Chapter 43
E-Service Innovation in Rural Africa Through Value Co-Creation

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ABSTRACT

E-Services have great potential, even in resource-poor environments such as in sub-Saharan Africa. However, contextual factors pose significant challenges for development, feasibility, deployment and sustainability of e-services. This chapter presents a case of e-service value co-creation in a rural context, with targeted end users in regions characterized by limited electricity infrastructure and poor or absent internet, strong diversity in languages spoken, high illiteracy rates and limited purchasing power. It offers a methodology to upfront analyze business model sustainability for e-service innovation in severely resource-constrained contexts. This is illustrated by an extensive case study in which a voice-based microblogging e-service was developed and deployed with local stakeholders in rural Mali.

INTRODUCTION

Despite the many information and communication opportunities offered by the World Wide Web, over 4 billion people are still unconnected. Many of them live in remote rural regions of the world.

Recent field studies in rural West Africa have revealed that there is a demand for relevant, timely and accurate information (Aker, 2008; De Boer et al., 2012; De Boer et al., 2015). Information about market prices, local daily rainfall and local weather predictions, information on animal diseases and health management of e.g. cattle and sheep, are just a few examples of information considered important

by local farmers (Bon et al., 2013; Gyan et al., 2013). This demand for information may be served by context-sensitive e-services that provide relevant information to local rural populations.

Accordingly, an important issue in rural development is how such e-services can be developed and deployed *in a sustainable way*, given the local conditions that are vastly different from the usual 'normal' urban contexts that dominate scholarly research.

In this chapter, we consider the case of rural areas of Mali and neighboring Sahel countries (e.g., Burkina Faso, northern Ghana) in West Africa. Electricity is scarce or even non-existing in many rural regions and villages, and internet and computers are hardly available. Low literacy is common (e.g., in Mali adult literacy is below 35%). In Africa, a wide variety of local languages are spoken, and most of them are not properly supported to date by the Web or other computational means. Purchasing power is limited, with an average income of less than 2 US$ a day. A positive condition is the widespread availability of mobile telephony among rural people, and the wide availability of community radios in rural Africa (De Bruijn et al., 2009; Bon et al., 2015).

The present study, based on extensive field research in West Africa over the period of 2009-2016, shows that value co-creation in a manner adaptive to local *context* is key to innovation and sustainable deployment of e-services. This chapter details how this works out for the conditions one encounters in rural Africa.

These very different conditions are important to acknowledge and investigate, as developers of ICT systems and e-services are often unfamiliar with the rural African context, and consequently many well-intended ICT projects fail. Conversely, local envisaged end users are unfamiliar with ICT and e-services. A farmer in Mali may be interested in a new mobile e-service. However, she will only pay for the service when it creates added value for her. Another actor, say, an enterprise such as a radio station, may be interested in participating in future commercial voice-service delivery. However, the sustainability and profitability of an innovative e-service is not obvious for the radio station upfront.

Therefore, to make new e-services useful and meaningful for local users and profitable for local business partners, ICT developers, local users and business partners must work together, and address the local needs, the contextual factors and the local (business) eco-systems in concert. This joint activity is a form of *value co-creation*.

This chapter offers a methodology to upfront analyze business model *sustainability* for e-service innovation in severely resource-constrained contexts. This is illustrated by an extensive case study in which a voice-based microblogging e-service was developed and deployed with local stakeholders in rural Mali.

From the standpoint of value co-creation, some key points from this chapter are worth mentioning here. First, business model analysis is usually carried out from a single-enterprise viewpoint (Osterwalder & Pigneur, 2010). However, regarding sustainability this chapter shows that it is crucial to take into account the whole socioeconomic and sociotechnical *network of actors*; we do so by using the e³value modeling language (Gordijn & Akkermans, 2001, 2003) to understand the business model. The e³value language explicitly supports the notion of value co-creation by two of its constructs, namely *actors* and *value activities*. To create a service or product, organizations and end-users (the actors) perform value activities, which create economic value for the actor executing the activity. A service may require many value activities, performed by many actors for its provisioning.

Second, as will be shown, the analysis yields *several* business models that can be feasible and sustainable; they are associated, however, with different roles and network configurations of involved actors, and they moreover have different implications for the ICT requirements.

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