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Diffusion of development initiatives in a southern Lao community: An agent based evaluation

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Abstract

Development initiatives in poor communities often aim at changing behaviour at the household level. We develop an agent based model to simulate the process of knowledge diffusion that undergirds household behaviour choices. The model is patterned on a rural community in southern Laos and is applied to simulating three development initiatives actually implemented there. The first initiative involves a program to encourage school attendance, the second a campaign to introduce safe water handling practices, and the third an investment in a feeder road to facilitate engagement with markets. The simulation exercise starts with an infusion effort that recruits specific households, then traces the diffusion process through social networks defined by shared activities. The decision to adopt a change in behaviour is based on the relative influence of adoptees vs non-adoptees within a household's network. Further, the degree to which a household opting to change its behaviour effectively realizes a change also depends on the influence of its social network. In actual fact, the education initiative failed in the Lao community while the initiatives involving water practices and market engagement were successful. Our model helps to understand these outcomes in light of the way the initiatives were promulgated within a community social structure.

Keyword: agent-based modeling, social network, Laos, village economy, infusion, diffusion

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Introduction

Despite a long history of well meaning development and anti-poverty work, progress has been uneven. Laos, for example, remains poverty ridden despite large infusions of development aid, even with recent high economic growth and rising per capita income. While macro-level human development indicators related to health, education, and income show improvement, evidence at a more micro level points to remaining problems. This has raised the alarm as to “who has been left behind in human development progress – and why” (UNDP, 2016).

Program design may be part of the problem. Development initiatives tend to be applied in generic ways based on successes in particular localities. Further, benefits of a project as measured in the aggregate may, in fact, be largely captured by particular groups or individuals while failing to permeate the broader community. Perhaps the benefits are concentrated at the infusion point of the initiative. Or maybe investment in, say, a power plant supports industrial development while nevertheless leaving

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