Chapter 32 Managing Seven Dimensions of ICT4D Projects to Address Project Challenges

Devendra Potnis

University of Tennessee at Knoxville, USA

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

DOI: 10.4018/978-1-7998-2460-2.ch032

Managing Seven Dimensions of ICT4D Projects to Address Project Challenges

& 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.

| Scope management | 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 |
| Time management | 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 |
| Cost management | 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 |

Table 1. Project management principles

continues on following page

21 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/managing-seven-dimensions-of-ict4d-projects-toaddress-project-challenges/252048

Related Content

The Role of Assistant Principals in Fostering Teacher Collaboration and Professional Growth: A Pathway to Effective School Leadership

Henderson Lewis, Stacy-Ann T. Campbell, Saleria S. Shafferand Veysel Altunel (2025). *Holistic* Approaches to Teacher Development: Leadership, Pedagogical Practices, and Cognitive Insights (pp. 121-146).

www.irma-international.org/chapter/the-role-of-assistant-principals-in-fostering-teacher-collaboration-and-professionalgrowth/376548

Advanced-Level Security in Network and Real-Time Applications Using Machine Learning Approaches

Mamata Rathand Sushruta Mishra (2019). *Machine Learning and Cognitive Science Applications in Cyber Security (pp. 84-104).*

www.irma-international.org/chapter/advanced-level-security-in-network-and-real-time-applications-using-machinelearning-approaches/227577

Data Analysis Techniques

(2025). Qualitative Insights Through Applied Cognitive Task Analysis (pp. 53-64). www.irma-international.org/chapter/data-analysis-techniques/370579

Building Smarter Educators: Merging Cognitive and Emotional Intelligence in Teacher Development

Vijendra Nath Pathakand Elizabeth Kardze Annan (2025). *Holistic Approaches to Teacher Development:* Leadership, Pedagogical Practices, and Cognitive Insights (pp. 47-68). www.irma-international.org/chapter/building-smarter-educators/376545

Bug Handling in Service Sector Software

Anjali Goyaland Neetu Sardana (2020). *Cognitive Analytics: Concepts, Methodologies, Tools, and Applications (pp. 1895-1914).* www.irma-international.org/chapter/bug-handling-in-service-sector-software/252117