Usability in the field: Reflections from an HCI4D project in rural West Bengal

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Abstract

In crossing international borders, HCI4D field research encounters challenges such as poor infrastructure, language differences, and power hierarchies. Tried-and-tested HCI methods no longer work as intended, often requiring on-the-fly adaptations that affect research output. In this position paper, we present an analysis of a usability study in rural West Bengal, India. During the HCIxB symposium, we hope to discuss how one can effectively adapt research methods designed primarily for western contexts to HCI4D settings, or what new research methods created specifically for such settings would look like.

Author Keywords
HCI4D; ICTD; Usability.

ACM Classification Keywords
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Introduction
International development has had to historically deal with a wide spectrum of infrastructures, with the cultural and socio-economic diversities across the Global South making it impossible to create 'one size fits all' technology solutions. In such contexts, design practices such as usability studies need to evolve towards catering to the unique environmental characteristics of local contexts.

In this paper we reflect on a usability study of the Open Data Kit (ODK) Android application with seven Community Health Workers (CHW) in West Bengal, India. The ODK application is built for data collection in low-resource settings with sporadic network connectivity and limited access to low-end smartphones. However, as the paper will outline, there were significant challenges encountered while conducting a usability analysis in this Global South context.

Context

iKure is a technology start up focused on delivering last-mile healthcare in rural West Bengal, India. Towards this end, iKure recruits and trains members of remote villages to provide primary healthcare and collect health data within their own communities. In May 2015, in partnership with (name anonymized), iKure instituted an Android application using Open Data Kit (ODK) [1] as their primary means of data collection.

In September 2016, the first author visited an iKure outpost in Tabageriya, a remote village in West Bengal to conduct a usability analysis of iKure's ODK deployment. Due to language constraints, he worked in conjunction with an interpreter who had earlier trained the community health workers (CHW) to use the ODK application. Each CHW participated in a pre-test interview, a usability test, and a post-test interview and a survey.

In the pre-test interview, CHWs were asked about their level of comfort with technology and primed for the usability test. The usability test required CHWs to fill two questionnaires on a mobile device, with the interpreter playing the role of a patient. In the post-test interview, CHWs were asked about their experience using the ODK application and how it compared to the paper forms they used prior to ODK. The survey, administered verbally, asked CHWs to evaluate the

complexity of the ODK application and the usability of the questionnaires.

Notes From The Field

1. Uncontrolled Lab Environments
Poor infrastructural support is pervasive across ICTD settings [6], and in our case, led to the creation of an uncontrolled lab environment influenced by intra-organizational power equations.

1.1 Infrastructural Demands
Usability tests assume the presence of basic infrastructure within a controlled lab setting, requiring electricity to continuously charge test phones and internet access to transmit completed questionnaires, for instance.

Due to the lack of such facilities in CHWs' own villages, our tests had to be conducted within an iKure office, which is the primary worksite for iKure's field officers. Thus, not meeting the required infrastructural demands meant a 'lab' environment with frequent distractions and interruptions, hindering the flow of the usability tests.

1.2 Power Hierarchies
CHWs frequently visit the iKure office to report to iKure officers and to pick up and drop off iKure-owned mobile phones used to collect data. During the course of the usability test the first author observed that CHWs were stressed during the usability tests. This was particularly visible when iKure superiors walked past the room during tests. In fact, all CHWs asked us whether they had performed the tasks correctly and if we would inform their superiors in case of mistakes.

The existing power differentials between CHWs and iKure superiors meant that our test site was far from a 'neutral' lab setting.

2. Lost in Translation

Language translation and the use of multilingual interpreters is an issue that researchers continuously grapple with, especially with research crossing geographical and linguistic borders. The lack of equivalence of research tools such as questionnaires, experimental instructions, and survey items when translated across linguistic groups can be significant barriers even with cross-cultural research that is cognizant of the distance between an English-speaking researcher and the local participants. While methods such as "double-blind" back-translation can be used to ensure cross-language validity [2, 5], they are costly and often not logistically possible in scenarios such as usability studies like in the case with iKure, where the tight schedules of the CHWs and the duration of the usability tests (which often lasted more than 2 hours) meant that the researcher and interpreter were afforded little time to interact with them during the post-test interviews.

Further, the very nature of language makes distortions in translations inevitable [3]. Even when working with competent interpreters, there are often issues with translation especially when dealing with technical terms that have no local language equivalent (e.g. the word "impact" in Hindi [4]). In the usability test at iKure, this was particularly evident when post test surveys (based on existing scales) were administered verbally. The first author observed that the interpreter found it challenging to translate the questions to the participants often asking the author for alternate English words/phrases that would convey the a similar meaning.

Ways Forward

As HCI grapples with reducing the distances between participants and researchers, especially with respect to interventions in the Global South, it is paramount that we think of how, as researchers, we can find ways to cross power, language, and infrastructural borders.

As seen in the above case study, the usability task at iKure brought with it multiple issues that were very local in nature. These issues, often unforeseen by the primary researcher, meant that the research design had to often be adapted on the field with the collected data constrained by logistic and cost constraints. Sites across the Global South will bring with them their own diverse sets of issues - a wide spectrum of infrastructures on the ground, a varied languages and dialects spoken, as well as the organizational hierarchies that pull and push local actors.

We intend to use the symposium as a forum to discuss how one can effectively adapt research methods designed primarily for western contexts to the Global South or if it is necessary to create new research methods specifically for Global South settings and if so, what these methods would look like.

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