



KhetScore: Impacts of Using Digital Technologies to Unlock Credit and Insurance for Marginal Farmers in Odisha

Many small and marginal farmers in developing countries lack the liquidity needed to expand their farms and invest in more profitable inputs and technologies, as well as the collateral and documented land rights required to access credit. Their reliance on agriculture also inextricably links their livelihoods to increasingly variable weather conditions. In tandem, these liquidity, credit, and risk constraints make it difficult to cope with frequent weather shocks, and prevent potentially profitable investments in their farms that could release them from poverty traps. Reducing risk and promoting investments that increase agricultural productivity are therefore important strategies to reduce hunger and poverty, enhance incomes and food security, and strengthen the resilience of this population.

We implemented a randomized evaluation of the impacts of KhetScore, an innovative credit-scoring methodology developed by Dvara E-Registry that uses digital technologies to unlock credit and insurance for small and marginal farmers in eastern India's Odisha state. The impact evaluation serves as a case study to provide insight into how digital technologies can help improve agricultural risk management.

Highlights

- KhetScore credit-scoring methodology has the potential to unlock credit and insurance for small and marginal farmers due to its reduction of transaction costs and ability to overcome information asymmetries and documentation requirements in the provision of financial instruments.
- In the treatment group, where Dvara E-Registry offered loans and insurance based on the KhetScore methodology, farmers (particularly women) were more likely to purchase insurance and renew their coverage in subsequent years.
- Farmers in the treatment group were more likely to take loans (particularly formal loans); the observed expansion of credit was the result of crowding in formal borrowing, rather than a substitution of formal for informal borrowing.
- Despite the increase in borrowing activity, households in the treatment group were much less likely to report difficulty in repaying loans, which suggested favorable loan terms that eased the burden of repayment.
- There were beneficial effects on agricultural revenues during the monsoon (*kharif*) season, reduced costs in the dry (*rabi*) season, and higher profits across both seasons.
- Women in the treatment group experienced significant improvements in empowerment within the household and in their subjective mental health (specifically, reduced feelings of stress).

Main findings

- There are a wide range of beneficial impacts of the KhetScore methodology.
- There is evidence of a significant increase in uptake (63% higher than in the control group) and renewal (50% higher than the control group) of agricultural insurance, and an overall increase in familiarity with the terms and conditions of crop insurance.
- The program increased overall credit use (particularly among women), with much of this due to an increase in formal credit (by about 23 percentage points on average, and by more than 38% among women) rather than a substitution of formal for informal credit.
- Households in the treatment group were more than 40 percentage points less likely to report difficulty in repaying their loans. Roughly 70 percent of respondents in the control group indicated difficulty in repaying their loans, compared with approximately 30 percent in the treatment group, suggesting that the loans offered as part of this program had particularly favorable terms.
- During the monsoon season (*kharif*) in 2022, revenues per acre in the treatment group were approximately INR 2,000 greater than those in the control group. During the dry season (*rabi*) in 2021–2022, treatment households increased their cultivated area by nearly 0.5 acres, though the total cost of production per acre fell by INR 3,400—perhaps because treatment farmers generated economies of scale. There is evidence that treatment households had significantly higher agricultural profits, with *kharif* profits nearly double of those in the control group, and *rabi* profits offsetting losses that farmers in the control group experienced.
- Women in the treatment group were 17 percentage points more likely to report making contributions to household borrowing decisions, 14 percentage points more likely to make contributions to household decisions on the use of borrowed money, a very significant 24 percentage points more likely to report providing input into household livelihood decisions, and nearly 18 percentage points more likely to report having control over income use.
- The program had a beneficial effect on reducing stress levels, but only among female household members who had cosigned the loans, rather than those directly targeted by Dvara E-Registry as the principal client. We find beneficial effects on a composite measure of perceived stress, as well as two of the component indicators.



Conclusions and recommendations

Policy

These findings suggest that scaling the KhetScore methodology, and the broader appeal of bundling credit with insurance, may be of particular relevance to policymakers in the Indian state of Odisha, where there is great interest in expanding access to credit and insurance for sharecroppers and tenant farmers who do not have documented land rights.

Programming

We suggest that the KhetScore credit-scoring methodology—particularly its reduction of transaction costs for both borrowers and lenders—ameliorates credit rationing and both expands and increases the inclusivity of rural finance. In particular, KhetScore's elimination

of paperwork requirements (specifically land titles) opens up formal agricultural credit to a new class of potential borrowers who were previously shut out of formal lending in this sector. In addition, the addition of crop insurance may help to alleviate collateral requirements, thereby possibly overcoming both risk and quantity rationing in formal borrowing.

Research

This evaluation found beneficial impacts across a wide range of agricultural, gender parity, and mental health outcomes. In particular, it demonstrates the potential for this novel financial product to have potentially transformative effects on the rural economy by increasing financial literacy, increasing credit and insurance uptake, increasing farm

profits, enhancing women's empowerment, and easing some of the mental health stresses that so often accompany near-subsistence agriculture.

However, the insurance product bundled with KhetScore loans rarely triggered payouts; this was partly because the three seasons on which this evaluation was focused occurred during relatively good-weather years. This suggests that the impacts reported in this evaluation are not driven by ex-post insurance payouts, but rather by either the ex-ante risk reduction provided by the insurance product, or by providing credit to a population with very limited access to liquidity. Disentangling the effects of credit and insurance, and assessing the impacts of the bundled solution in years with worse weather conditions, remain areas for future research.





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About this brief

This brief is based on an impact evaluation report entitled *KhetScore: Impacts of Using Digital Technologies to Unlock Credit and Insurance for Marginal Farmers in Odisha*, completed in 2024, by Berber Kramer, Subhansu Pattnaik, Patrick S. Ward, and Tharakeswar Ganta.



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