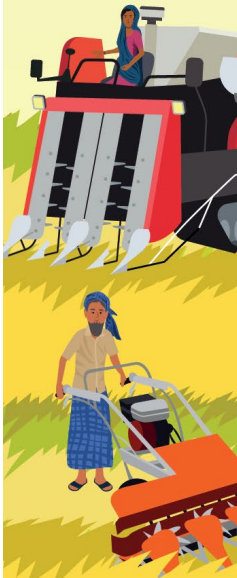


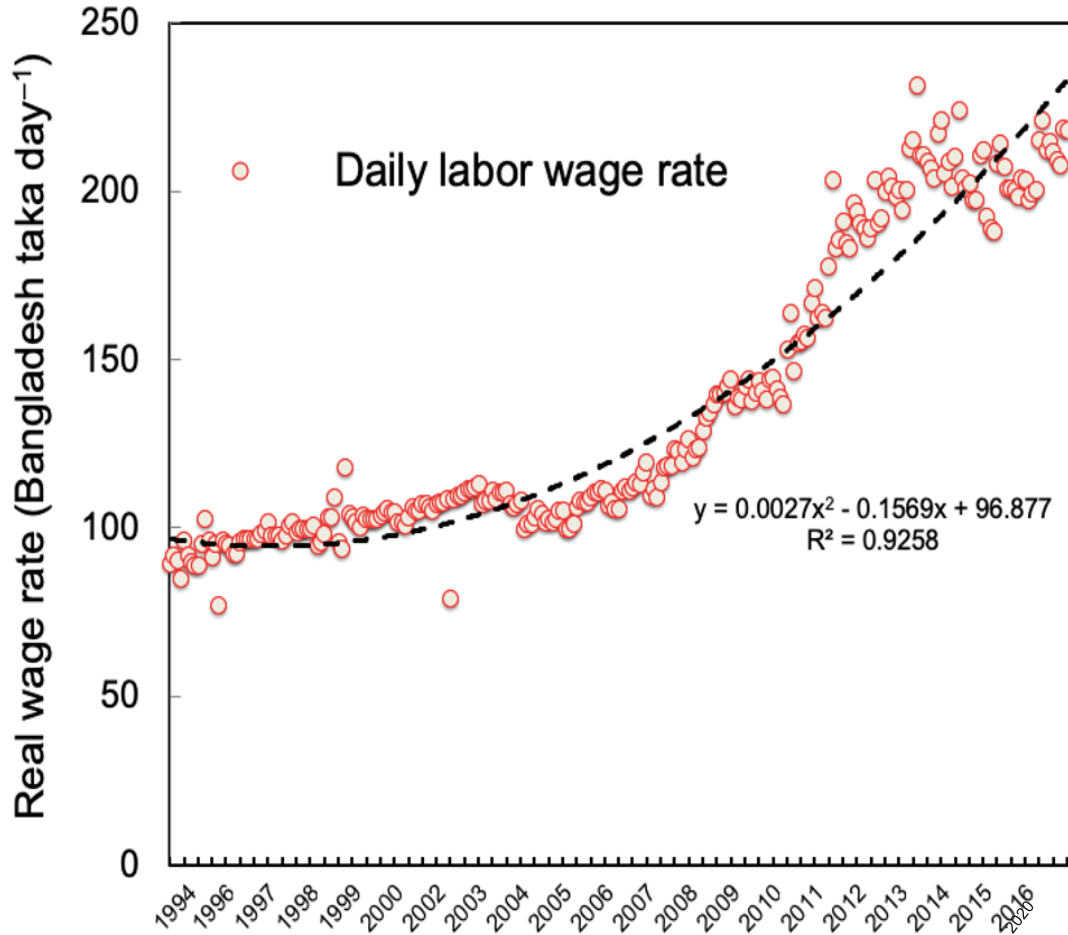
Scale-Appropriate Farm Mechanization in Bangladesh:

What does the future hold?

Timothy J. Krupnik | CIMMYT
Pan Pacific Sonargaon, March 21, 2022



Why 'scale-appropriate' farm mechanization?



The challenge

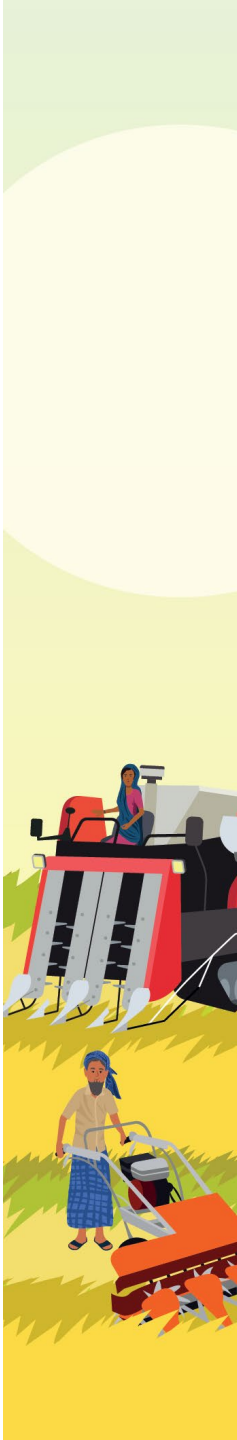
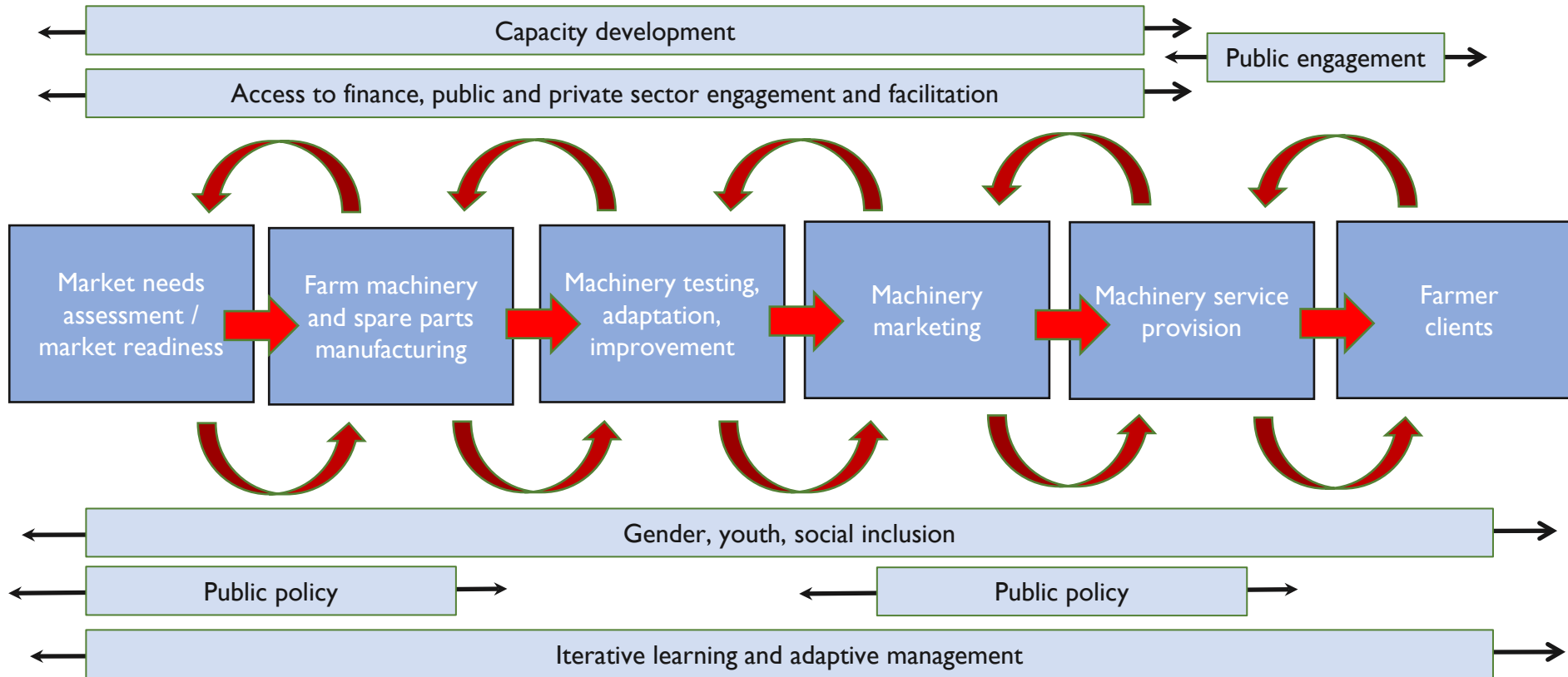
- Economic transition
- Increasing rural labor scarcity and cost
- Small field sizes, soil conditions
- Most equipment is imported

The opportunity

- Growing agricultural machinery market
- 800+ machinery workshops
- 70+ foundries, 20,000+ mechanic workshops
- Market size ~US\$ 907.5 million/year
- < 50% is captured by domestic firms
- Significant post-harvest mech. opportunities
- 4th industrial revolution



Cereal Systems Initiative for South Asia - Mechanization and Extension Activity (CSISA-MEA)





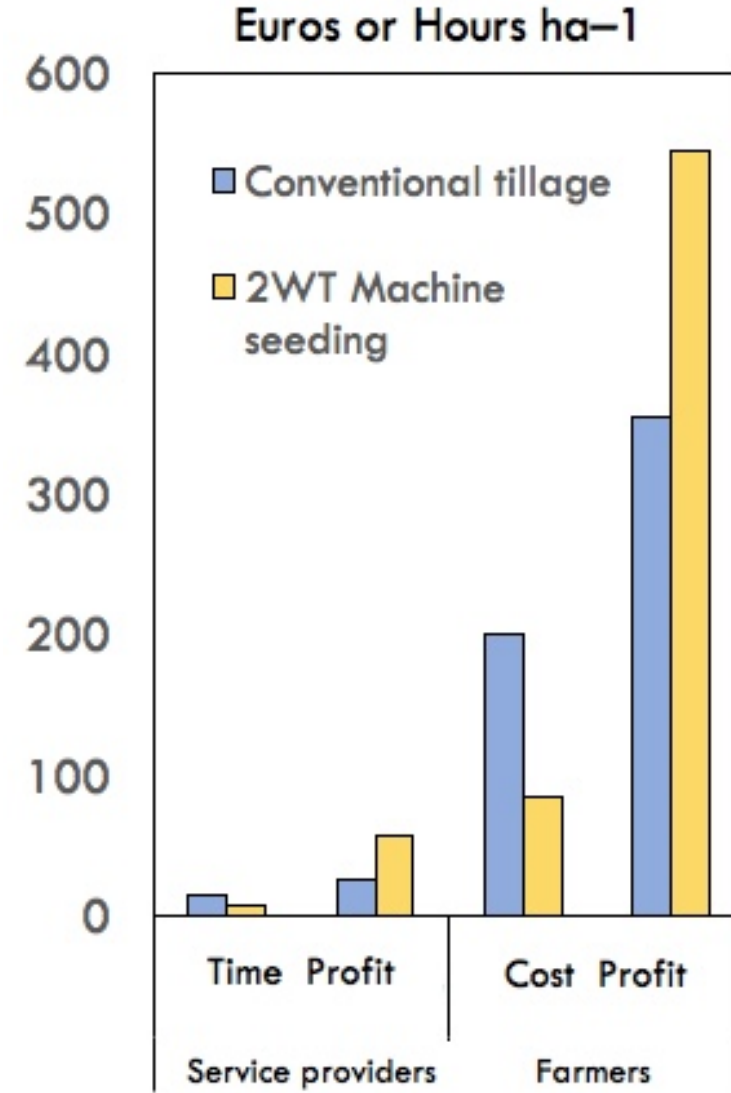
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Win-win business model solutions



Maize processing into snack foods, Md.Ali Engineering (Jashore)



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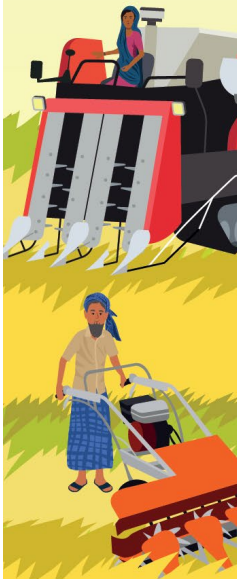
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Everybody must make money



Rice reaping



Mechanical rice transplanting



Wheat combine harvesting



Farmers save BDT 2,000/ha

Service providers make BDT 4,000/ha



Farmers save BDT 5,750/ha

Service providers make BDT 3,800/ha



Farmers save 7,100/ha

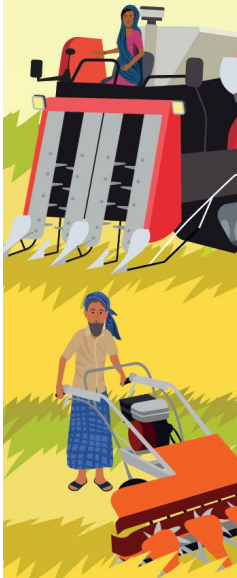
Service providers make BDT 5,000/ha



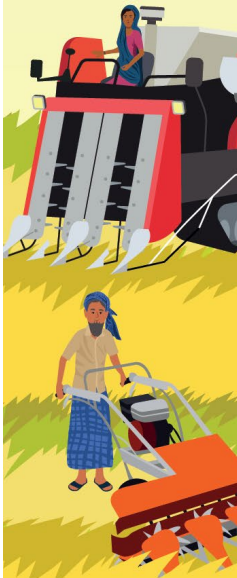
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Significant hidden benefits from mechanization





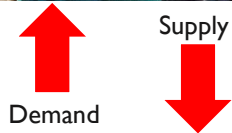
Improving manufacturing

Activities:

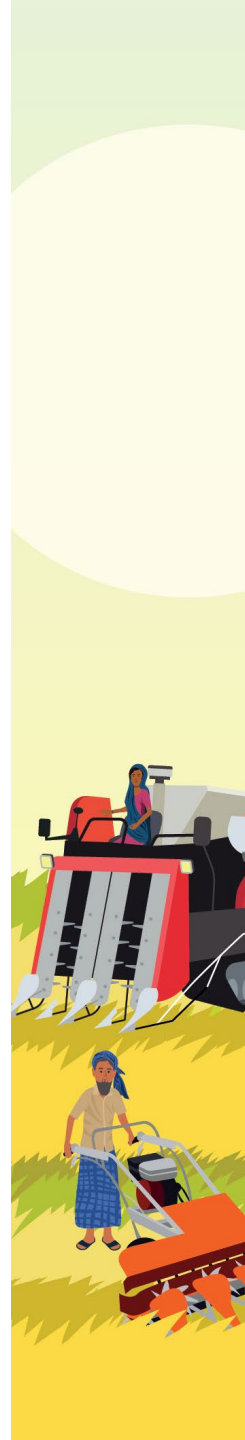
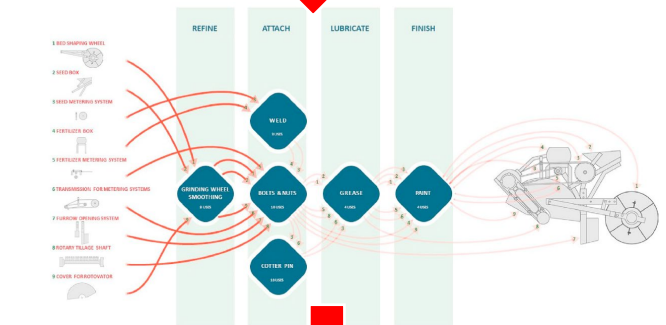
- 100+ small manufacturing SMEs
- 7 lead firms
- Metallurgic quality testing, training, advising
- New machinery markets
- Reducing and reusing wastes

Impacts:

- New spare parts product lines
 - Combines, transplanter sales services
 - Horticultural and jute equipment
 - Factory redesign
 - Considerable private sector co-investment
- Improved fodder choppers



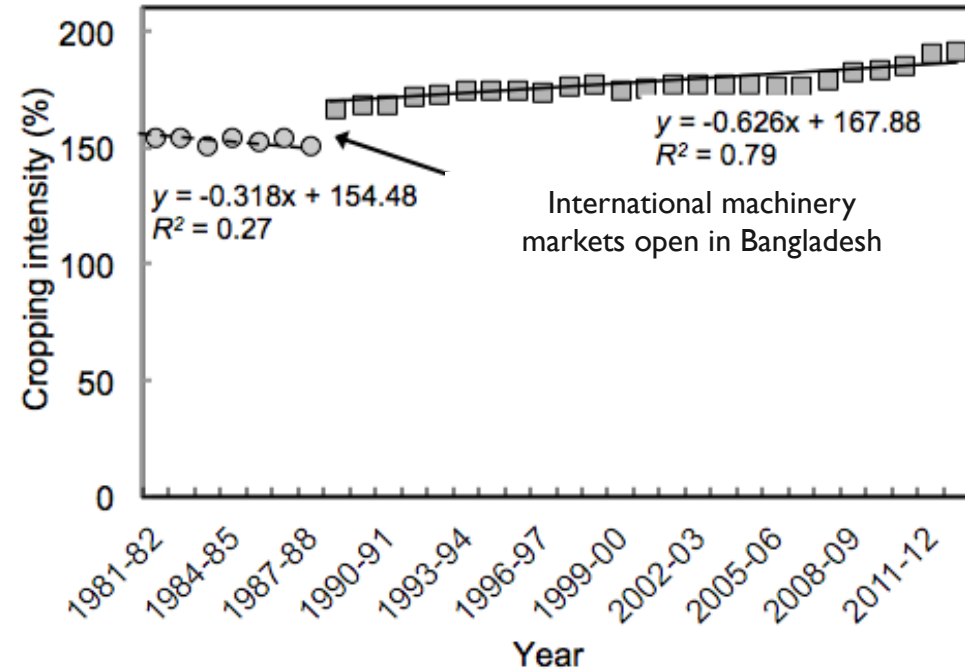
'First-mover' domestic spare parts firms



Historical policy analysis:

Service provision is crucial to expanding machinery access

- Data from 800,000 households (census)
- Enabling policies are key
- Adoption associated with assets, access with access to finance, civil infrastructure
- Machinery is capital intensive: service provision



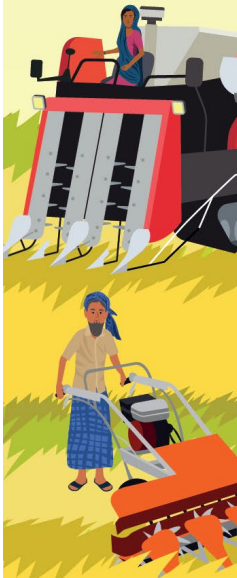
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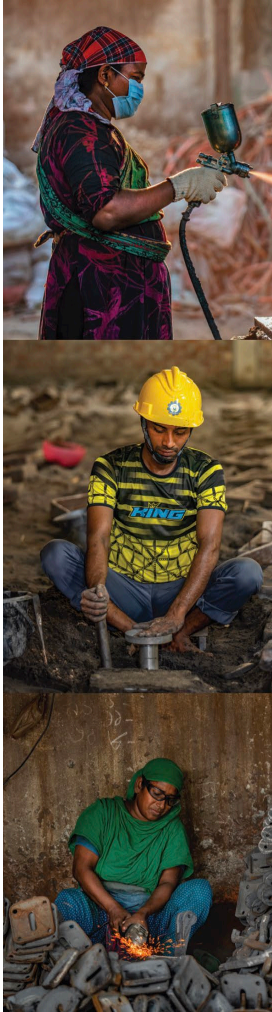
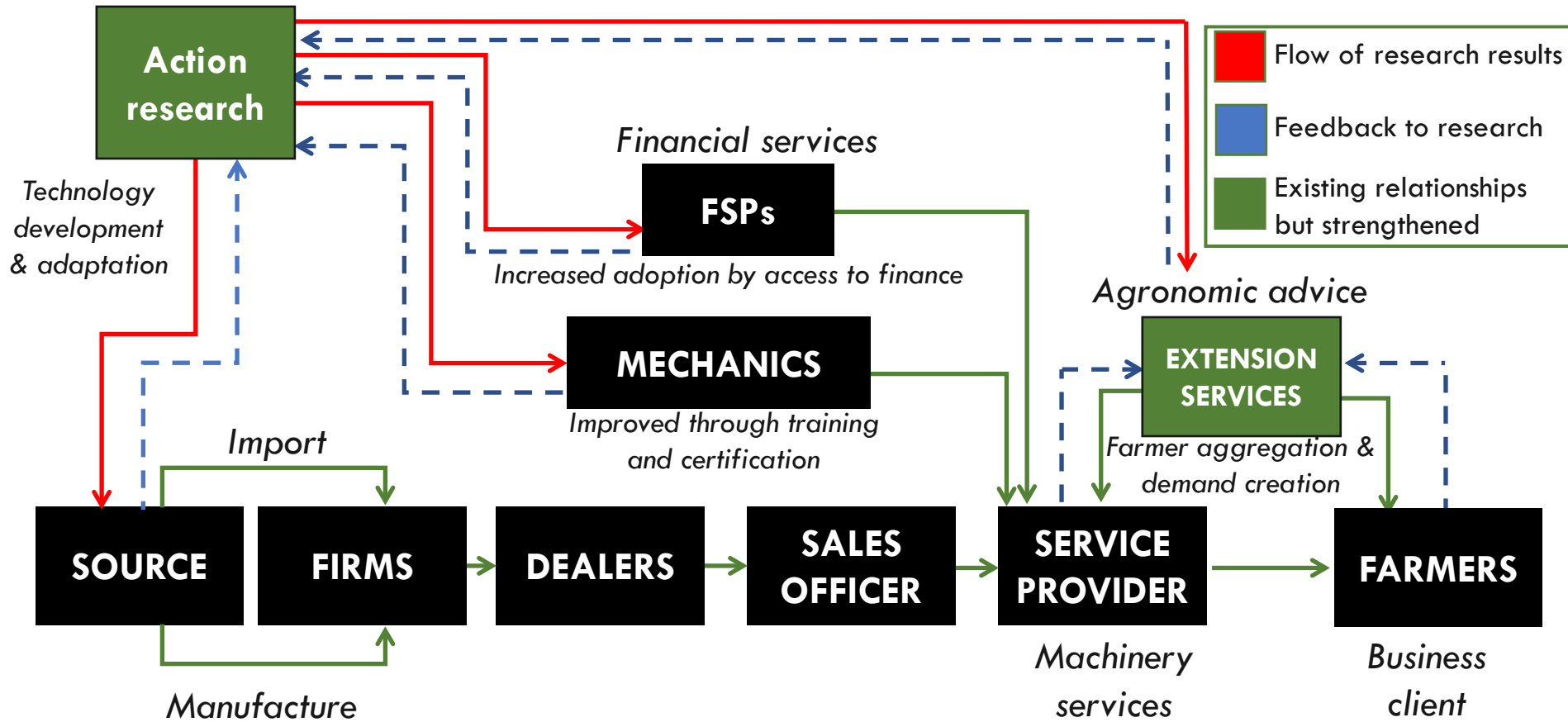
journal homepage: www.elsevier.com/locate/jrurstud

Factors associated with small-scale agricultural machinery adoption in Bangladesh: Census findings

Khondoker Abdul Mottaleb ^{a,*}, Timothy J. Krupnik ^b, Olaf Erenstein ^a

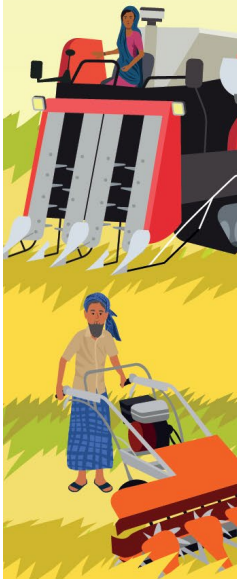
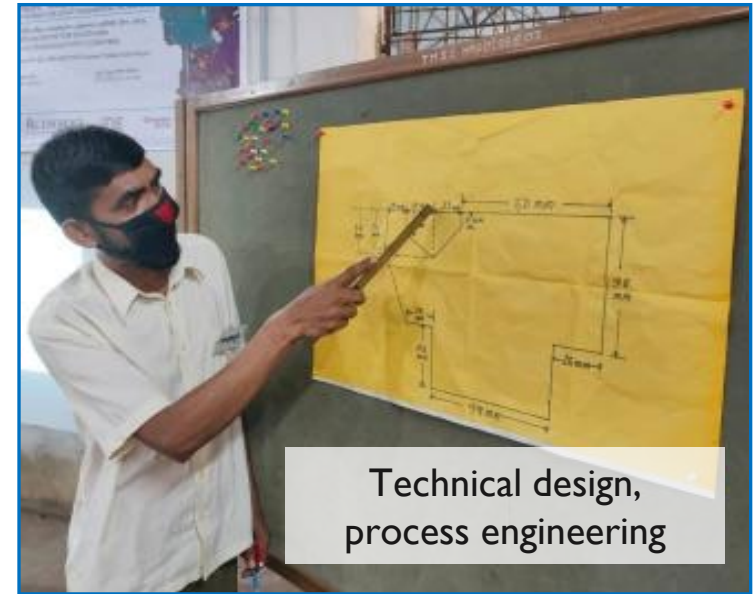


The crucial role of applied and action research



Workshop objectives

1. Identify opportunities for smart mechanizing farm operations to reduce drudgery and cost, and to save resources
2. Identify constraints to accelerating mechanization through changes policy
3. Assess how light engineering sector can be supported to manufacture machinery for domestic and international markets
4. Clarify how to support rural women and youth to gain employment through farm mechanization businesses
5. Suggest innovative ways of financing machinery manufacture, sales, and service provision.





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THANK YOU



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