

Diffusion of Technologies Within Social Networks

Evidence from a Coffee Training Program in Rwanda



In brief

- Coffee exports constitute about 15% of Rwanda's foreign exchange earnings and is a major export industry for the country. However, production is dominated by small producers with roughly 500,000 farmers growing 170 trees on average.
- These farmers' production is limited by production levels. Finding ways to improve yields could make coffee a more attractive crop choice and help small-scale farmers shift out of subsistence farming into more profitable activities.
- Assuming that knowledge deficits are the main hindrance to the adoption of productivity-enhancing agronomic practices, training on agricultural technologies could promote the take-up of these practices, increase productivity and improve economic outcomes for poorer farmers.
- The results of this study will interest agricultural agencies, donors, governments and private entrepreneurs who seek to improve the quality of farm level coffee.
- Understanding the adoption of new productivity enhancing technologies is extremely important for the design of policy.
- Additional important policy implications will emerge regarding the impacts of extension services in a developing economy, including the magnitude of resources governments should spend on extension services and what the effects of such services are.

Policy Motivation

“Training on agricultural technologies could promote the take-up of these practices, increase productivity, and improve economic outcomes for these poor farmers”

Coffee is one of Rwanda’s major exports (contributing 15% of its foreign exchange earnings) but coffee production is dominated by small producers (there are roughly 500,000 such farmers across the country, with 170 trees each on average) whose revenues from coffee sales are limited by production levels. Therefore finding ways to improve their yields could make coffee a more attractive crop choice and help small-scale farmers shift out of subsistence farming into more profitable activities. Assuming that knowledge deficits are the main hindrance to the adoption of productivity-enhancing agronomic practices, training on agricultural technologies could promote the take-up of these practices, increase productivity, and improve economic outcomes for these poor farmers.

Policy Impact and Audience

Our study has a number of different target end users, including agricultural agencies and donors, governments and private entrepreneurs seeking to improve the quality of farm level coffee for the international market. TNS is interested in using the results of this research to inform their programming in East Africa as well as other countries across the world where they work in the coffee sector (for example, Guatemala). TNS also works in other sectors than coffee where they have similar training programs where these results could be invaluable. In addition, aspects of our data collection efforts are important to TNS. For example, self reports of the technology adoption are often inaccurate as farmers may not understand the extent of these practices that matter. We find that observing practices directly is a much better way to measure whether households have adopted practices - TNS finds this to be very important for their own program and measuring its effectiveness. A second example is the use of scales to collect harvest data - TNS has actually implemented this across their entire program in Rwanda now (our field experiment is only in one administrative sector of the country).

Policy-makers such as the Ministry of Agriculture would also have interest in the results of this project. Our results would help inform how governments promote the new technologies they are developing as well as how best to concentrate these efforts.

Policy Implications

“Our results would help inform how governments promote the new technologies they are developing”

This research has extremely important implications for policy. Understanding the adoption of new, productivity enhancing technologies is extremely important for policy. For a partner like TNS, it is important for the design of their program to understand the diffusion process. If there is a lot of diffusion, then TNS can train a few farmers and expect that others will adopt and learn from the trained farmers. However, if there is little diffusion, then TNS is better off concentrating their program over small geographic spaces to get the largest impact. The additional important policy implications that will emerge from this research will deal with the impacts of extension services in a developing economy. Given the magnitude of

resources that governments spend on extension services of this kind, it is important to understand whether they have effects, how large and how broad given that there may be diffusion of the training. We hope to be able to answer all these questions over the course of the next several months with the data collected in this project.

Implementation and Dissemination

“Understanding the adoption of new, productivity enhancing technologies is extremely important for policy”

Once the final results are completed and reports have been submitted, we plan to present widely in Rwanda as part of the dissemination efforts. This would include the government as well as a variety of stakeholders in the country. In addition, the findings have implications for other countries in East Africa, which provide opportunities for more dissemination. This is all the more important given that TNS’s program covers all of East Africa and coffee is a major part of the economies of East Africa. We will also reach out to other governments and agricultural ministries in East Africa to disseminate the results. Finally, the CGIAR system across the world would be another natural place to disseminate these results to.

About the authors

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