of attempts to introduce information systems initiatives into both the private and public sectors, including healthcare information systems that require data entry by healthcare practitioners, have been unsuccessful (4, 5).

According Diamond et al (2004), it cannot be ignored that a characteristic of many public sector reforms is that they are introduced into organizations that are not willing to accept the reform, have the technical ability to understand and implement the change, or possess the ability to maintain the change once it has been introduced. As a result, the reforms are often
severely delayed or create distortions that have damaging effects, leading to changes that are often ultimately abandoned (6).

In light of the abundant experience available, it is difficult to understand why the frequency of implementation failures is so high. For example, it has been determined that half of all computerized information systems fail largely due to user resistance (7). Likewise, Paré et al (1998) showed that many healthcare organizations have devoted significant amounts of money and frustrated countless people in wasted efforts to introduce new information systems (8).

These failures are alarming, since the introduction of new, large healthcare information systems require a major investment (5). In order to have successful and sustainable information technology in a healthcare setting, many factors need to be considered when introducing the new technology. One factor that has been indicated as crucial for success is the involvement of clinicians and other staff who will use the healthcare information systems throughout the planning and preparation stages of the design (9,10,11).

In general, regular and open communication between designers and users allows for the understanding of user preferences, their needs, their problems, and confusions. Recently, participatory design has been employed in different fields (12); however, as for health informatics, which is a more recently developed field, the use of participatory design has a shorter history (13). Due to obvious problems in introducing integrated computer-based health applications, utilizing new approaches such as participatory design can make a difference where traditional methods have failed, in particular, with regards to the social factors that are of importance for the successful implementation of an information system (13). Participatory design, which explicitly advocates active user participation throughout the design process, is a proactive design method.

In this paper we aim to discuss the underlying factors for user adoption of new health information systems in healthcare organization.

**Theoretical background**

*Participatory design*

The participatory design approach was introduced in Scandinavia in the 1970s (14). It started in the field of computer software design, but similar approaches have been used in other fields as well (15). Various studies have found that involving users in the system development process is an effective way to increase their adoption of the system (16). In this respect, participatory design can be an appropriate approach for promoting user involvement. Participatory design was initiated as a resource to empowering system users by involving them in the design of an important part of their work setting. By involving of healthcare staff in the design and development processes of health information systems, it is said that the usability of the systems as well as their success increase (17). Furthermore, it is important to consider the attitude of end-users – instead of one single viewpoint on a system’s requirements – in the process of development in order to increase final acceptance (18).

In addition, users are able to redesign and evaluate their work routines by applying the experience obtained during the participation process, and are even provided with the opportunity to improve their understanding of computers (18). However, another objective for participating in the process of participatory design is based on recognizing the fact that it gives designers new and better ways of gaining an understanding of the users’ everyday working practices. Additionally, users are expected to be more willing to accept the final system once it is introduced, when they have assisted developers to arrive at a more accurate and realistic model, and reduces their aversion to the new system. The final overall effect of this participation can be considered to be the main incentive for improving work efficiency and productivity. It is argued that participation helps users to enhance their skills, thereby increasing the quality of services provided (18).
To have an effective and credible health information system, user involvement in the design and development processes influences the perception, reception, and ultimately, the success of the new system (19).

**Social Capital**

The political scientist Robert D. Putman (1993) explained social capital as a theory about the complexities of trust and participation (20). The concept refers to features of social organization such as norms and networks that can improve the efficiency of society by facilitating coordinated actions (21). The social capital vocabulary has expanded, and today it addresses broadly the value of social networks both between similar and different groups of people by norms of reciprocity. The narrowest concept of social capital however, is still associated with Putman (20, 21). He views it as a set of “horizontal associations between people”, and argues that social capital encourages the formation of social networks and associated norms that have an effect on the productivity of the community and it facilitate the coordinated cooperation for the mutual benefit of the members of this “association” (20).

Prior to Putman’s study, the concept of social capital had been used in community studies to describe relational resources embedded in personal ties within a community (see discussion in 22). Nowadays, it is being applied in a wide range of studies in different disciplines, from anthropology and economy to information systems. However, despite the variety of definitions available for social capital, there is a consensus about the fact that social capital consists of those specific processes among people and organizations, which arise from working collaboratively in an atmosphere of trust, leading to the accomplishment of a goal with mutually shared benefits (21).

The benefits of social capital have, however, been identified and considered as “optimal” when social capital is created by individuals who learn to trust one another so that they are able to make credible commitments and rely on generalized forms of reciprocity, contributing to an increase in society’s productive potential (23).

To summarize, social capital consists of individuals forming and utilizing social networks in communities. Like financial capital, social capital is a resource that helps to sustain a community and encourages the collaboration and cooperation between members of groups for mutual benefits (24). Introducing a new, healthcare information systems in which all users are involved and where networks are used for collaboration at different levels of the healthcare setting environment, are examples of such assets. Furthermore, the networks are usually groupings of people with common interests.

**Human Capital**

Human capital is defined as “the skills, knowledge, and experience possessed by an individual or population, viewed in terms of their value or cost to an organization or country” (25) and “the skills, general or specific, acquired by an individual in the course of training and work experience” (26). The main components of human capital, as stated in the literature include qualifications and knowledge acquired through formal education as well as skills, competencies, and expertise acquired through on-the-job training. Several authors have recognized the importance of human capital as a firm’s only appreciable asset due to the fact that the individuals’ productivity improves with literacy. It is said that workers may increase their productivity at the workplace by learning new skills and improving old ones (18). The introduction of new technologies is likely to require the employment of a highly educated and skilled staff. There is, however, substantial evidence that education and training have strong positive effects on the accumulation of physical capital (27). In the case of implementing an healthcare information systems, acquiring knowledge and experience through formal and informal training becomes important and any shortfalls in the program raise many problems such as users’ complaints and resistance against the system.
Methods

In this study, I first review the literature in order to illustrate previous studies that present failures in implementing new IT-based systems in healthcare settings. Next, I discuss and apply the concepts just discussed to interpret the results.

Literature review

A literature review of published evaluation studies of IT-based systems in healthcare during the last five years (from 2003 to 2007) was performed. Linköping University’s database was used to gain access to articles on this subject. The keywords used in the search were: patient records, medical records, health records, information technology, medical informatics, healthcare information, health informatics, hospital information system, patient care information system, information system/technology, and evaluation study. I included papers that demonstrated a failure in implementing IT-based systems as well as some studies that discussed success and failure factors affecting the systems. Table 1 presents some examples from the reviewed literature.

Results

Examples of studies on the implementation of health information systems

Table 1 presents a summary of some previously published articles in the medical informatics area from 2003 to 2007, targeting factors that affect the implementation of health information systems.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Domain</th>
<th>Findings</th>
<th>Lessons learned</th>
</tr>
</thead>
</table>
| Bryson et al. (29) | Home care, primary care, hospital | This study showed that the nursing staff were not fully aware of the current IT plans. A lack of confidence in using advanced information technology compounded with the lack of training, and no involvement by the nurses in the process of change, were found to be the cause behind the negative response. It was demonstrated that the nurses would be able to share decision making with clients using credible, timely, and accurate information. The study showed that for future developments, early and regular involvement of potential users was expected. | - Early and regular user involvement is important  
- Sufficient training is needed                                                                               |
| Kamadjeu et al. (30) | Primary care       | This study proved that users generally showed good acceptance of the system. Some of the key issues identified during the development and implementation of the system were: user involvement, the choice of appropriate terminology, pre-existing data collection culture, and leadership issues. | - User involvement was a success factor  
- Appropriate terminology to be used by users is needed  
- Leadership has an important role in success                                                                    |
| Littlejohns et al. (31) | Primary care, hospital | The result of this study showed failure in implementation. It was found that the reasons behind the failure were: not taking into consideration the professional and social cultures of healthcare organizations, difference of opinion between the expectations of the active users, there was no recognition of the importance of training of users and computer staff, underestimation of the complexity of routine clinical and managerial processes, the producer and commissioner, a long system implementation process. | - Take into consideration the different expectations of the commissioner, developer, and users  
- Take into account healthcare cultures  
- Failure to look for and learn from lessons from past projects                                                   |
| Vreeman et al. (32) | Hospital           | This study found that the barriers for implementing a computerized patient record system include challenges with behaviour modification, equipment inadequacy, and training. They also reported key success factors, including end-user participation, | - User participation in design and implementation is a factor for success  
- Adequate training and workflow analysis before implementation is needed                                        |
<table>
<thead>
<tr>
<th>Studies</th>
<th>Settings</th>
<th>Findings</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lapointe et al. (33)</td>
<td>Hospital</td>
<td>The results of this study showed that most staff members were either neutral or enthusiastic about the Clinical Information System (CIS) implementations. The level of resistance varied and became sufficiently large to lead to major disruptions and system withdrawal. They also determined the importance of the implementers and users in determining the outcomes of a CIS.</td>
<td>The importance of the roles played by implementers and users in determining the outcomes of system implementation</td>
</tr>
<tr>
<td>Paré et al. (34)</td>
<td>Hospital</td>
<td>The findings of this study reveal that, in order to foster physicians’ adoption of a computerized patient record system, the following factors are needed: A) encourage and cultivate a positive attitude toward the new system. B) psychological ownership of the system is positively associated with physicians’ perceptions of system utility and user friendliness. C) through users’ active involvement and participation, physicians feel they have greater influence on the development process.</td>
<td>- Users’ active involvement and participation foster their adoption of the system - Positive perception of the technology’s usefulness is crucial - Users’ adoption of the system is associated with system user friendliness</td>
</tr>
<tr>
<td>Müller-Jensen et al. (35)</td>
<td>Hospital</td>
<td>This study made several important findings. For example, during ward rounds, the physicians experienced a significant improvement in their work. The study proved that it is possible to configure the content of an electronic health record so as to significantly improve the clinician’s overview of the patient’s current status in different clinical situations during the clinical process, based on the clinician’s actual needs.</td>
<td>- The content and management of a participatory design process will be incorporated in future electronic health record projects.</td>
</tr>
<tr>
<td>Törnvall et al. (36)</td>
<td>Primary care</td>
<td>In this study, the district nurses found several advantages for the structured form in the nursing record, including facilitation of documentation, clinical decision-making, and evaluation of care. However, it is the nurses’ opinion that there is need for support and education to strengthen the district nurses’ professional identity. It was also shown that involvement from the heads of the primary health care center and the manufactures of the electronic patient record system is necessary, in cooperation with the district nurses, to render the nursing documentation suitable for future use in the evaluation and development of care.</td>
<td>- Need for support and education to strengthen the district nurses’ professional identity - Involvement by the heads of the center, the users, and the manufactures of the Electronic Patient Record (EPR) system is necessary</td>
</tr>
<tr>
<td>Scott et al. (37)</td>
<td>Primary care, hospital</td>
<td>This study showed that the adoption of the electronic medical record system was flawed and detached from the local environment, disapproving its implementation. Four major processes were identified in the implementation of EMR: selection, design and early testing, adaptation for widespread use, and adaptation of the organization to the new electronic medical records. Regarding the selection of the electronic medical record system, only one respondent expressed approval of the system choice, while the rest found it problematic and reported dissatisfaction with it. The resistance observed towards the design and testing was thought to be due to inadequate early testing, substantial software problems, and inadequate IT knowledge. Difficulties were also noticed regarding the adoption of the electronic medical records due to differences over priorities of the users and software problems. The results also showed that the system reduced clinical productivity due to the extra work involved in processing laboratory result reports, entries orders and navigating through the system.</td>
<td>- Take into consideration users’ need in the system development phase - Need for support and education to users - Take into consideration organizational factors</td>
</tr>
<tr>
<td>Malato et al. (38)</td>
<td>Hospital</td>
<td>The findings fell into five challenging issues for the end-user and the healthcare administration: end-user perceptions of inadequate training, negative experiences with implementation, and perceived deficiencies in quality of technology, perceptions of lack of participatory design, and an ensuing circumvention of the new system.</td>
<td>- Apply participatory approach in system design - User support through training</td>
</tr>
</tbody>
</table>
What do end-users say is missing?

The consequences of this trial seem to indicate that medical informaticians must learn from the past in order to communicate and adapt their own practices according to experience and research. The results demonstrate the lack of some important aspects in the implementation of a new system:

1) User involvement in the design and implementation phase of the system would provide better insight into existing workflows and work practices. From the users’ point of view, to better integrate the new system, involving users in the system design and implementation phase would have avoided some human-computer interaction problems as well as training problems.

2) In fact, perhaps the most important question is concerned with the way in which the implementation process can be adapted to different professional needs. It is clear that different staff members in the hierarchy of a healthcare organization demand different interfaces and modules. For example, taking into consideration and differentiating the nurses’ needs from the physicians’ needs, when developing the system, become important in order to achieve a good adoption rate for the new system. To understand how the implementation of a new system can be adapted to a large variety of user needs and expectations seems to be an important step towards facilitating user adoption of ICPRs.

3) Staff complained that the training provided was not based on their need.

4) The changes made to the current work routine due to the new system were also a source of resistance against the adoption of the system.

5) Additionally, the results show that one of the important factors influencing the outcome of health IT-based systems implementation is the design of the user-training programs. Users’ inability to effectively interact with the new system caused secondary issues, leading to opinion that the health IT-based systems were not appropriately designed.

Discussion

Our findings show that evaluations of health IT-based systems seem to have not been successfully implemented in a number of cases, and have failed to demonstrate improvements in patient care, operating costs savings, and improvements in productivity. This study shows that, in fact, we have not learned from the past.

Weng et al. (2006), in their paper aiming to apply participatory design for the creation of a highly usable collaborative protocol writing system for a national cancer clinical trial protocol authoring organization, show that after applying participatory design, users liked the system design. The users also liked the fact that some features of the system could speed up the reviewing process, the interoperability between the new system and the old tools, the integration, and the “all-in-one” design. The system’s usability was demonstrated in their results. Their study concluded that they could reduce usability errors of healthcare information systems with concrete approaches to participatory design (39).

Therefore, before draining further the scarce resources available to healthcare organizations, it is necessary to develop strategies that will involve the end-users of the new system and ask for their assistance in accelerating the organizational change as well as work routines. In their paper, Vimarlund, Eriksson, and Timpka (2001) discuss the economic impacts from the use of participatory design for the development of public-health information systems. They argue for the need of a method that minimizes the information asymmetry in the development process, thus avoiding market failures. They conclude that participatory design is beneficial for the public-health organizations involved in information system development processes by avoiding the risk of rejection of the final system, while increasing knowledge, decreasing information asymmetry, updating habits and work routines.
in a “natural manner”, avoiding unnecessary sunk-costs, and contributing to the efficient use of human and economic resources (40).

The challenges we have described first and foremost highlight a lack of collaborative approaches in the implementation of HISs. For instance, many of the most significant failures emerge from the absence of feedback from end users to developers during the development process. The logical conclusion is to increase the involvement of end users in the implementation process in order to provide:

- Designers with new and better ways of gaining an understanding of users’ everyday work practices.
- Users with the opportunity to redesign and evaluate their work routines by applying experience obtained during the participation process
- Users with the opportunity to appreciate the HIS as a useful tool in their everyday working life.

In fact, what is needed is the use of an implementation methodology that minimizes the information asymmetry in the implementation process, and allows the accumulation of the knowledge needed to prevent rejection of the final system.

To compare with another field, a participatory design approach has recently been used in individual education, particularly with an increasing interest in experiential- and learner-centered education; users take responsibility for their own learning. In other words, there has been some recognition that learners as well as teachers should participate in deciding what and how the teachers are expected to teach (12).

Failure in information systems implementation may originate from different sources, such as development failures and information system usage problems. User participation, better modeling tools, and better management of the developing project are means that could be used to reduce these risks in information systems projects. When user participation was emphasized during the design process, this showed to be a factor for a successful design and resulted in positive user satisfaction (11).

**Social and human capitals**

Using a participatory design approach in health IT-based systems design and implementation allows for a group of people with a common interest to exchange ideas and experiences within the group. It seems that during their collaboration and exchange of experiences and skills, the staff members widen their knowledge, or, in other words, increase the human capital. The participatory design approach, through the involvement of end-users in the design and implementation processes, provides them the opportunity to learn how to work and collaborate with one another in a new and common subject. They learn how to use each other’s ideas and viewpoints to improve the quality of work. Moreover, by exchanging their experiences with each other, they obtain new experiences. In a broader context, they might employ this new experience and knowledge in their future work in the organization. It can be claimed that in this way the human capital is increased.

From another perspective, despite the importance of information and communication technologies for knowledge sharing, it has been known for a long time that the creation and diffusion of knowledge within organizations relies on the development of social networks, a shared system of meanings, and cultivation of shared values and norms. As part of this emphasis on the social aspects of knowledge creation and sharing, considerable attention has recently been directed toward the role played by social capital (41, 42).

In fact, users may not have the time to exchange information during the ordinary work life, yet this kind of involvement brings the users together and creates the possibility for building a network. From a social capital perspective, the individuals’ involvement in the development process can become more important because such a system allows on-the-job IT-training as well as the creation of a new social network, thereby incorporating new
knowledge and skills or improving old ones, while working. This harbors both, present and future organizational benefits, from the experience and specialization of employees (18).

The benefits of social capital has, however, been identified and considered as “optimal” when it is created by individuals who learn to trust one another so that they are able to make credible commitments and rely on generalized forms of reciprocity, contributing to an increase in a society’s productive potential. In our case, social capital is obtained through mutual relationships that are used to accomplish different joint activities.

Like financial capital, social capital is a resource that helps to sustain a community and encourages collaboration and cooperation between members of groups for their mutual benefits (42). To summarize, the introduction of a new health information systems in which all users are involved and where networks are used for collaboration at different levels of the healthcare setting environment, are examples of such assets. Further, the networks are usually groups of people with common interests. We believe there is a particular need to involve users and other experts in the early concept phase, where important decisions are made. It can be concluded that using a participatory design approach to involve end-users in the design of their own system or program, benefit both the individual and the organization. It can be concluded that the application of a participatory design approach in health IT-based systems may be fruitful for the organization. The involvement of the end-users in the design and implementation process will allow for the collection of their ideas, thus benefitting the developing system as well as the development of the work routines. In addition, a feeling of ownership could be reached through their participation in the design and implementation of the system.

References


Gender Dimensions of Information Communication Technologies for Development

Arzak KHAN

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Abstract: Internet use and attitudes to Internet in Pakistan cities were surveyed by interviews in the three cities of Karachi, Lahore, and Quetta. Clear differences between the sexes were observed. It is concluded that if the current trends remain prevalent where access to ICT is limited to an exclusive class and the majority of women remain unable to use it, then we will be unable to reap the benefits of ICTs for the social and economic development of women.

Introduction
Knowledge is a fundamental driver of increased productivity and global progress. It is a determining factor to innovation, invention, wealth creation, and development. ICT provides a foundation for building up and applying knowledge. In the last few decades international attention has focused more sharply on poverty reduction using ICT as a tool for socioeconomic development. The potential of ICT helping in reducing poverty, healthcare delivery, trade facilitation, distance education, spreading knowledge and nurturing economic growth in developed and developing country has been widely recognized by intelligentsia and development organizations around the world. A socially inclusive knowledge society empowers all members of society to create, receive, share, and use information and knowledge for their economic, social, cultural, and political development (Huyer et al 2007).

Women’s welfare and economic empowerment is a vital issue for women’s development around the globe. Women are central to economic and social development in any community. They make a major contribution to the socio-economic growth in both developing and developed countries. Majority of the population of women are in rural areas in most developing regions, which are traditionally poorer and have less access to social support services and infrastructure (DAW 2008). Similarly a woman’s potential to exploit ICT as a tool for empowerment and development is constrained in different ways. Factors such as connection cost, literacy, economic conditions, age and culture are some of the constraints that have particularly disadvantaged women in developing countries to improve their income generation, health gain information, awareness concerning their public and private rights, and improve the wellbeing of themselves and their families (McCann & McCloskey 2003). While the potential of ICT for stimulating economic growth, socioeconomic development and effective governance is well recognized, the benefits of ICT have been unevenly distributed within and between countries. This has created a digital divide in resources and capabilities to access and effectively utilize ICT for development that exist within and between countries, regions, sectors, and socio-economic groups. The digital divide is often characterized by low levels of access to technologies. Poverty, illiteracy, lack of computer literacy, and language
barriers are among the factors impeding access to ICT infrastructure, especially in developing countries (DAW 2005). The majority of women in the developing world are on the wrong side of the digital and knowledge divide; the capacity of women to engage in the knowledge society is grossly under-developed and under-utilized. Women are at risk of becoming increasingly marginalized in the knowledge society, where much more than access to and use of information technology is at stake. In the knowledge society they need access not only to new technologies but also to education, entrepreneurship, and employment opportunities, as well as the ability to participate fully in knowledge-based activities. Given the gendered barriers, challenges and roles that determine their ability to participate on an equal basis with men, the gender divide in knowledge societies cannot be expected to improve automatically with economic growth. Rather, specific actions and interventions are needed (Huyer & Hafkin 2006). Unless this gender divide is specifically addressed, there is a risk that ICT may exacerbate existing inequalities between women and men and create new forms of inequality in current era of globalization and development (Nathan et al. 2004). Globalization and development are not gender neutral process and as Brooks (2006) has indicated the changes brought by globalization and development have presented opportunities and risks for women. Globalization also highlights the multiple roles of women across the globe and their highly differentiated levels of opportunity and inequality. Women are leading highly diverse lives and some are far more privileged than others and the nature of privilege and inequality has differences and similarities across developing countries societies.

To address the widening issue of gender divide within developing countries, much more needs to be known about women’s rates of participation in the various facets of the knowledge society and about the opportunities and barriers they encounter (Shrum et al. 2006). To be able to make policies to address the gender divide issue, policy makers and planners need data, statistics, and indicators in order to benchmark the progress. Without information about different access levels, trends in education levels and the availability along with adoption and usage of ICT real national targets cannot be set. Solutions cannot be targeted without identifying where the inequalities are and how they are manifested. If policy makers are to understand the potential for building socially inclusive and economically vibrant knowledge societies, they will need to know the capability of all groups in their countries to contribute to and develop it.

The aim and data sources of the present study

The aim of the present paper is to examine and highlight the digital divide constraints based on various socio-economic demographics. The paper will analyze how education, economic conditions, age, culture, and modernization influence the adoption and usage of broadband internet technology among women in Pakistan.

The research methodology for the collection of data is built around random household sampling. The interviewer administered a questionnaire survey which is considered to be the most appropriate methodology to collect representative data of the target population within a limited time frame and resources. This questionnaire-based method also addresses the issue of reliability of information by reducing and eliminating differences in the way in which questions are asked (Cornford & Smithson, 1996) and facilitates the collection of data within a short period of time from the majority of respondents (Walliman 2001). Different factors such as social, economic, ethnic, cultural, modernization, access to ICTs and availability of research staff were considered before selecting the three research locations, i.e. Karachi, Lahore and Quetta. The overall sample of 672 individuals interviewed for the survey was equally collected from these three cities. Table 1 gives a breakdown of samples collected from each city. The primary objective was to get a diverse sample from all regions of Pakistan. The sample cities hold different ethnicity, language, cultural values, and socio-economic status of their populations, along with different stages of modernization and access to ICTs (Table 2 – for each city, the author can provide detailed maps showing in which districts the data were collected; please use the author’s email address for such requests).
Table 1: Respondents Breakdown by Location

<table>
<thead>
<tr>
<th>City</th>
<th>Respondents</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karachi</td>
<td>233</td>
<td>196</td>
<td>35</td>
</tr>
<tr>
<td>Lahore</td>
<td>214</td>
<td>101</td>
<td>113</td>
</tr>
<tr>
<td>Quetta</td>
<td>225</td>
<td>173</td>
<td>52</td>
</tr>
<tr>
<td>TOTAL</td>
<td>672</td>
<td>471</td>
<td>201</td>
</tr>
</tbody>
</table>

Table 2: Characteristics of the Research Locations

<table>
<thead>
<tr>
<th>City</th>
<th>Population</th>
<th>Fixed/Mobile/TV</th>
<th>Internet</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karachi</td>
<td>20 Million</td>
<td>Yes</td>
<td>Yes</td>
<td>Financial Hub of Pakistan and highly developed.</td>
</tr>
<tr>
<td>Lahore</td>
<td>10 Million</td>
<td>Yes</td>
<td>Yes</td>
<td>Mostly Agriculture/ Very good Education Sector/ Business.</td>
</tr>
<tr>
<td>Quetta</td>
<td>2.4 Million</td>
<td>Yes</td>
<td>Yes</td>
<td>Least developed of the three regions. Still very cultural in traditions.</td>
</tr>
</tbody>
</table>

Analysis of the data collected in this study will help us to identify women’s participation in adoption and usage of broadband internet technology in Pakistan. This will also help the policy makers for ICT in the country and in the international community to focus on more women-centric development policies for the adoption and promotion of ICT in developing countries to realize the millennium development goals and bridge the digital divide between the two genders.

Pattern of Use

Documenting the extent to which women access and use different kinds of ICT is only a first step in understanding the gender digital divide. To take the analysis one step further, we examine whether women use new technologies differently than men. In so doing, we also examine statistical evidence related to the frequency, intensity and diversity of use, as well as the types and reasons of such use. Obviously, women do not behave as a monolithic group, and factors such as class, socioeconomic status, education and age will also affect use. Additionally, use depends on the various roles and multiple responsibilities women take on in their daily lives. The available statistical data from the empirical research conducted in Pakistan by the author unveil some potentially important issues worthy of understanding in the context of the gender digital divide.

Access to Internet

An interesting dimension of the gender divide is from where women access and use internet. Research data from three cities of Pakistan (Karachi, Lahore, and Quetta) (Figure 1.1) support some interesting observations. It is apparent from the figure that home is the most prominent location of internet access for both men and women. Access to internet from work was not far behind for men compared to women who have less access to internet at work. Interestingly access to internet from learning centers (university, colleges, etc) for women was relatively very high compared to men whereas internet café was the least preferred place to access the internet from for women owing to the cultural environment.
Men prefer to use internet cafes more to access internet compared to women. This most probably reflects the culture of Pakistan which is very reserved and women are very unlikely to go to cafes to access internet.

The percentage of women using internet at a learning center is higher compared to men. The gender divide is very prominent for work locations. This may be partially explained by the relatively low rate of female labour force participation and nature of job. This concurs with the relatively low proportion of women who are economically active in the country. The underrepresentation of women in the labour force is also particularly large in parts of Asia. Pakistan, for example has only 14% of women in the economically active population, compared to 70% of men.
Intensity of Internet Use

In addition to the gaps in access to and use of ICTs, gender gaps appear to extend to the frequency of use as seen from Figure 1.2. Women fall short of men in the amount of time spent online in accessing the internet. The gender gap is again evident with women spending less time than men online.

**Heavy Internet Users**: Household individuals who are spending more than 10-50+ hours a week online are categorized as heavy internet users.

**Low Internet Users**: Household individuals who are spending 1-10 hours a week online are categorized as low internet users.

Figure 1.3 shows some very interesting observations on the digital divide that exists within cities as well. Karachi being the economic hub of Pakistan with higher income level, better education and employment opportunities for women and relatively more modernized and influenced by western cultures has more women spending time online compared to Lahore and Quetta. It is evident that the digital divide between same gender exits within countries and cities as well.
Advantages and Disadvantages of Being Connected

The internet is indeed a wonderful and amazing addition in our lives. Internet has great potential and lot to offer to both men and women however, like every single innovation in science and technology, internet has its own advantages and disadvantages. To better understand the important aspect of the gender divide is to understand how women see the advantages and disadvantages of internet in their lives.

Figure 1.4 shows information to be probably the biggest advantage internet is offering to the women in Pakistan. The internet is a virtual treasure trove of information. Any kind of information on any topic under the sun is available on the internet which can be utilized for personal, social and economic development and well being of families especially women. Communication and entertainment is another popular reason why many people prefer to surf the Internet. In fact, media of internet has become quite successful in trapping multifaceted entertainment factor. Downloading games, watching videos, visiting chat rooms sending email and communicating with your loved ones thousands of miles away has become very easy. Online services were the least thought advantage of internet. Recently government and business enterprises have started deploying online services. Since there is no widespread availability of online services most respondent didn’t thought it was that greater advantage.

![Figure 1.4 Female Perspective on Advantages of Internet](image)

As for disadvantages, virus threat is considered to be the biggest disadvantage of the internet nearly: 72% of the women interviewed thought that followed by pornography at 37% as the second biggest disadvantage of the internet. Theft of personal information e.g. credit card details/online banking was viewed by 12.9% of the individual as a disadvantage of internet. Some women thought internet disadvantages included health hazards since most of the younger generation are sitting in front of their computers all day and depriving themselves of healthy life by not exercising. Individuals were also of the view that internet is addictive and once you are online you don’t want to go offline and thought of this addiction to be its disadvantage as well.

Figure 1.6 shows how most women behave online with an internet connection. The behavior and usage of internet connection also depends upon several socio demographic and economic characteristics such as income, age, education, employment, geographical location, and family type, ethnicity type of connection to access internet from and the amount of time spent online.
Awareness of Latest Technology

We must also be aware of the continuous evolution of the very technologies that gave rise to the digital divide in the first place. ICTs and their applications do not stand still, feeding an ever evolving digital divide. By implication, the gender divide too becomes a moving target. Figure 1.7 shows information about the awareness about broadband technology in both genders. It is evident from the figure that 73.5% of women who were interviewed in the survey didn’t knew about broadband technology compared to around 50% of men.
Women experience low rates of access to latest information and communications technologies for a number of reasons, ranging from socio-cultural attitudes and preconceptions about women’s lack of understanding of technology. The low rate of literacy and education is also a major contributing factor to the lack of awareness about latest broadband technology. Having no information about broadband services is also a reason why most of the women are not adopting broadband internet.

Figure 1.8 also depicts this fact where 51.2% of women interviewed in the survey had no information or awareness about broadband internet. 21.5% believed that broadband internet services were too expensive and it was generally felt it didn’t had the returns both economically and socially for them to invest any kind of amount for broadband internet services. 15.1% of women had no access to computer facilities which left them no reason to adopt broadband internet. Only 8.1% of women in the survey had access to broadband internet services at home compared to 38% of men who had access to broadband services. It is imperative for creation of a knowledge society that governments along with all the involved stakeholders cooperate and form effective strategies and polices to address the reason for not adopting broadband internet.

The cost of service is important because it influences or even determines whether people will subscribe to a certain service or not. Although ICT infrastructure is crucial in providing the basic prerequisite for citizens to access and use ICTs, the services offered have to be affordable and within its people’s means. In most of the developing world policy discussions and analysis often tend to be focused on the availability of infrastructure, whereas the power
of price “cost” is often not sufficiently addressed. Cost is a crucial factor in creating a vibrant Information Society.

From figure 1.9 it is clearly visible that majority of the women 69.1% are unable to afford more that 2-5US$ for a broadband connection. Only 21.1% are able to afford 6-9US$ for being connected. Table 3 shows the connectivity costs for a standard broadband connection in major cities of Pakistan.

![Figure 1.9 How Much Can They Pay](image)

### Table 3: Connectivity Costs

<table>
<thead>
<tr>
<th>Technology</th>
<th>Hookup Cost</th>
<th>Monthly Cost</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Broadband (DSL)</td>
<td>Free Installation/CPE</td>
<td>19US$</td>
<td>Major Cities</td>
</tr>
<tr>
<td>WiMAX</td>
<td>50US$ for CPE</td>
<td>25US$</td>
<td>Major Cities</td>
</tr>
<tr>
<td>Wireless GSM</td>
<td>90US$ for CPE</td>
<td>22.5US$</td>
<td>Major Cities</td>
</tr>
<tr>
<td>Cable</td>
<td>25US$ for CPE</td>
<td>20US$</td>
<td>Major Cities</td>
</tr>
</tbody>
</table>

If we compare both Figure 1.9 with Table 3 we can see clearly that services offered are not affordable by majority of the women. Unless and until there are drastic policy measures taken very soon the majority of women will remain disconnected from the knowledge economy and the gender digital divide will keep widening up. If women are not active participants and contributors to the shaping of the knowledge society, they risk exclusion from the opportunities it presents, and, further, they may be in danger of losing the gains they have made in the last 20 years.

In most countries women make up a substantial portion of the lowest income groups and play a central role in the well-being of their family and community. The value of information to women is enormous, and affects all aspects of their lives. Thus their participation in the knowledge economy is vital for improved economic or social well-being in the community. ICT possess the potential to improve the lives of female, and to contribute to social development in developing countries. They have proved useful in: health care delivery; distance education; enhancing rural productivity through access to market information and access to finance; promoting empowerment and participation in national and international policy processes and improving service delivery by governments. According to UNCTAD Information Economy Report (2006) ICT can effectively contribute to achievement of the Millennium Development Goals, particularly those related to income poverty reduction,
education, health, environment and gender equity through creating economic opportunities & contributing to poverty reduction. Women are more likely to become part of a knowledge society if they have the full opportunity to become socially and economically active members of society. If the current trends remain prevalent where access to ICT is limited to an exclusive class and the majority of women remain unable to use it, then we will be unable to reap the benefits of ICTs for the social and economic development of women. The digital gender gap between and within countries will remain constant. In order to address the gender dimensions of ICT, women centric policies need to be developed with the focus on gender based issues/constraints to women’s use of ICT. Special attention needs to be drawn towards issues such as literacy level, ICT education and training for women, lowering the connectivity cost to increase participation of women in the knowledge economy, measuring the adoption and usage of different kinds of ICT and change in cultural attitude and practices towards women in knowledge society.

Finally, only if we are able to address some of these socio-economic issues and provide the opportunity to women to participate in the knowledge society, will we be fully able to realize the benefits of information communication technologies for development and poverty reduction.

References
M4D Applications in Agriculture: Some Developments and Perspectives in India

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Abstract: Result-oriented mobile services based on farmers' needs and with farmers’ rural, socio-economic constraints should be a major challenge for the research community (technical, social and domain-specific). This challenge provided to business enterprises to re-look into their business strategies to tailor their services and applications for rural communities, since it is attributing for its promising future market. Bridging the development divide, mobile phone based pilot projects is providing a platform to test the catalytic growth of rural India. In this paper we are looking at Indian pilot projects, which are targeted specifically to farmers through their applications and services by customised innovative business processes. We are also looking at how effective these projects are in providing the information services to enhance crop yields and improve productivity over a wide range of crops by taking effective decisions at right time by farmers under different agro climatic zones. We investigate the current status based on their strengths, weaknesses and proposed future outcomes for the benefit of farmers.

1. Introduction

The rural growth is usually more efficient than the urban growth as agriculture growth is more efficient than manufacturing growth. If we can see the pattern of effectiveness of poverty reduction impact (Danielson A, 2001) based on the corrective measures are undertaken by governments, donor agencies, and the project implementing both commercial and social organisations. The indirect impacts create the long term effect on development mechanisms. With quality information at rural people fingertips available in local languages, rural people can make improved decisions, from what crop to plant, to whom to sell it for better profit, and benefitting from health and disease prevention advice. The technology (specially mobiles) is making this to happen since mobiles position themselves as a personal entity for each individual; they occupy room in their pockets along with money, keys etc (Rao and Sonar, 2009). The present pilot mobile-based projects are targeting the farmer-specific applications because in rural India about 60 per cent of the population depends on agriculture. This provides an opportunity to research community to study about pilots for socio-economic development of rural areas. By this study we are looking at how effective these projects are in providing the services to farmers to enhance their crop yields and in turn improve their productivity over a wide range of crops under different agro climatic zones.

By analysing the pilots to know about the delivery of user needs as services at affordable cost in their local languages wherever they are. Analysis concentrated especially on the socio-economic aspects of the outcomes arising out of projects implementation rather than looking at immediate profits as returns. Keeping in mind the farmers’ interest and benefits, the effectiveness of the outcomes are tried to measure in terms of development perspective. These projects fall under farm expert advice on crops, market price information, crop finance, weather and other information sharing areas. Some of the pilots are at R&D stage and other are at field testing stage at various small geographic zones of India.
1.1 Organisation of paper

The rest of the paper is organised as follows: Section 2 reviews the agriculture domain and its need for the technology intervention specific through mobile based networks. The status of ICT use in India is discussed, in particular cell phones across urban and rural areas. Section 3 discusses the mobile-based Indian pilot projects versus development agenda. Here we looked upon how these projects are designed to cater the valid development steps. Section 4 discusses the results of the pilot projects with respect to farmers needs. Section 5 goes for discussion on outcomes. Section 6 sees on related work. Section 7 offers conclusion.

2 Mobile ICT intervention for rural areas

The rural society is a tradition-bound community in which their traditions, cultures and religion play a strong role in influencing their behaviour. This shows on their adoption of technology, incremental change in work more clearly. The transfer of knowledge and information is the basic need to change traditional society to knowledge society. ICT interventions are the need of the hour in agriculture because the socio-economic growth of rural areas mostly depends on agriculture.

2.1 Need of ICT intervention for Agriculture

Agriculture’s role in economic development is essential because the majority of the people in developing countries make their living from the land they cultivate. To improve the welfare of the majority of people is by helping to rise, (i) the farmer’s productivity goes up by growing food and cash crops, (ii) the prices they receive for those crops produced. Although, it is a necessary condition, raising agricultural output is not by itself sufficient to achieve an increase in rural welfare (Perkins et al, 2007). The rural and often remote nature of the community makes it unbelievably difficult for farmers, in particular those with small holdings. Farmers inadequate information on current and local market prices or timely need-based information (advisory or time tested) which help them decide in harvesting the crops. Reduced crop yields, increased wastage (unwanted and ill-advised inputs), and slowed down market efficiency, severely impacting farmer’s earnings. Exploitation by middlemen and further losses marginalize small, marginal farmers and village artisans (Misra Satyan, 2005). The implications on the rural people are three-fold: loss of income, time and opportunity.

Information is critical to the social and economic activities that comprise the development process. Telecommunications, as a means of sharing information, is not simply a connection between people, but a link in the chain of the development process itself (Hudson, 1995). To bridge the information gap between the farmers and to build productive and competitive market, different ICT interventions providing to make rural and under-developed markets become efficient and productive. Agriculture extension and farmer-outreach programs are facing major challenges (Rammritham, 2006) – cost-effective outreach, solutions tailored to needs of individual farmers and an image that is farmer-friendly. Mobile technologies have created new channels to communicate in a well-located way.

2.2 Mobile diffusion in India

During the present decade, India has seen an exponential growth in the telecom sector, particularly in wireless. The pace of growth of telecom diffusion in urban India has been very high as compared to rural India. See Figure 1 for a diagramme plotting the quarterly additions of Rural and Urban Wireless Subscribers 2006-2008.

The total number of mobile phone subscribers as on September 2008 are 353 million of which only 29% is the contribution from rural India which constitutes about nearly 70% of the total population of the country. Rural teledensity has just reached the two-digit level whereas the urban teledensity is moving towards the three-digit level. As on September 2008,
the rural teledensity is at 12.72 per cent whereas urban teledensity is placed at 72.47 per cent. However, the percentage of rural mobile coverage has reached 69 per cent as on March 2008. Out of 593731 inhabited villages, the service providers had reported that 407112 villages have already been provided with mobile coverage (TRAI-1, 2008).

2.3 Agro-information services through Mobiles

The internet and mobile networks have the potential to provide agro-information services that are (i) affordable, (ii) relevant (timely and customized), (iii) searchable and (iv) up-to-date (Ramamritham et al, 2004). The mobile phone technology provides electronic capabilities (battery, processing power, memory) (Helen Nierinck, 2008), reach to customer, privacy, and anytime/anywhere, physical contact-less services (Helen Nierinck, 2008). Keeping these factors and needs of Indian farmers in mind, various applications and services provided by pilot projects for dissemination of agricultural information over ICT (Mobile clients and Terminals backend) networks in India. Operators are developing consumer friendly value added applications which can be accessed by just two-three key strokes. Complicated applications will be discouraged by rural communities. Hence, operators are selling handsets with pre-embedded value added services (VAS) content in the mobile devices. These measures are driving customized applications and services in India. The projects are being taken up at locations which are more favourable to test and implement the technology, applications and services (Rao and Sonar, 2008).

3. Development agenda Vs Projects Objectives

Development occurs when people are increasingly able to take control of their lives - means the decision power for the development challenged citizens had a chance to come out of bottom of the pyramid (Danielson A, 2001). The mobile based pilot projects listed in Table 1 for farmers had objectives which benefit farmers and the pilot projects. These objectives suits for markets (input, output) prices, availability status, agricultural extension and finally financial support systems.

The pilots considered are providing farmer needs-based services through innovative applications with creative business plans – aAqua mini (Bahuman and Kirthi, 2007), Fisher Friend (Thomas, 2007), mKrishi (Robert Horvath, 2008), Reuters Market Light (RML) (Amit Mehra, 2007), IFFCO Kisan Sanchar (Awasthi, 2008), Life Tools (Nokia report: 2008) and
Table 1: The Indian pilot projects in agriculture domain

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Project Name</th>
<th>Implementers</th>
<th>Project Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>aAqua Mini</td>
<td>Agrocom (on GSM,CDMA)</td>
<td>Commercial trails</td>
</tr>
<tr>
<td>2.</td>
<td>mKrishi</td>
<td>TCS-Qualcomm (on GSM)</td>
<td>Field trails</td>
</tr>
<tr>
<td>4.</td>
<td>Reuters Market Light (RML)</td>
<td>Reuter-MSAMB-India Post (on GSM, CDMA)</td>
<td>Commercial trails</td>
</tr>
<tr>
<td>5.</td>
<td>IFFCO Kisan Sanchar (IKSL)</td>
<td>IFFCO-Airtel (on GSM)</td>
<td>Field trails</td>
</tr>
<tr>
<td>6.</td>
<td>Life Tools</td>
<td>Nokia + Idea + RML (on GSM)</td>
<td>Field trails</td>
</tr>
<tr>
<td>7.</td>
<td>CERES</td>
<td>CERES + Reliance (on CDMA)</td>
<td>Commercial trails</td>
</tr>
</tbody>
</table>

CERES (Anurag et al, 2008). (The details of the pilot projects and their services are placed at Annex-A for detailed reading). The project stage, profile and other analysis is based on the available sources of project documents, press statements, presentations and other published open documents.

The company background, presented in Table 2, provides indirectly that elimination of donor agency need, long term project execution, scale up issues and sustainability of projects are well attained. Stakeholders need projects to sustain based on their objectives and usefulness.

4. Results

The pilot projects have similar objectives but the business models of them are different based on their subjective planning and implementation. There are challenges – affordability is an important one for many potential users. The missing issues are the confidence on the system, delivery mechanism through affordable mobile device, localised content in local language, and easy to adopt.

The customers of the future change and their demands will also change. Projects plan for the change in advance, based on farmers taste and expected demands. This made them look into “flexible business model” rather than complex and rigid of the past. The major observation is that the pilots’ capabilities to serve the farmers needs, but not through in any single project till date. The combined outcomes are arrived through SWOT analysis on mKrishi, RML, aAqua mini and eSagu to see how effective these pilots are as per farmers needs.

The following bullets summarize the functions of the pilots’ services:
- The objective of all of the pilots is to provide latest information about crop practices, input and output market information to farmers to gain good price for their produce.
- The strength in providing better back-end crop information system management including crop yields per farmer handled by agri-experts to provide advice.
Table 2: Pilots Company profiles

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Company Name</th>
<th>Location</th>
<th>Type of Company</th>
<th>Sector Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Multinational corp.</td>
<td>Large national Company</td>
</tr>
<tr>
<td>aAqua Mini</td>
<td>Agrocom</td>
<td>Indian</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>mKrishi</td>
<td>TCS</td>
<td>Indian</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Qualcomm</td>
<td>UK</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Fisher Friend</td>
<td>Astute Sys</td>
<td>Indian</td>
<td>x</td>
<td></td>
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<tr>
<td></td>
<td>TATA Tele</td>
<td>Indian</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Qualcomm</td>
<td>UK</td>
<td>x</td>
<td>x</td>
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<tr>
<td></td>
<td>SF</td>
<td>Indian</td>
<td>x</td>
<td></td>
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<tr>
<td>Reuters Market Light (RML)</td>
<td>Reuters</td>
<td>UK</td>
<td>x</td>
<td>x</td>
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<tr>
<td></td>
<td>MSAMB</td>
<td>Indian</td>
<td>x</td>
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<td></td>
<td>India Post</td>
<td>Indian</td>
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<tr>
<td>IFFCO Kisan Sanchar (IKSL)</td>
<td>IFFCO</td>
<td>Indian</td>
<td>x</td>
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<tr>
<td></td>
<td>Airtel</td>
<td>Indian</td>
<td>x</td>
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<tr>
<td>Life Tools</td>
<td>Nokia</td>
<td>Finland</td>
<td>x</td>
<td>x</td>
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<tr>
<td></td>
<td>Idea cellular</td>
<td>Indian</td>
<td>x</td>
<td></td>
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<tr>
<td>CERES</td>
<td>CERES</td>
<td>Indian</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reliance Infocom</td>
<td>Indian</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

SME – Small and Medium Enterprise; SF – Swaminathan Foundation; MSAMB – Maharashtra State Agriculture Marketing Board;

- The back-end information management supported by automated data collection of weather, crop information, soil analysis details through remote sensory system.
- Expert (Agriculture/Extension official) can contact farmer on his mobile handset at any time to get further crop details as per expected needs.
- Remote operation capability at front-end and automated multimedia-based back-end information management system provides farmers better crop management guidance from experts.
- The tools and features providing to expert(s) to study state of the crop are quite advanced and guide farmer(s) critically at needy time on demand at any time.
- Equated Monthly Instalments (EMI) with differed payment-based (proposed) business model suits best to Indian farmer conditions and situations of rural India.
- Providing market (input and output) information (price and stock) through SMS to farmers timely in local language daily.
5. Discussion and inference

The observed features of the pilots looked collectively the networked pilots can provide an excellent services and applications to farmers at affordable cost. By looking at the above issues, it is inferred that:

- The projects initiators are multinational or major communication companies of India provide stable business with extended reach and penetration across the country.
- Transparency and feedback system mechanisms are to be adopted into the system to enhance pilot’s sustainability.
- Add on feature of expert interaction through mobile with back-end information management system can provide any-time any-where service mechanism.
- Network-independent operations can give users better service confidence, else some parts of the market segments get negative feedback which leads to negative growth.
- By providing consolidated weekly market price trends reports (by email, snail mail or on their mobiles itself) on crops, provide farmers a chance to plan better.
- The growth can expect with signal spread across villages with affordable price tags.
- Network independent hybrid model is the best bet for any project that wants to deliver the services to rural consumers.

The potential of any project is looked from an end user perspective, such are: (i) ease of use, (ii) effectiveness of the system, (iii) meeting of the needs of the users, and (iv) cost effectiveness of applications. One of the stepping stones to achieve the goals is utilising technology to make services reach the unreached in development process.

6. Related work

Wireless technologies have created an unprecedented opportunity for rural consumers in the developing world to solve their communication and information problems in an instantaneous, interactive and customized way. SeedNet (Michael D., 2006) in Philippine aims to enable seed growers and seed centres to link together and share a real-time seed stock inventory system. DrumNet (Jonathan Campagne, 2006) network in Kenya managed by an ‘info-broker’, usually from the community, who collects and shares information, helps form farmer groups, and arranges buy and sell deals. Agrı Hotline-121 (Michael D., 2006) in China assists farmers in marketing activities using ICT tools.

7. Conclusion

The information is a key ingredient for sustainable human development – hence, for further human development access to it is a prerequisite for the needy communities. Once these pilots are time tested with common objectives, then they become hope for the entire developing countries. The process has just started but the impact remains to be seen. Future work would aim at deriving suitable methodology to test the impact of these pilot projects on rural people’s socio-economic development. Outcomes are looked upon from a farmers’ needs perspective rather than from an economic sustainability angle. The mobile-based projects are offering a method for bridging the gaps between development professionals and rural communities by initiating interaction among them: a dialogue, new alliance, inter-personal networks, and cross-sector links between organisations and communities. This can articulate bottom-up mechanism, sharing domain-specific and localised knowledge in local language. The benefits observed through the pilot projects include increased efficiency in the use of development resources, less duplication activates, reduced communication costs. More in-depth studies of mobile-based services can provide better understanding of how effectively and efficiently mobiles can act as a tool for development to solve farmers’ needs.
References


Helen Nierinck (2006), “Mobile proximity payments: Scenario for market development”, Analysis Mason, Table 1.1.


Annex-A  Features of the Mobile-based Pilot Projects

These projects become a source of knowledge and information transfer for farmers from agriculture scientists/extension functionaries and markets through mobile ICT medium. The critical thing is the understanding of the content or knowledge by farmers based on their literacy status. Even they are providing in local language of local content through text mode, the literacy challenged farmer is facing the real hurdle to utilise the opportunity for his/her benefit. Understanding the nature of agriculture is fundamental to understanding development.

i. aAqua Mini – offers real-time decision-support tools (aAQUA) to progressive farmers and organizations supporting progressive farming (Bahuman and Kirthi, 2007). This is the
project working on Revenue generating business model. The services provided by this project broadly to farmers include, localised – remote crop diagnostic solution; audio prompted guide application (in English/Marathi/Hindi); remote crop & land properties based disease diagnostics; micro-weather info (temp, cloud cover, precipitation); SMS enabled register & query mechanism; online poll for registered users; spam, search, rank features; and service is available on GSM and CDMA networks.

ii. Fisher friend – This is the project working on Private NGO Partnership based Revenue generating business model in Tamilnadu state at present (Thomas, 2007). It is under field testing as pilot project to test its sustainability with Indian fishing communities. The services provided by this project broadly to fishing farmers include, weather forecasting; market price; sea wave heights information; fish shoals location information (via satellite scan data); and service is available on CDMA (pre-configured handset) networks only, but not on GSM networks.

iii. mKrishi – allows the farmer to make a query in a local language from a mobile phone and receive personalised advice or relevant information on the same in local language (Robert Horvath, 2008). This is the project working on Private Partnership based Revenue generating business model in Maharastra and Uttar Pradesh states at present. It is under field testing to test its sustainability with Indian farmers needs. The services provided by this project broadly to farmers include, crop disease diagnosis; sensors based remote land & crop property recording (grape, cotton, soybean and potato); micro-weather Information (temp, cloud cover, precipitation) and service is available on CDMA networks only, but not on GSM networks.

iv. Reuters Market Light (RML) – offers Indian farmers up-to-date, local and customised commodity pricing information, news and weather updates (Amit Mehra, 2007). This is the project working on Public Private Partnership (PPP) revenue generating business model in Maharastra and Punjab states. The broad services provided to farmers include: localised commodity pricing (Onion, Cotton, Soybean, Pulses, Pomegranate et al.); weather updates; news (agriculture & general). Service is available on GSM networks only, but not on CDMA networks.

v. IFFCO Kisan Sanchar (IKSL) – would be focusing on communication requirement of rural India through mobile operator Airtel, besides providing agriculture related information to enable villagers take right farming decisions (Awasthi, 2008). This is the project working on Public-Private-NGO partnership based revenue generating business model across major states covering in two stages. The services provided by this project broadly to farmers include, telecom products and services of Airtel; free daily voice updates on VAS platform (mandi prices, farming techniques, weather forecasts and fertilizer availability) and dedicated helpline for farmers to answer their queries.

vi. Life Tools – having a range of agriculture, education and entertainment services designed especially for the consumers in small towns and rural areas of the emerging markets (Nokia report: 2008). This is the project going to work on Private Partnership based revenue generating business model in India. The services provided specifically to farmers include: information on seeds, fertilizers, pesticides, weather (temperature, rainfall, wind conditions), and prices in English, Marathi and Hindi, and prevailing market prices, education service in dual language display option.

vii. CERES – aims to assist farmers by providing exhaustive information covering all areas in timely and customized manner to meet specific local needs to increase the overall productivity of agricultural practices (Anurag at al., 2008). This is the project working on Private Partnership based revenue generating business model in Gujarat state covering 78 villages in Vadodara district. The services provided specifically to farmers include: information on seeds, fertilizers, pesticides, disease and farming input; market prices and weather (micro-climatic, rain/storms, temperature, humidity, precipitation, wind speed) on weekly and monthly basis.
IPIID – the International Network for Postgraduate students in ICT4D (http://www.humanit.org/PID/) – arranged a course in the academic year 2008/2009 as a response to several requests from IPIID members for an introduction to development theories and for guidance in how to define the ‘D’ in the expression ICT4D.

The aim of the course “Development, Globalisation and ICT (Defining the ‘D’ in ICT4D) – 7.5 ECTS” was thus to provide a sound foundation for advanced studies in ICT4D. The course was designed to provide insights into some of the most influential development theories. The selection was made on the basis of classical bodies of ideas with strong impact on recent notions of development.

Devoted scholars from relevant fields were invited to lecture and comment on student papers. Postgraduate students from all over the world registered for the course. Video recording was used to provide access to the lectures for those who could not attend. In the event we have eleven completed papers, which are presented in this report.