

## Chapter 32

# Managing Seven Dimensions of ICT4D Projects to Address Project Challenges

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### ABSTRACT

*A large number of ICT for development (ICT4D) projects experience a variety of challenges, especially when conducting field research with disadvantaged communities in developing nations. Using cluster analysis, this chapter identifies the six most common factors associated with a majority of ICT4D project challenges, and depicts the inter-relationship between these factors and over 100 distinct challenges reported by existing literature. In addition, based on the secondary analysis of 380 research artifacts in the ICT4D literature, this chapter proposes ways to manage the scope, time, costs, quality, human resources, communication, and risks for addressing ICT4D project challenges. Findings inform researchers of best practices for conducting ICT4D research with disadvantaged communities in developing nations.*

### BACKGROUND

Projects which (a) design information and communication technology (ICT) solutions for disadvantaged communities, (b) test ICT prototypes with disadvantaged communities, (c) deploy ICT solutions in disadvantaged communities, or (d) assess the impact of ICT solutions on the development of disadvantaged communities in developing nations are known as ICT4D projects (Potnis, 2014). A large number of ICT4D projects experience a variety of challenges, especially when conducting field research with disadvantaged communities in developing nations. In addition, most ICT4D projects have limited resources, including time and money, which are often subjected to identified or unforeseen risks.

ICT4D researchers are always in search of systematic guidance for addressing project challenges. As a result, a number of studies published by top journals in the ICT4D area, including *IT for Development* (e.g., Krauss, 2013; Krishna & Walsham, 2005; Madon, Reinhard, Roode, & Walsham, 2009; Walsham

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& Sahay, 2006, etc.), *IT and International Development* (Abraham, 2006; Anokwa et al., 2009; Medhi & Toyama, 2007, etc.), *Electronic Journal of Information Systems in Developing nations* (e.g., Touray, Salminen, & Murso, 2013), *International Journal of ICT and Human Development* (e.g., Mathur & Sharma, 2009; Rahman & Ramos, 2013), and books or book chapters (e.g., Chib & Harris, 2012; De, 2012; Krishna & Madon, 2003, Vaidya, Myers, & Gardner, 2013, etc.), discuss the challenges associated with ICT4D field research at great length. This multidisciplinary guidance available for conducting ICT4D field research equips researchers collecting, analyzing, and reporting data in multiple formats from the field.

However, this guidance is not systematic or structured. As a result, it requires significant experience or a relevant academic background for interpretation and application. For instance, a team of computer scientists (Brewer et al., 2006) advise researchers to “plan hard but remain flexible.” But how does one remain flexible in ICT4D field research? What exactly does it mean to plan hard in the context of ICT4D projects in developing nations? Also, there hardly exists any theoretical foundation of the guidance for addressing ICT4D project challenges, which makes the problem worse for researchers with no prior experience or training.

This study proposes applying project management principles to address ICT4D project challenges. Project management is a scientifically designed approach for managing scope, time, cost, quality, human resources, communications, and risks related to a variety of projects. Table 1 presents seven project management principles (PMP) and related activities.

*Table 1. Project management principles*

<b>Scope management</b>	Scope planning	Documentation of how the project scope will be defined, verified, controlled, and how the work will be broken down in a structured way
	Scope definition	Defining a project statement useful for future decisions
	Creating a work breakdown structure	Subdividing project into smaller, more manageable components
	Scope verification	Formalizing acceptance of completed project deliverables
	Scope control	Controlling changes to the project scope
<b>Time management</b>	Activity definition	Identifying specific schedule activities
	Activity sequencing	Identifying and documenting dependencies among schedule activities
	Activity resource estimating	Estimating the type and quantities of resources required for each activity
	Activity duration estimating	Estimating the number of work periods needed to complete schedule activities
	Schedule development	Analyzing activity sequences, durations, resource requirements, and schedule constraints
	Schedule control	Controlling changes to the schedule
<b>Cost management</b>	Cost estimating	Developing an approximation of the costs of the resources needed to complete project activities
	Cost budgeting	Aggregating estimated costs of individual activities to establish cost baseline
	Cost control	Influencing factors creating cost variances and controlling cost changes

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