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How do Social Networks Influence the Performance of Extension Workers?

Peer Effects of Community Knowledge Workers' Agricultural Extension in Uganda

MEAS Technical Note

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By Festus O. Amadu and Dr. Paul E. McNamara, University of Illinois at Urbana-Champaign

An individual's actions, choices and outcomes in social interactions are usually a reflection of those of their peers¹. For example, research shows that a student's decision on which course major to choose and how he or she utilizes recreational facilities can be an effect of his peers' decisions.

The performance of workers often similarly exhibits interdependence within a social setting,

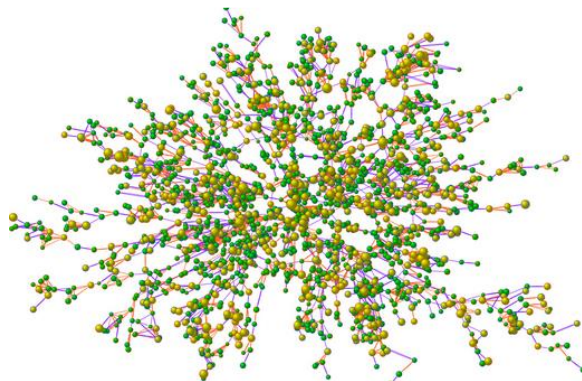


Figure 1. Depiction of a social network

as workers usually take their cues from peers when faced with making performance decisions.²

Peer effects describe how individuals or groups of individuals influence the actions or behaviors of others in a social context, and social networks – social structures with connections between individuals and groups – provide a



Photo 1. Researcher Festus Amadu with a community knowledge worker and a coordinator brandishing cellphones used for CKW operation.

¹ Mas and Moretti (2009)

² Mas and Moretti (2009)

platform for these interactions. Interactions among these individuals have self-perpetuating effects on one another's behavior, attitudes, and accomplishments, such as one's performance or productivity at work.

As the social science research literature on peer effects and social networks rapidly expands, analyses of social interactions are becoming more prevalent in agriculture. This is particularly true regarding information sharing about technology adoption decisions among smallholder farmers in social networks across sub-Saharan Africa. Connections between individuals and groups may be linked by one or more specific kinds of interdependency, such as their job (e.g., co-workers), beliefs, friendships and values³.

However, social learning – or peer effects – through social interaction has not been thoroughly studied among extension workers, particularly in sub-Saharan Africa where poor extension systems continue to limit agricultural development despite some significant past agricultural investments.⁴



Photo 2. Researcher Festus Amadu interviewing a leading CKW in Kasese district, Uganda

An analysis of social interactions among extension workers in the region could provide insights on how to inform the design and implementation of effective extension policies and programs. Such outcomes can enhance sustainable agricultural development (see box 1). The analysis can also provide useful information for understanding social learning among extension workers in rural settings. Particularly, how do peers affect one another in terms of higher performance within networks of extension agents?

The Community Knowledge Worker, or CKW program in Uganda, developed and implemented by the Grameen Foundation of Uganda, is a new extension innovation designed to increase outreach to smallholders in the rural areas of the country. The program offers a

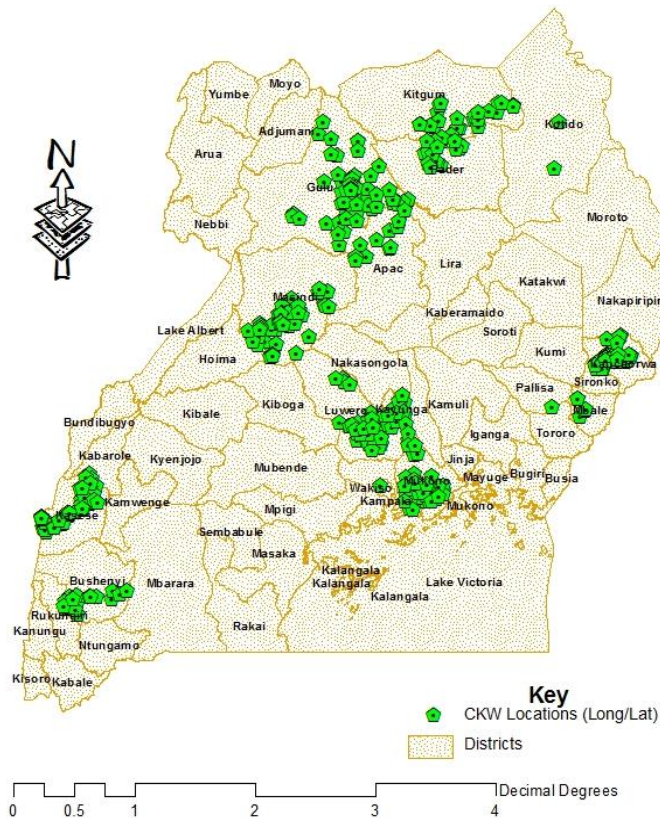


Figure 2. Community knowledge worker distribution in Uganda

³ Bramoulle, Djebbari and Fortin (2009)

⁴ Krishnan and Patnam (2014).

combination of high-tech and simple, rural adaptive approaches that have been used in the past. It utilizes cellphones equipped with an agricultural information database linked to a remote server that provides reliable agricultural information.

Box 1. Implications of Social Networks on Extension

Through social networks, the performance of extension systems can be improved and sustained by:

- (1) Creating an enabling social environment for higher levels of information sharing and knowledge transfers among extension workers (peer learning), thereby increasing technical capacity.
- (2) Reducing the cost of management and training through the right mix of extension workers. That is, those with higher performance capacity are paired with those that have lower capacities through team selections based on technical experience such as on-the-job trainings.
- (3) Granting better ability to program managers to plan and supervise extension systems based on an understanding of appropriate social structures and network involving extension workers in a setting.

Prior to the inception of the CKW program in Uganda, agricultural extension and advisory services (EAS) were extremely low in the country, with over 85% of rural farmers lacking any kind of extension support from the government extension workers⁵. This is due to a variety of factors, including poor transportation infrastructure (traveling to remote communities, especially across hilly terrains, is a demanding task and a difficult one for most government extension workers), weak organizational structures that fail to reach poor

farmers, and the lack of coordination between the government ministry and the NGOs supporting programs like CKW.

The goal of the CKW program is to improve the livelihoods of smallholder farmers, most of whom are very poor, through improved access to agricultural information. The agricultural information is delivered by a select group of community members (called CKWs or community knowledge workers) from each district, with CKWs currently serving over 50% of all rural farmers in the country⁶.

CKWs in Uganda provide a classic example of a social network: a group of local farmers are trained as local extension agents working within their communities, interacting with one another and learning from one another on various activities such as how to efficiently reach more farmers with agricultural information. Although they mainly exist to provide agricultural information to farmers, there is a high propensity of information sharing among themselves as a peer group of local extension agents. Studying and measuring the propensity for these folks to positively influence one another's performance, in addition to improving agricultural production among rural communities, constitutes the goal of this technical note.

Our analysis of the CKW program is based on performance data for a 13-month period spanning December 2010 through December 2011. We used a theoretical model that considers how CKWs influence one another. We assumed that each individual CKW within a district belongs to a peer group (taking district blocks as peer groups for interaction). The average performance and characteristics in a group influences an individual's own

⁵ McCole, Culbertson, Suvedi and McNamara (2014)

⁶ McCole, Culbertson, Suvedi and McNamara (2014)

performance (see box 2). We gathered information on 650 out of the current 1300 CKWs in 13 out of approximately 33 total districts, over a period of 13 months. Each district represents a local network, a “peer group”, in which interactions take place among CKWs.

There are diverse ways by which peer effects could be communicated in the CKW network setting. For one, individual workers might learn from one another through exchanging information via cellphones used for extension work, such as how to optimize their performance to get the highest monthly compensation. Moreover, workers might benefit from information from peers (or neighbors) about the best approach to reach more farmers or how to better operate their cellphone (like during the rainy season when the cellphone can malfunction when wet).



Photo 3. A bicycle used by a community knowledge worker to transport bananas

Since the community knowledge workers have various levels of knowledge, experience, expertise, training, and lifestyle (e.g., marital status, indebtedness), some CKWs may have greater impacts while administering information to farmers than others. Because peers influence one another within the CKW network, there is an opportunity for less

effective (less experienced, less educated, more constrained by lifestyle) workers to improve their services when they learn from their peers or neighbors. On the other hand, poor performance from one CKW may bring the performance of his peers down. The result of our analysis shows that the total monthly performance of a CKW is positively influenced by the monthly performance of his peers (Box 1). We measured monthly performance as the number of searches conducted by a CKW on behalf of farmers in a month, which is a critical performance benchmark utilized by the Grameen program managers. Our result indicates that if the average performance of peers increases by one point, a CKW might be influenced to increase his/her own monthly performance by 0.787 units. It implies that through the effects of peers, it is possible for Grameen Foundation to increase levels of monthly performance for CKWs by more than 50% (i.e., by about 79% increment) if they have the right mix of highly performing CKWs working as peers (or neighbors) to other CKWs

Box 2. Factors that describe the social network among CKWs

Three outcomes were typical factors of influence during our research:

- (1) Total monthly performance of each CKW is influenced by the average monthly performance of his peers, known as the influence of peers on peers.
- (2) Total monthly performance of each CKW is influenced by the average characteristics of his peers.

Common institutional factors such as the effectiveness of the cellphones and the equipment (ready-sets) supplied to CKWs, create a link for peer influence.

that have relatively low performance abilities.

Our findings reinforce and support the use of peers and peer exchange as critical components of effective extension staff networks. The importance of peer influences upon extension worker performance can be utilized by program managers through a variety of means. Peer to peer training, often through scheduled in-service training opportunities, is one effective means of providing platforms for peer exchange that can improve performance. Another method of furthering peer exchange is through evaluations conducted by peers that involve direct observation of an agent's extension

program and its delivery. Annual conferences or extension program meetings or other training events like webinars, can provide a useful platform for peer-to-peer exchange and information sharing.

Thus, this analysis indicates that social networks are very important to achieving higher levels of performance in sub-Saharan African agriculture. The effects of peers, especially in improving the performance, effectiveness, and efficiency of the CKW system, can serve as a vital tool for extension workers as well as extension program managers in Uganda and elsewhere in the developing world.

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*Prepared by Festus O. Amadu and Dr.
Paul E. McNamara and Kathryn Heinz,
University of Illinois at Urbana-
Champaign*

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