

Building a Crowdsourcing Community: How Online Social Learning Helps in Poverty Reduction

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ABSTRACT

In this paper, we describe the design and use of a knowledge sharing network that has recently been deployed for agricultural extension work in the Lao People's Democratic Republic (Lao PDR). The system, Poverty Reduction and Agricultural Management – Knowledge Sharing Network (PRAM-KSN), was built using a collaborative design process that involved both experts and ministerial agricultural extension workers who are also the current users of this web-based platform. This paper also discusses the relevance of the PRAM-KSN for agricultural extension work, how the principles of crowdsourcing apply to the system, and how social learning occurs for the benefit of agricultural extension work. Suggestions for impact assessment of the PRAM-KSN at different time-frames are offered.

Categories and Subject Descriptors

H.5.2 [User Interfaces] - *User-centered design*.

General Terms

Design, Human Factors

Keywords

Participatory design, crowdsourcing, social cognitive theory, poverty reduction, evaluation

1. INTRODUCTION

Agricultural extension work is vitally important for poverty reduction in the Lao People's Democratic Republic (Lao PDR). According to the United Nations Development Programme, Lao PDR ranked 138th on the Human Development Index in 2011 and over 70% of the country live below the poverty line [3]. The majority (80%) of Laotians are farmers making rural agricultural development a critical means of achieving food security for the country. However, for the 6,000 agricultural extension workers employed by the Ministry of Agriculture and Forestry (MAF), a lack of breadth in knowledge and skills hampers efforts to improve rural agriculture practices.

To address this deficiency in technical knowledge and skills, the

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MAF launched a program in "Poverty Reduction and Agricultural Management" (PRAM) in 2007. PRAM is geared at the professional development of agricultural extension officers through hands-on training. The curriculum emphasizes problem- and project-based learning, and is taught by a consortium of agricultural colleges in Lao PDR and northeastern Thailand.

The PRAM – Knowledge Sharing Network (PRAM-KSN) was conceptualized as a web-based platform to accelerate capacity building among the extension workers. The goal of PRAM-KSN is to facilitate peer-to-peer learning among the agricultural extension workers. Three conditions made the deployment of a web-based knowledge sharing network viable in this context: (a) There exists privately-developed ICT infrastructure in rural areas, including 3G Internet connectivity; (b) MAF has been setting up Internet-enabled computers in district offices and government technical service centers; and (c) Most PRAM students already have their own laptops installed with an air card for 3G access.

The PRAM-KSN has been deployed since February 2012 and is active in 18 districts over 8 southern provinces in Lao PDR at the time of writing. The rest of the abstract is organized as follows: the next section describes the user-centered approach to the design of PRAM-KSN. It then discusses how PRAM-KSN works on crowdsourcing principles to help extension workers solve problems in their districts. The paper then examines how social learning is helping in the agricultural extension efforts and suggests the method of evaluation for PRAM-KSN.

2. DESIGN ELEMENTS OF PRAM-KSN

2.1 A user-centered, participatory design

The PRAM-KSN used a participatory, user-centered design that involved national, provincial, and district level staff, and PRAM students and teachers. A key design element of the platform is allowing user-authored multimedia content to be uploaded and shared. This function promotes the diffusion of locally-relevant information and peer-to-peer learning among extension workers. In terms of this function, the PRAM-KSN bears similarities to aQUA (almost all questions answered), the video-based Digital Green network, and the audio-based Avaj Otalo network in India. The PRAM-KSN differs from these platforms in that it is also a system of information management and dissemination used by a government agency for its agricultural extension work. The grassroots involvement in content generation can be seen as progress in governance that is usually associated with top down communication.

Since the deployment of the PRAM-KSN, 73 users have signed up of which 20 have been uploading 78 local stories in the form of pictures and photos. PRAM-KSN serves as a repository of

local-level information that can be retrieved by any extension worker who has access to the platform. Another design element is the question and answer function that extension workers can use to seek help in solving the problems in their districts. Help may be delivered in the form of expert advice from the PRAM teachers. The similarities of this function to crowdsourcing are drawn in the next section.

2.2 Problem solving by crowdsourcing

Crowdsourcing is a relatively new concept and has been used for a wide variety of online activities [5]. Recent research has sought to integrate the different definitions of crowdsourcing [4] and based on this latest integrated definition, the PRAM-KSN is considered a type of crowdsourcing since it has: (a) a clearly defined crowd, (b) tasks with clear goals, (c) clearly identified crowdsourcers, (d) clearly defined compensation for the crowdsourcers, (e) online assigned processes of participative type, (f) open calls, and (g) a web-based interface.

On a practical note, crowdsourcing of solutions to problems at the grassroots level appears to be working on the PRAM-KSN platform for two reasons. First, instead of a single expert being assigned to a problem, the open nature of PRAM-KSN means that any number of experts and users can participate in suggesting solutions. The multiplicity of the solutions from the whole agricultural extension community entails that the crowdsourcer would benefit from both quantity and quality of advice. Second, the production of user-generated content by PRAM-KSN users eases the burden on scarce ministerial resources. Furthermore, not only is the content generated by fellow extension workers locally-relevant, the actual production process expands the capacity of the extension workers for ICT use.

2.3 Social learning online

Besides its crowdsourcing function, the PRAM-KSN also facilitates social learning. Social learning is founded on the social cognitive theory (SCT) which provides an approach for understanding human behavior [1]. The premise of SCT is that communication and learning from observation are bases for behavioral change. Consequently, observational learning is a key process by which people adopt new behaviors. The PRAM-KSN facilitates this process by allowing users-authored content to be uploaded and encouraging communication among the users. When success stories and best practices are shared among the extension workers, positive models are made available to other users. When users discuss their common problems, other users can also partake in observational learning by drawing on similarities with their own situation. For instance,

According to the SCT, the acquisition of new behaviors is also contingent on self efficacy, or the capability to perform the behavior in pursuit of important attainments [2]. When individuals are confident that they can succeed in performing a behavior, they are likely to persist, even when they have not yet acquired specific skills to execute the behavior [6]. In the context of PRAM-KSN, an emerging theme among the success stories is that the extension workers grow increasingly self-efficacious with the successful implementation of each project. The PRAM-KSN increases the collective self-efficacy of the 6,000 extension workers in two ways. First, it provides a platform for affirming success in implementing innovative agricultural practices. Second, it boosts confidence by demonstrating that regular extension workers (just like the users themselves) are capable of

implementing innovative agricultural practices in their districts. For instance, stories of successful frog-raising projects have been diffusing from district to district via the PRAM-KSN. After observing the successful implementation of projects, other extension workers are asking questions about where to purchase tadpoles and how to install the tarp for the frog ponds.

3. OUTCOMES AND EVALUATION

The current research paradigm in the field of ICT for development is an emphasis on impact assessment. Accordingly, suggestions for the evaluation of the PRAM-KSN are made for different timeframes. In the short term, the changes (if any) to the knowledge and skills among extension workers can be measured using a pre-post online user survey. Changes to the self efficacy of extension workers to implement innovative projects can also be assessed. In the mid-term, the reach of PRAM-KSN in terms of number of sites deployed and users as well as the amount of content can serve as indicators of the reach of the system. In the long run, district-level poverty indices can inform policymakers on the progress that is being made in agricultural extension.

In conclusion, although it has only been months since the PRAM-KSN was deployed, stories emerging from the users of the platform are optimistic. The regular uploads of user-generated content suggests that the extension workers are gradually taking ownership of the system built for them and by them. As PRAM-KSN gains traction and user numbers permit a quantitative survey, the systematic evaluation suggested above will provide objective indicators of the impact made by PRAM and the PRAM-KSN.

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