The Effects of Crowdsourced Information Sharing on Farmers and Agricultural Markets in Pakistan

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Sector(s): Agriculture

Location: Afghanistan

Sample: 3,088 farmers

Initiative(s): Agricultural Technology Adoption Initiative (ATAI)

Target group: Farmers

Outcome of interest: Market access Technology adoption Service provider performance

Intervention type: Digital and mobile Information Monitoring

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Partner organization(s): International Growth Center (IGC), World Bank, Punjab Livestock and Dairy Development Department

Buyers often have limited information on service quality in low- and middle-income countries. In the absence of information, buyers may receive low quality services or may choose not to seek out service at all, limiting potential benefits for households. Researchers evaluated a program in Pakistan that provided farmers with information on veterinarians' artificial insemination (AI) success rates and average prices. This led to more successful inseminations without a rise in AI prices.

Policy issue

In low- and middle-income countries (LMICs), buyers may not be able to assess the quality of services or how hard the service provider works ahead of purchase due to information gaps on service quality. Information gaps are common in many agricultural markets in LMICs due to disorganized supply chains with many intermediaries. In the absence of information, buyers may receive low quality services or may choose not to seek out service at all, limiting potential benefits for households.

Livestock and veterinarian services are one example where information gaps present a challenge to rural low- and middle-income communities. Many farming households only keep female cows because they produce milk and calves, both of which requires cows to be impregnated. Farmers hire veterinarians to conduct artificial insemination (AI) in order to grow their female herds, but they commonly lack information on the quality of veterinarians in their region. As a result, AI success rates are lower than what is possible given the available technology. This costs farmers potential income in calves and milk, and veterinarians possible clients. Does providing farmers with information on veterinarians' quality of AI service provision increase the number of successful inseminations and, therefore, agricultural income?

Context of the evaluation

In Pakistan, livestock production accounted for twelve percent of the country's GDP in 2013. In the Sahiwal district of Punjab province, where this evaluation took place, farmers can obtain AI services from trained government providers or from self-employed private providers, who are often not formally trained. The government provides approximately 43 percent of AI services across the region, while private veterinarians provide the remaining services. The average cost of one veterinary visit was 200 PKR (US$2).

Farmers in the study used government veterinary services, owned at least two livestock (cows and/or buffalo), and had regular access to a cell phone. Prior to the start of the evaluation, AI led to impregnation of livestock 70 percent of the time on average, while 85-90 percent was possible with the training and equipment available in Sahiwal. This suggests that the veterinarians were under-performing, either in terms of effort or skill, yet farmers were unable to fully observe veterinarian effort and therefore quality during a visit. As such, before the study, farmers' beliefs about the quality of government veterinary services is uncorrelated with the actual quality provided.



Livestock farmers received mobile-based information on AI and inoculation services.

Photo: Lucia Sanchez

Details of the intervention

In partnership with the Punjab Livestock & Dairy Development Department, researchers evaluated the effects of a mobile phone-based clearinghouse that delivered information to farmers on the quality of government-provided Artificial Insemination (AI). To build the clearinghouse, researchers collected and aggregated price and AI success rate data from January to September 2014 through a smartphone application. Researchers randomly assigned XX farmers into the following two groups:

1. *Information group (95 farmers):* Farmers received two calls from representatives from the clearinghouse. First, they were called a day after service provision to confirm the service took place and collect price data, and then sixty days later to ask if the insemination was successful. After sixty days the clearinghouse also provided the farmers with information on the top six government veterinary technicians within three kilometers of their household in terms of AI success rates (three for cows and three for buffalo), as well as the average price per service. Additionally, farmers could request veterinarians' phone numbers, information on average farmer-reported satisfaction with veterinarians on a 1-5 scale, and information on any other veterinarian in the database.
2. *Comparison group (95 farmers):* Farmers did not receive any information on the quality of government AI service provision or average prices.

Results and policy lessons

Farmers who received quality and price information on government AI services through the clearinghouse experienced higher rates of successful inseminations without paying higher prices on average due to greater effort from veterinarians.

Insemination Success Rates: Farmers who received information from the clearinghouse experienced a 17 percentage point increase in AI success rates on average from a base rate of 67.7 percent (a 25 percent increase). The increase was largest among farmers who continued to use a government provider after they received the information, a 36 percentage point increase from a base of 58.1 percent (61 percent increase). Researchers explained that AI success rates did not increase because farmers switched to higher quality providers. Rather, access to quality and price information enabled farmers to increase their bargaining power with providers. There is some suggestive evidence farmers who were told the quality of their veterinarian is lower than they had predicted in a baseline survey were able to bargain for lower prices for AI services.

Researchers estimate that the increase in AI success rates for farmers who received the information could lead to 3 percent more calves born per year per farmer resulting in a potential increase of nearly half of one month’s median income in Pakistan per year.

Prices paid for AI services: Farmers who received information did not pay higher prices on average than farmers who did not receive information.

Veterinary choice: Farmers who received information on the quality and price of government AI services were not more likely to switch to a private provider afterwards than those who did not receive information. This is evident because there is no difference in the average AI success rates between farmers who continued to use the government provider and those who switched to private providers. This result suggests that the clearinghouse improved AI rates through improved effort of providers, rather than by inducing farmers to switch to better performing veterinarians.