The Quest for Development – Reviewing ICT4D Research

by

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Abstract: Electronic Government (eGovernment) has attracted considerable investment over many years but there is little agreement on how to measure success. This is problematic as eGovernment has ambitions beyond project success – in particular in developing countries it is expected to yield development. There is also both an academic and a practitioner debate on eGovernment assessment in which social and political values are included, meaning an external perspective is beginning to take root. This paper reports a literature study of ICT4D (Information and communications technologies for development) journals, where the focus on development should be the greatest. Our study investigates to what degree case study research on eGovernment and ICT4D focuses on ICT's role for development in developing countries or regions. This means that we examine to what degree evaluations of ICT4D-projects focus development assessment**.** We find that while a majority of the papers include social factors only a few take an external, i.e. development, perspective. It seems that instead of focusing research on the critical factors in developing countries today, on which we need new knowledge, the majority of the research is repeating studies done in the industrialized world in the past twenty years to which we cannot expect to find neither the solution to the problems in the developing world nor radically new findings to enrich the body of research already existing. This said, the few papers that did have a development focus introduced challenging issues, research on which holds promises of relevance to target countries as well as improving the knowledge base of IS research.

Keywords: ICT4D, development, developing countries, literature review, e-government

1. INTRODUCTION

Electronic Government (eGovernment) is an area, for research and practice alike, that is attracting considerably interest as a way to improve government and governance in terms of more efficient operations, better services and improved democracy (e.g., EU 2004). This usually involves three main actors: government administrations, users of government services, i.e. citizens and companies, and the political system (Gore 1993; OECD 2003; UN 2004; Grant and Chau 2005; Grönlund and Horan 2005).

eGovernment can be measured from within or outside the government organization. The definition above includes both internal and external outcomes, where better democracy is an external measure including citizens, and ICT (Information and Communication Technologies) as a means for organizational change is an internal measure as it relates to a more efficient organization. In industrialized countries the government structure for catering for such changes is what is in academia called New Public Management (NPM), which in brief is a business style incentive model (Boston, Martin et al. 1996; Hughes 2003). Within this model, eGovernment is not a project but a government management tool for implementing efficiency within government organizations. Hence, outcomes are typically measured with an internal focus on department efficiency (as opposed to whole-system efficiency or effectiveness). In developing countries, the picture is typically different. Here, eGovernment is often seen as an impetus for external change, development, with government as the central actor. An example is the World Bank definition of eGovernment:

> E-Government refers to the use by government agencies of information technologies that have the ability to *transform relations* with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: *better delivery* of government services to citizens, *improved interactions* with business and industry, *citizen empowerment* through access to information, or more *efficient government management*. The resulting benefits can be *less corruption, increased transparency*, *greater convenience*, *revenue growth, and/or cost reductions.* (World Bank 2004) [Italics by the authors]

This definition adds some more specific outcomes, such as citizen convenience, reduced corruption and economic gains where development is the goal and technology the means. Finally, the OECD defines eGovernment as 'The use of ICTs, and particularly the Internet, as a tool to achieve better government' (OECD 2003, p 23). "Better government" is also clearly a development view as "better" must be measured from outside, in terms of what good it does for (civil) society. In summary, definitions from major actors clearly take a development perspective to eGovernment.

Also among governments, the interest in eGovernment has shifted over time, from a focus on technology towards assessing effects. This is conspicuously captured by the changing titles in the annual Accenture eGovernment reports. In the early 2000s focus was clearly internal signaled by titles such as 'Realising the Vision'(Accenture 2002). In the last few years titles reflect a more external perspective; 'Building the Trust' (Accenture 2006) and 'Delivering on the Promise' (Accenture 2007) reflecting a citizen view.

Given this outlook this study sets out to review research literature concerning case studies on eGovernment in developing and transitional countries. This paper assesses whether the focus on evaluation of case studies (e.g., developing and implementing a new ICT, or evaluating an already implemented system) in eGovernment and ICT4D reflect this, relatively new, wider focus on social and economical development or if the focus still is mainly assessing ICT systems and projects. More specifically, we examine to what extent assessments of case studies on eGovernment ICT4D-projects focus on development issues, such as poverty reduction, increased capabilities for people, economic growth etc, rather than project issues such as meeting deadlines and budgets or technical issues such as usability.

The paper is designed as follows. Section 2 reviews eGovernment measurements and discusses their relation to development. Section 3 describes the method used for this literature study. Section 4 presents the findings and in Section 5 we present our conclusions.

2. E-GOVERNMENT AND DEVELOPMENT

As the acronym ICT4D refers to ICT for *development*, research within this area is concerned with how ICT can contribute to different socio-economical development objectives such as income growth, health education, government service delivery or micro-finance (Prakash and De' 2007). The focus on development issues is also evident in the "InfoDev" (World Bank

2008) initiative, which started in 1995 for the purpose of 'exploring innovative uses of information and communication technologies (ICTs) as tools of poverty reduction and sustainable development'.

Following the above, in the following we generally use the term development to mean 'a positive change in people's life situations'. Such changes may be of social, economic, or political nature. Focusing on development means a focus on how developing and using ICTs can contribute to such changes. Because governments often play a dominant role in many developing countries, ICT investments in government, today typically called eGovernment, are supposed to play a major role for development, by spurring investment in private sector, by building a domestic ICT industry, by harnessing schools with computers to improve education, etc. The anticipated effect on development is most often quite obvious and explicitly stated as a goal, and ICT is seen as the tool of choice.

Sen (2001) focuses on the importance of capabilities for development. He argues that governments should be measured against the concrete capabilities of their citizens. To the extent that citizens are given increased capabilities to social and democratic improvement development has taken place. However, the means and the incentives to see that through are largely missing. While eGovernment has attracted quite some investment over many years there is little agreement on how to measure success. So far most measurements have concerned production side variables, such as amount of ICT used and dissemination, and ignored social effects such as reorganisation of government and better services or capabilities to citizens. For the purpose of easy measurability, researchers typically use more narrow definitions such as 'electronic services from government', sometimes even more narrow like 'what is there on national web sites' (e.g., West 2003; West 2003; Accenture 2004; Accenture 2005; DGIM 2005; West 2005). Heek's (2003) much referred evaluations of eGovernment are also confined to project success defined very narrowly: was a system implemented or not? This is problematic, as the above definitions show that eGovernment has ambitions far beyond system implementation, and that rather the focus is on development.

This narrow focus is also in sharp contrast to the academic discussion about eGovernment value creation, to which there is also a corresponding practitioner debate. This typically distinguishes among three types of benefits, and indeed costs – direct financial, direct non-financial, and

indirect ones – each of which should also be considered from the perspective of stakeholders, i.e. at least citizens and governments, as Table 1 illustrates (Lau 2006).

Table 1: eGovernment assessment factors (adapted from Lau 2006)

	Governments	**Non-government stakeholders**
Direct financial costs and benefits	Reducing costs, increasing value of services	Better services, reduced administrative burden
Direct non-financial costs and benefits	Synergies across delivery channels, sharing and reusing data resources	Increased user satisfaction, increasing privacy
Indirect costs and benefits	'Good governance'; supporting legitimacy, supporting growth	

Good governance is often discussed in terms of social capital. Creation of 'social capital', as well as the potential loss of it, is one of the foci in the 'indirect costs and benefits'. While the term social capital is unambiguously defined and clearly not easily measured, there is a literature in the IS field which clearly addresses the social context in a structured way, and also to some extent the specific situation in developing countries (Walsham and Sahay 2006; Avgerou and McGrath 2007).

Most of the 'development' issues fall within the non-government stakeholders' column, and clearly this is where defining good measurements are the most difficult. Moreover, it is hard to motivate government agencies to make investments where the benefits appear outside the own organization. The prevailing basic paradigm for governance in the industrialized world, the NPM model, does not include provisions for general development (Boston, Martin et al. 1996; Hughes 2003). It is a business model for internal efficiency. Replacing current bureaucratic government models in developing countries with NPM will not solve the problem of a need for a focus on development. There is clearly a need for rethinking the governance models used in the industrialized world before importing them wholesale to developing countries. Such discussions have already been on the agenda in for example the EU where evaluation models have been

designed to acknowledge the multiple goals of eGovernment, i.e. both economic and social. One example is the eGEP model (eGovernment Unit 2006).

Against this background of high ambitions but yet little success so far in measuring success, it would be expected that researchers in eGovernment with a focus on ICT in developing countries should focus on finding such measures that would make governments and projects better equipped to contribute to development. Researchers should, one might hope, take the lead towards the yet unexplored. Therefore, this paper investigates to what degree case study research on eGovernment and ICT4D focuses on ICT's role for development in developing countries or regions. More specifically, we examine to what degree evaluations of ICT4D-projects focus development assessments, such as poverty reduction, economic growth etc, rather than project assessment. For that purpose we have developed a model to distinguish between the key dimensions following from the review above; between technical and social perspectives, and between internal and external perspectives. Table 2 displays our model with some example issues pertaining to each quadrant.

Table 2: The focus of assessment in ICT4D research

	Internal focus	**External focus**
Technology focus	Internal technological issues such as system features, and technology use within organizations.	Dissemination of technology 'Naïve' digital divide issues such as access to broadband
Social focus	Organizational and individual social issues such as system development process, organizational effects of ICT, and user capabilities and acceptance.	Life situation changes for people, e.g. employability, poverty reduction, emancipation. Social digital divide issues, such as people's actual use of ICT and underlying reasons.

An *internal focus* considers technical factors such as functionality of technical systems but also social factors such as user satisfaction, work organization, and systems development processes.

An internal focus emphasis changes within or between organizations. An *external focus* considers technical factors such as general public access to technology but also social factors such as improved life situations. An external focus puts much emphasis on the citizen and his or her capabilities. Traditionally in internally focused IS research criteria like user satisfaction and descriptions of systems development processes have been used to investigate human and organizational factors of the workplace. Following the above definitions of development an external focus would similarly include changes in peoples' – citizens', users', farmers', families', etc. – life situations. One example from the industrialized world would be administrative burden, which is now used in the Netherlands to assess the costs and benefits of eGovernment systems. In developing countries one would expect other issues to be more salient, such as availability of market information to farmers to improve their chances to improve income or rural government service access point to make government more accessible.

3. RESEARCH METHOD

This paper reports a literature study on eGovernment case studies in developing and transitional countries. We have chosen to focus on case studies as they are most likely to take a development perspective. A case study examines the phenomenon in a natural setting, employ multiple methods of data collection, where no experimental control or manipulation is used (Benbasat, Goldstein et al. 1987; Yin 1994). This would typically be the case for development. Attempts to measure development quantitatively are problematic because of the difficulty to see direct causal relations between eGovernment systems and economic and social development, and because concepts pertaining to development are typically not distinctly. Qualitative case studies also giver better details to investigate the notion of development. Another choice we made was to focus on journals dedicated to ICT4D. While clearly articles concerned with development appear in many other research outlets it would be expected that, given the above definitions, journals with that focus would be particularly concerned to provide just what we are looking for, a dedicated focus on development. Our sample, hence, does not claim to cover the whole population of ICT4D publications but rather the spearhead. We would expect to find these journals more development-oriented than the average journal. This is by the same argument that we would expect journals that have the term Electronic Government in their name would include a larger proportion of eGovernment articles than the whole set of journals.

Following this argument, all articles in the journal 'Information technology for development' between the years 2004-2008 and all articles in the 'Electronic journal on information systems in developing countries' between the years 2004-2008 were included. We focus on the issues from 2004 and onwards as we want to explore the current view on ICT4D in eGovernment-research.

The total number of articles in these two journals for the above periods was 74 for 'Information technology for development' and 105 for the 'Electronic journal on information systems in developing countries'. As we focus on case studies, we examined them by the following inclusion criteria: empirically based case studies involving ICT use within the field of eGovernment. This means that we include papers dealing with introduction, use, or evaluation of ICT for the public sector. Exclusion criteria were: theoretical (e.g., Thompson 2005) or conceptual papers (e.g., Kodakanchi, Kuofie et al. 2006), surveys (e.g., Bautista and Quimbo 2007) as well as empirical studies in the private sector (e.g., Sanzogni, Whungsuriya et al. 2008). We have also excluded papers analyzing policies or strategies (e.g., Ciborra and Navarra 2005), or pure literature reviews (e.g., Dada 2006) as our focus is on the role of ICT as such. This sample gave us a total of 42 papers. Each paper in this set was categorized based on the classification outlined in Table 2. The analysis was done in two steps. A first analysis classified each article in terms of its external, internal, social, or technological focus. The article's focus was decided according to what was done in the article, not exclusively according to the purpose outlined as the research question(s). This meant that the analysis, results, discussions, and conclusion sections were carefully read and compared to the research question(s). It should also be noted that some papers have more than one focus, and that it is quite common that technical papers also include social aspects (e.g., Davis and Fonseca 2006; Sahay and Walsham 2006), which is illustrated in Table 3. One paper (Özkan, Baykal et al. 2006) was omitted from the analysis since it was difficult assess its focus.

A second analysis focused on identifying themes within each quadrant of the basic research model (Table 3). By re-reading the articles' contents, each theme was further categorized into sub-areas describing the content of the theme in the reviewed articles. Beyond the interest in charting the field generally this analysis was done to see if somehow development issues were 'hidden' in an internally focused research. For example, following the above definitions and history, it could be that developing a system includes profound changes for external people. A technical system concerned with land registration in India clearly involves a public side which

may not at the development stage be much discussed with citizens but will surely have profound effects once in operation. Still, if design and implementation discussions are very much concerned with the future use, the capability creation for farmers and so on, it might be that there is indeed a focus on development visible (see e.g., the use of GIS for registering land deprivation in Ethiopia as described by Aynekulu, Wubneh et al. 2006).

4. ASSESSING ELECTRONIC GOVERNMENT ICT4D RESEARCH

4.1 ICT4D – Studies with a social and internal focus

As Table 3 shows, there is a clear majority of papers with an internal focus. In the 'Internal' column we find 29 papers, while in the 'External' column we find only 10. In both columns there is a strong social focus, and there is only one pure technology paper (Reinsalu 2006), while the social papers are as many as 35. In the Internal/Social quadrant there are 25 papers and in the External/Social there are 9, to be compared with one and zero for Internal/Technical and External/Technical respectively. Six papers (Davis and Fonseca 2006; Gerhan and Mutula 2007) (Sahay and Walsham 2006) (Huerta and Sandoval-Almazán 2007) (Cocchiglia 2004; Aynekulu, Wubneh et al. 2006) assess both technical and social aspects. There are three overlaps between internal and external (Cocchiglia 2004; Aynekulu, Wubneh et al. 2006; Byrne and Sahay 2007). The dividing line among the papers surveyed here is hence not technical/social but internal/external. The conclusion is that research is usually guided by an interest in either external or internal aspects, where technology is viewed as a complement or perquisite to understand social concerns in relation to ICT. This clearly shows how the researcher's view on what constitutes development together with his or her view of the role of ICT is guiding research within ICT4D.

Table 3: Papers plotted on the dimensions internal-external and technology-social

	Internal focus	**External focus**	**Internal & External focus**	**No. of papers**
Technology focus	Reinsalu (2006) = 1 paper	0 paper	0 paper	1 paper
Social focus	Alvarez (2004) Chilundo & Aanestad (2004) (Chilundo and Sahay 2005) Duvail et el (2006) Fenenga & Jagaer (2007) Furuholt and Örvik (2006) Gunawardema and Brown (2007) Hussein, Karim et al (2007) Ifinedo (2006) Jacucci et al (2006) Joia (2007) Kimaro (2006) Kimaro & Nhampossa (2005) Kimaro & Sahay (2007) Koti & Weiner (2006) Krishna & Walsham (2005)	Al-Saggaf (2004) Madon (2004) Mans (2006) Nabwire and Nyabenge (2006) Puri & Sahay (2007) Soriano (2007) Sreekumar (2007) Standing, Sims et al.(2004)	Byrne & Sahay (2007)	35 papers

	Mosse & Sahay (2005) Muhren, van Den Eede et al.(2008) Puri (2006) Shrestha (2006) Silva (2007) Smith, Madon et al.(2008) Uwadia, Ifinedo et a(2006) de Vreede & Mgaya (2006) de Vries (2006) = 25 papers	= 9 papers	= 1 paper	
Technology & Social focus	Davis & Foneseca (2006) Gerhan and Mutula (2007) Sahay & Walsham (2006) = 3 papers	Huerta & Sandoval-Almazán (2007) = 1 paper	Aynekulu et al (2006) Cocchiglia (2004) = 2 papers	6 papers
No. of papers	29 papers	10 papers	3 papers	42 papers

4.2 The different themes of ICT4D-research

Table 4 summarizes the themes we found within each category (in Appendix A all articles are laid out by the different themes). The articles with an internal-technology focus on research aspects related to the technical system. This includes issues such as functionality and use of the application, the organization's access to technology and the role of the application in the systems development process. Articles related to the internal-social category are concerned with individual or organizational social aspects such as the system development process, implementation and adoption, issues related to the user, the role of ICT for learning, integration issues, and organizational development. The external-technology papers analyze research on citizens' access to, and use of, technology, while the external-social papers are devoted to development issues such as ICT's role in changing and improving the life situation of people. This involves research on the digital divide, the use of ICT for developing rural areas and poverty reduction, ICT for sustainable land development, and social effects for the individual as well as for the community as a whole.

Table 4: Themes within the different focus areas

	Internal focus	**External focus**
Technology focus	Functionality and use of the application Organizational access to technology The role of application in the systems development process	Citizen's access to technology
Social focus	The systems development process Implementation and adoption The user Learning Integration of ICTs Organizational development	Digital divide Rural development Poverty reduction Sustainable land development Social effects (e.g., crime prevention)

4.3 From project to development: Research within ICT4D

This section outlines the results from the literature study by describing the themes we developed in the analysis, together with some illustrative examples from the literature study.

4.3.1 Internal-technology: The application

The focus for the internal-technology quadrant is the technical system. This includes issues such as functionality and use of the application, the organization's access to technology and the role of the application in the systems development process.

Aynekulu, Wubneh et al. (2006) assess the **functionality and use** of a participatory geographic system (PGIS) for collecting and presenting information of land use processes in Tigray, Ethiopia. 'This paper describes the application of participatory geographic information systems (PGIS) tools and approaches in Tigray.' The result of the paper is a description of how PGIS is used for producing maps comparing land use 50 years ago with today.

Organizational access to technology in relation to the problems of scaling is investigated in a study by Sahay and Walsham (2006). This involves the implementation of a health information system (HIS) within the primary health sector in India, where they investigate the content as well as processes of scaling. The research question is: 'one, to develop a deeper understanding of the problem of scale, and two, to apply this understanding to an empirical setting'. The authors discuss 'scaling up the complexity', involving aspects such as geography, numbers, technical systems, data and databases, etc. In their conclusions they point out that scaling is about 'all or nothing', which means that the systems involved are almost useless unless they cover the whole state.

Davis and Fonseca (2006) analyze the success factors of a Geographic Information System (GIS) in Belo Horizonte, Brazil, where **the role of the application in the systems development process,** was seen as an important factor. They argue that the application-driven nature of the project was one explanation to its success. 'Although the project had an early focus on data and standards, the fact that it was application-driven made it successful.'

4.3.2 Internal-social: The user and the organization

Articles in this category deal with social issues related to ICT use and development ranging from the individual to aspects related to organization and management within or between organizations. The articles research questions related to organizational factors such as the system development process, the implementation process, integration issues, and organizational development. The user-centred papers analyze issues such as user characteristics and skills or user resistance and acceptance. There were also some papers concerning the role of ICT for learning.

Most papers investigate issues related to **the systems development process.** This can include issues such as design principles, project management or descriptions of the process of developing a system. Muhren, van Den Eede et al. (2008), for instance, present a case study of a 'dynamic emergency response management information systems' in the Democratic Republic of Congo from the perspective of 'sense-making'. By interviewing people from the UN, NGOs, donor

organizations and the Red Cross as well as other organizations, they analyze and propose a set of design principles to be used for designing ICTs for the preparing phase of an emergency.

On the internal-social dimension, it is also common to reflect on the **process of implementing and adapting an ICT.** Alvarez (2004), for instance, analyzed the role implementing IT systems play for enabling decentralization within the public health sector in Ecuador. The objective of his paper is 'to illustrative a substantive process theory of IS implementation, situated within the context of a case study'. The author concludes that the implementation process reinforced established patterns of organization and planning, instead of changing them, which would make decentralization possible. The case study shows that implementation projects should take into account the motivations and interests of intervening key stakeholders, and local end-users, in order to minimize conflicts of interests.

Systems integration is another common theme in the investigated articles. Chilundo and Aanestad (2004) focus on integration of information systems (computerized as well as manual) for reporting information about malaria, tuberculosis, and HIV/AIDS in Mozambique. This is done with the following research question: 'how the diverse reporting and monitoring systems using the multiple separate programmes should be approached'. The authors describe the applications involved in reporting information, the data flows, and how data is collected and used as a way to understand the different information systems' rationalities and properties. The descriptions outlined in the paper are subsequently used as a basis for suggesting how to integrate the malaria, tuberculosis, and HIV/AIDS information systems.

A third theme is **organizational development**, which the study by Fenenga and Jager (2007) investigates. The research question of their paper is to describe how a health management information system (HMIS) can be used for organizational development, and the paper 'reports on the experiences of the HMIS programme of the Uganda Catholic Medical Bureau (UCMB)'. The authors argue that the HMIS provides information as a support to better decision making and informed actions, aspects that enable organizational development.

As ICT becomes a more common tool in developing countries, research concerning the users and their capabilities are an important study area. A number of articles investigate **users' skills and capacity**. An example is Kimaro (2006) who in his article on a HIS (health information system) in Tanzania argues for the importance of strengthening human capacity in order to develop

sustainable ICTs. The paper 'sheds light on the ICT capability and information skill gaps that exist in the health sector of Tanzania, and suggest ways in which human capacity can be improved to support use of ICT based HIS'. He suggests that experts working with ICT4D should aim at developing local ICT and information skills and knowledge, as well as organize teacher training.

Joia (2007) investigates **user resistance** in development and use of an electronic link between the Brazilian Central Bank and Brazilian Federal State. The research question is: 'From the case study presented, what must the concerns with respect to the correct implementation of Government to Government processes between two public agencies in Brazil be?' He summarizes his paper with three important areas to consider when embarking on a government-to-government ICT project: security, organizational environment, and training, and argues that 'user-, system-, and interaction-based approaches to resistance to information systems are all intertwined.'

Another issue that was analyzed in the investigated papers were **the effects of ICT on learning**. One such example is a study by de Vreede and Mgaya (2006), that investigates the use of Group Support Systems (GSS) for anonymous and parallel communication and learning in higher education in Tanzania. 'We applied GSS in a number of case situations in Tanzanian higher education to explore how this technology can support collaborative learning processes.' The authors conclude, for instance, that the GSS was beneficial for encouraging interaction between students and teachers, making it easier to discuss sensitive topics more openly. They argue that the costs for setting up GSS in a developing country could be too high, and that it probably would be necessary to use outside funding. Another important issue is the training of the teachers, who need to be able use this type of technology in order to develop a good learning situation.

4.3.3 External-technology: Citizens' access to, and use of, technology

The papers on the technology-external dimension report citizens' access to, and use of, technology.

Citizen's access to use of technology is investigated in a study concerning telecentres, located in Estado de México, Mexico, reported by (Huerta and Sandoval-Almazán (2007). Their research question concerns technical, as well as social issues. The technical part of the research question

is: 'What are the activities telecenter users are performing on the Internet? What are the problems they deal with when using the Internet?' They have investigated how technical barriers, such as Internet access speed influence users' behaviours, as well as analyzed what activities users carry out when using the Internet. They conclude that the most common activities are using e-mail, searching for information, and playing. One recommendation is to develop graphical interfaces using simple language.

A study that investigates **citizen's access to and use of technology** is described by Cocchiglia (2004), who evaluates 'the potential development impact' of Regional Information Centres (RICs) 'on the recipient communities' in Azerbaijan. The evaluation is done in terms of e.g., 'equipments and services provided', and, 'relevance and accessibility'. The article concludes with a number of local requirements and specifics to be used as guidance for future development of RICs in Azerbaijan.

4.3.4 External-social: Community development

Studies in this area have a development agenda, investigating the role ICT plays in improving the life situation of the citizens. This involves research on the digital divide, the use of ICT for developing rural areas and poverty reduction, ICT for sustainable land development, and social effects for the individual as well as for the community as a whole.

Digital divide issues are investigated in a study by Huerta and Sandoval-Almazán (2007). Their article 'explores the problems that Internet users of marginalized populations face at telecenters' from the perspective of digital illiteracy. Their findings were based on interviews with telecentre users and operators in Community Learning Centers (CCA), situated in Estado de Mexico, Mexico. They conclude that users have problems navigating on the Internet, problems with analyzing and synthesizing retrieved information, and problems assessing the quality of the information.

One example of a paper that deals with **rural development** is Byrne and Sahay (2007) who describe and evaluate the use of participatory design (PD) when developing a community-based health IS in South Africa. They examine 'the role of participation within the domains of information system (IS) research and social development' and specifically 'how the process of IS development, and the IS itself, can reflect and shape the status of social development.' They investigate how PD should be expanded to embrace social development motivation, and argue

that important community decisions are taken collectively in African countries, which makes PD an appropriate approach to systems development. They discuss reconceptualization of PD in terms of going beyond end-user participation and also involve the community affected by the application, developing a multilevel and multisectoral approach, and finally enhancing reflective practices and capacity to participate.

An example of research that focuses ICT's effect for **poverty reduction** is Soriano (2007) who investigates farmers' use of telecenters in poor rural villages in China. The purpose of the paper is to explore 'the direct and indirect role that telecentres play in facilitating the poor's access to more livelihood resources and assents and in influencing the adoption of diverse livelihood strategies'. He concludes that the use of Internet for accessing e.g., agricultural information such as market prices or educational resources has the potential to improve poor's possibility to improve their lives and reduce poverty.

Another theme is the use of ICT for **sustainable land development**. One such example is Nabwire and Nyabenge (2006) who based on a case on watershed management 'reviews how integrated natural resource intervention strategies and community resource mapping were complemented to realize sustainable development action planning in SW Uganda'. The purpose of comunity resource mapping is to improve citiens's access to information and increase transparency in local governance. The authors conclude that the process of community resource mapping made it possible for farmers to come one step closer to solving boundary conflicts and improving property rights as information about individual plots and community resources were laid out.

The **social effects** of ICT is illustrated by a study by Al-Saggaf (2004) that analyzes the role ICT plays in improving citizens' lives. He examines the effects of online communities in Saudia Arabia on social interactions in 'the real world'. He focuses social issues such as the effect of using Internet on e.g., self-confidence, shyness or awarness about the world outside the Internet users' homes. He summarizes his paper with some positive as well as negative effects of using Internet. The partipants in his study increased their self-confidence, become more open-minded, and less inhibited by, and better appreciate the opposite gender. On the negative effects, he found that participants became less shy, neglected family commitments, and become confused about some aspects about culture and religion.

5. CONCLUSIONS AND DISCUSSION

The purpose of this paper was to examine to what degree research on e-government ICT4D projects focus on development issues, such as poverty reduction, economic growth etc, rather than on more limited than project issues. We chose journals explicitly targeting ICT4D as the basis for the study as we expected to find them more specifically targeting development issues than general IS journals.

Our analysis scheme included the categories internal/technical, internal/social, external/technical and external/social. In this scheme, development issues fall within the fourth category, external/social.

We found that a vast majority of the papers include social factors. Only one paper deals exclusively with technical issues while 35 have their main thrust on social issues, where the focus is on internal issues. Only 13 out of 42 papers take an external, i.e. development, perspective, and only 10 do that as their main theme. Most of the papers are internal/social and deal with issues typically investigated over decades in the industrialized world, such as usability, systems development process, and implementation issues. An overall conclusion is therefore that instead of focusing research on the critical factors in developing countries today, on which we need new knowledge, the majority of the research is repeating studies done in the industrialized world in the past twenty years to which we cannot expect to find either the solution to the problems in the developing world nor radically new findings to enrich the body of research already existing. Usability has more to do with human cognition and experience than native language or socioeconomic factors. The widespread use of mobile phones in developing countries is one piece of evidence to that. It is the same phones that are used in Bangladesh as in Finland, and even the poorest farmers with little or no education can – and do – use them; usefulness is more critical than usability. Uptake of technology in everyday life, on the other hand, is quite different in rural Bangladesh or Rwanda than in urban USA or Sweden. From a development perspective the latter kind of issues should hence be most in focus as it is (amount of) uptake and (kind of) use that determines what development there will be, if any; What new government services? What new businesses? What new social patterns develop? Why these and not others?

This said, the few papers that did have a development focus introduced challenging issues, research on which holds promises of relevance to target countries as well as improving the knowledge base of IS research. We have pointed to a few examples here, including how the traditional PD approaches should be expanded to take into account the social development motivation (Byrne and Sahay 2007) and how integrated natural resource intervention strategies and community resource mapping are complemented to realize sustainable development action planning in SW Uganda (Nabwire and Nyabenge 2006). These papers, and the other few we found in this category, investigate the use of ICT as a tool for development issues such as poverty reduction, emancipation, or economic growth, i.e. as way to increase individual, and collective, agency. Research on eGovernment in the context of ICT4D should focus more on such issues as this is where research could both help developing countries and expand its own knowledge base in general in the field. We simply do not have answers to such questions, and more researchers should look for those answers instead of doing more-of-the-same-research just relocated to other countries. What is also largely missing in the sample of papers we found is longitudinal studies. This is another important kind of research necessary; development takes time, and research should acknowledge that and study also the path to development, not just development itself. Many so called evaluations stop at the time of a technical system being built. This is rather where development starts.

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APPENDIX A - The different themes and papers

Internal focus			**External focus**		
Tech-nology focus	*Functionality and use of the application*	(Aynekulu, Wubneh et al. 2006), (Duvail, Hamerlynck et al. 2006), (Gerhan and Mutula 2007), (Reinsalu 2006)	(Cocchiglia 2004; Huerta and Sandoval-Almazán 2007)	*Citizen's access to, and use of, technology*	**Tech-nology focus**
	Organizational access to technology	(Sahay and Walsham 2006)			
	The role of application in the systems development process	(Davis and Fonseca 2006)			
Social focus	*The systems development process*	PGIS (Shrestha 2006) Participatory design (Byrne and Sahay 2007), (Koti and Weiner 2006), (Uwadia, Ifinedo et al. 2006) The role of knowledge (Davis and Fonseca 2006) Design principles (Muhren, van Den	Digital illiteracy (Huerta and Sandoval-Almazán 2007) Digital divide for SMEs and urban areas (Standing, Sims et al. 2004)	*Digital divide*	**Social focus**

		Eede et al. 2008) Project management (Gunawardema and Brown 2007) Organization of telecentres (Cocchiglia 2004)			
	The implementation process	Implementation of standardized IS (Jacucci, Shaw et al. 2006) IS implementation (Alvarez 2004) Failure of IT implementation and adoption (Furuholt and Örvik 2006), The role of identity (Mosse and Byrne 2005) Communication practices (Mosse and Sundeep 2005) Organizational factors for successful IS adoption (Hussein, Karim et al. 2007) Stakeholders' shaping	Participatory Design (Byrne and Sahay 2007), (Puri and Sahay 2007)	*Rural development*	

		of the IS implementation process (Puri 2006) Implementation of SDI Silva, 2007 #35} Implementation for ICT4D (Krishna and Walsham 2005)			
	The user	User capabilities, skills and characteristics (Kimaro 2006), (Sahay and Walsham 2006) User acceptance and resistance (Joia 2007) (Ifinedo 2006)	The role of telecentres (Soriano 2007)	*Poverty reduction*	
	Learning	The effects of GSS (Group Support Systems) (de Vreede and Mgaya 2006) The role of ICT on learning (Gerhan and Mutula 2007)	Community resource mapping (Nabwire and Nyabenge 2006) Information about land degradation (Aynekulu, Wubneh et al. 2006)	*Sustainable land developmen t*	
	Integration of ICTs	Integration (Chilundo and Aanestad 2004) (Smith, Madon et al.	People's use of applications (Madon 2004)	*Social effects*	

		2008) Sustainability and local shaping (Kimaro and Nhampossa 2005) Translation of information (Chilundo and Sahay 2005) The Institutional context (Kimaro and Sahay 2007)	The social effects of on-line communties (Al-Saggaf 2004) Crime prevention (Mans 2006) Social power and networking in rural areas (Sreekumar 2007)		
	Organizational development	Organizational effects of HMIS (Fenenga and Jager 2007) Effects of SDIs (de Vries 2006)			