



Participative ICT4D and living lab research: The case study of a mobile social media application in a rural Tanzanian University setting



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ABSTRACT

The ICT4D field has for a long time focussed on rather unilinear processes of technology transfer. This focus was initially caused by the short time frames in which key actors in the ICT4D field had to operate. Different authors acknowledge that the ICT4D ideology has to be reconceptualised, recognizing the fact that technology is not neutral and that context and cultural complexity need to be taken into account in its development. This article argues that the living lab approach, involving the end user in the process of problem identification, technology design, implementation and evaluation, might be a suitable approach to move towards a more participatory ICT4D framework. The underlying study investigates how a location-based and community-oriented mobile app could improve the quality of life of Tanzanian University students. The research was part of an ongoing living lab study in order to gain insights into the local context and ensure a user-centric approach. The outcomes suggest that a mobile app can support student life in several ways, but that location-based services are not likely to be massively adopted and infrastructural limitations should be taken into account. The results demonstrate that ICT4D projects can benefit from adopting participative practices and that living lab research is an adequate tool to do so.

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1. Introduction

We live in a networked society in which web-based information and communication technologies (ICTs) are interwoven in our daily life. Access to ICT enables access to information and knowledge, and new technologies support and facilitate everyday-life activities. In many parts of the world, it is hard to imagine life without these new technologies. Yet, access to and usage of new technologies remain unequally distributed. Developing countries lag behind in terms of uptake and use of phones, computers, internet and other technological services and products. These disparities hinder development, as access to information and the creation of knowledge is considered to be essential in development processes (ITU, 2005). In addition, ICTs have become enablers of openness and innovation, can support performance improvements of state organizations, and health and education services, and have participative democratic and empowering potentialities (Avgerou, 2010).

Despite the unequal distribution of ICT access and use, ICTs have been used to support development processes in developing countries. For instance, mobile technology (SMS and internet based) has been used to train and support health workers

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in rural areas (Ramachandran et al., 2010). New technologies have also been used to assist in raising awareness concerning HIV, malaria, tuberculosis and other health related issues via spreading educational materials and reaching people in remote areas (Baelden, 2013). Collaborative learning technology offers opportunities for universities in developing countries as they can not only support teaching and learning processes, but also forms of distance education (Adam et al., 2011). Mobile applications have been used for crowdsourcing purposes and enhance citizen collaboration. For instance, community mapping-applications have been used for mapping water points and other community assets and text messages have been used to report and map cases of harassment (Peuchaud, 2014; Welle, 2005).

Despite these promising examples, the use of ICT for development (ICT4D) is still too often focused on technology transfer aimed at bridging the digital divide. While improving access to technology is unquestionably essential for development, the mere diffusion of technologies in developing countries is not enough. More attention should be paid to the context in which technology will be used, the community's needs, and the fact that technology is not neutral and value free. Heeks (2008) argues that innovation in the ICT4D field should take new forms and makes a distinction between 'pro-poor', 'para-poor' and 'per-poor' innovations. Pro-poor innovations are done outside and for poor communities. While these efforts could lead to the development of innovations that do not fit local realities and that as a result are prone to failure (e.g. the initial tele-center concept), Heeks (2008) argues that there should remain space for such innovations. If developed while taking into account local realities, pro-poor innovations can succeed, as is shown for instance by the innovative pre-paid pricing plans. Per-poor efforts are innovations done by and within poor communities who adapt technology to local needs. A well-known example is the innovative business model of using of mobile phones as bank accounts. Para-poor innovation is done in collaboration with poor communities. Para-poor innovation is what Heeks (2008) calls "ICT4D2.0" and addresses the need to design innovations in a participative and user-centred way.

This article focuses on the latter form of innovation. It first presents an historical overview of how ICT4D has been conceptualised. It then argues why the ICT4D tradition could benefit from adopting a more participative stance and how living lab research can support this shift in relation to digital technologies. Next, it focuses on the results of an ongoing living lab study on a location-based and community-building mobile app for Tanzanian students in a rural university setting. The discussion focuses on why living lab research can assist the shift to a more participative ICT4D tradition.

2. ICT for development (ICT4D): a historical perspective

ICT4D can be defined as "*the application of information and communication technologies for international development*" (Heeks, 2009). While the concept of ICT4D was only introduced around the 1980s (Thapa and Sæbø, 2014), technology has played an important role in development processes ever since the field of development studies emerged in the post-World War II period (Baelden, 2013). The ways in which the use of technology for development is conceptualised has however changed drastically over the years. These changes can be understood in terms of the different development paradigms (Thapa and Sæbø, 2014), which have generally shifted from a focus on modernization towards participation.

Within the modernization paradigm, which has been dominant from the 1950s till the turn of the century, development was conceived as economic growth aimed at bridging the gap with the western world. Modernization scholars believe in the linear effects of information dissemination and view communication as means for persuasion (Baelden, 2013). Scholars like Lerner (1958) and Schramm (1964) considered mass media technologies as tools for modernization and agents for social change, because they were believed to enable the diffusion of 'modern and Western ideas' to developing countries. Mass media technologies were in other words viewed as driving forces of development and were therefore transferred to developing countries on a large scale (Servaes and Malikhao, 2008). The amount of mass media channels (e.g. the amount of TV sets for every 100 individuals) distributed in developing countries was then seen as an index of modernization (Lerner, 1958).

The modernization paradigm has been heavily criticized for its ethnocentric view on the world, its lack of attention to local contexts and cultural diversity, and its assumption that mass media technologies are neutral and value free and can therefore easily be transferred to other contexts. These critiques have led to the emergence of the participatory, or multiplicity paradigm in which development is conceived as a process of change that should occur from within local contexts, taking into account cultural multiplicity and local needs. In this paradigm, communication is viewed as a two-way process, meaning that participation of all partners involved in development projects is the key to change (Baelden, 2013). These different views on development imply altered views on the role of technology. In the participatory paradigm technologies are considered as tools that can support (instead of drive) development processes as they enable interactivity and participation, which in turn facilitates the identification of indigenous knowledge, practices and meanings (Thapa and Sæbø, 2014).

The introduction of new web-based technologies, and web 2.0 in particular, has supported the altered ways in which technology for development is being conceptualised (Van Audenhove et al., 2009). New technologies have a number of characteristics that are unique compared to traditional media. In contrast to technologies like television and radio, ICTs have a dual character in the sense that they allow data processing activities that can be used to sustain human reflection and action and can be networked, which enhances interactive forms of communication and the automation of processes (Mariën et al., 2010). In addition, new technologies allow for what Castells (2007) has called 'mass-self communication', which means that users can easily distribute (self-produced) content to large audiences via web 2.0 applications. These characteristics contain participatory and democratic potentialities, which can be used for supporting the process of social change. ICTs should thus no longer be viewed as indices for development, but as an instrument that can be integrated in a more global vision on social change (Mariën et al., 2010).

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