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"Competition for Resources in a Changing World:
New Drive for Rural Development"

Rural Knowledge Networks and Dynamics of Innovation: Lessons from Bolivia's Smallholder Agriculture

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Abstract

This contribution presents results from a study on how the inclusion of relational parameters describing connectivity and embeddedness in social networks affects a model that explains adoption of innovation among small farmers. Empirical evidence is derived from rural communities in four microregions in Bolivia that have used a set of innovations including improved seed varieties as well as new plant protection, harvest and post-harvest methods in the production of quinoa, a high altitude staple grain. A robust Tobit regression model was applied to analyse variation in levels of adoption depicted by the average degree of adoption across the diverse components of the set of innovations promoted in every microregion. Embeddedness in social networks was measured in terms of degree centrality of every farmer in the affiliation network, a term calculated from the count of ties between farmers and other change agents normalised by the maximum number of change agents each farmer could have been affiliated with.

Results show that neither one of the three factors, framework conditions, innovative capabilities and networking alone were able to sufficiently explain adoption of local farmers; however in combination the three factors could explain up to 45 of the variation in the adoption rates. The inclusion of the networking variable in the model improved the overall fit from 37 to 45 %. Degree centrality alone did not improve the overall explanatory power of the model; improvement of fit was rather achieved through including the frequency of farmer's interactions with a number of change agents such as technology transfer agents, development projects and NGOs, neighbouring producers, input providers, buyers and local authorities. This indicates that innovation processes are indeed of collective character. Interaction with a single extension worker or project agent is not enough; rather it is the simultaneous relationship with a range of change agents which does enable small producers to apply innovations on their farms. The results lead to the conclusion that development projects fostering agricultural innovation in regions such as rural Bolivia shall focus on knowledge and technologies that respond to the local capacities among smallholders and their endowment with resources.

Keywords: Adoption, Bolivia, rural innovation, social networks

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