

Scaling up the Reach of Processing Equipment

Concept, Efforts, Results and Learning

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Scaling up Small Millet Post-harvest and Nutritious Food Products Project

Context

- The hullers for small millets developed in the first phase need to be adopted by decentralised processing units along with other accompanying equipment to serve as a functioning unit
- The market for the processing equipment is not yet established; it is a derived market that caters to the slowly emerging market for small millet foods
- The decentralised units have to compete with large scale centralised processing units in meeting the demand for small millet rice in the urban areas

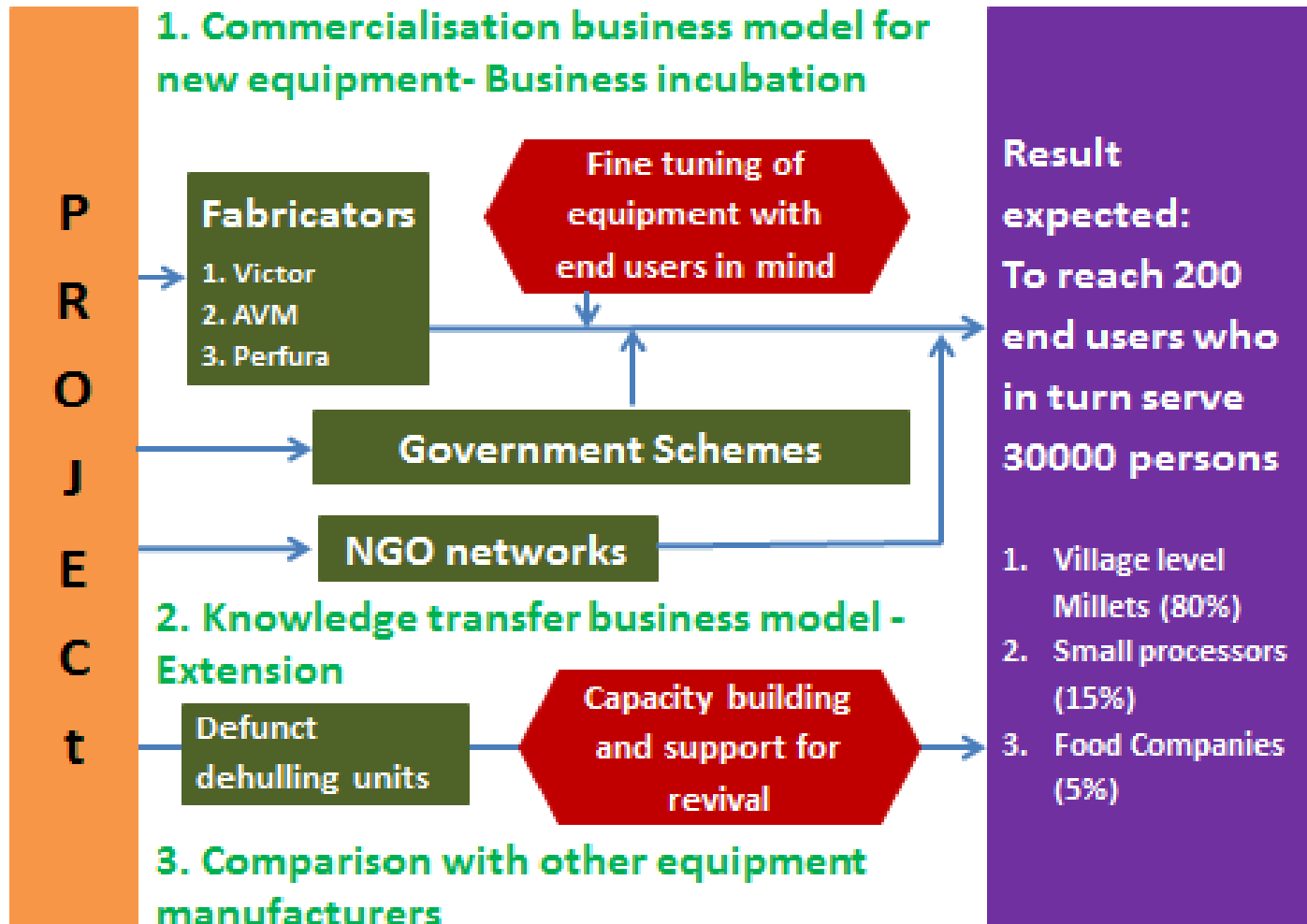


Context...

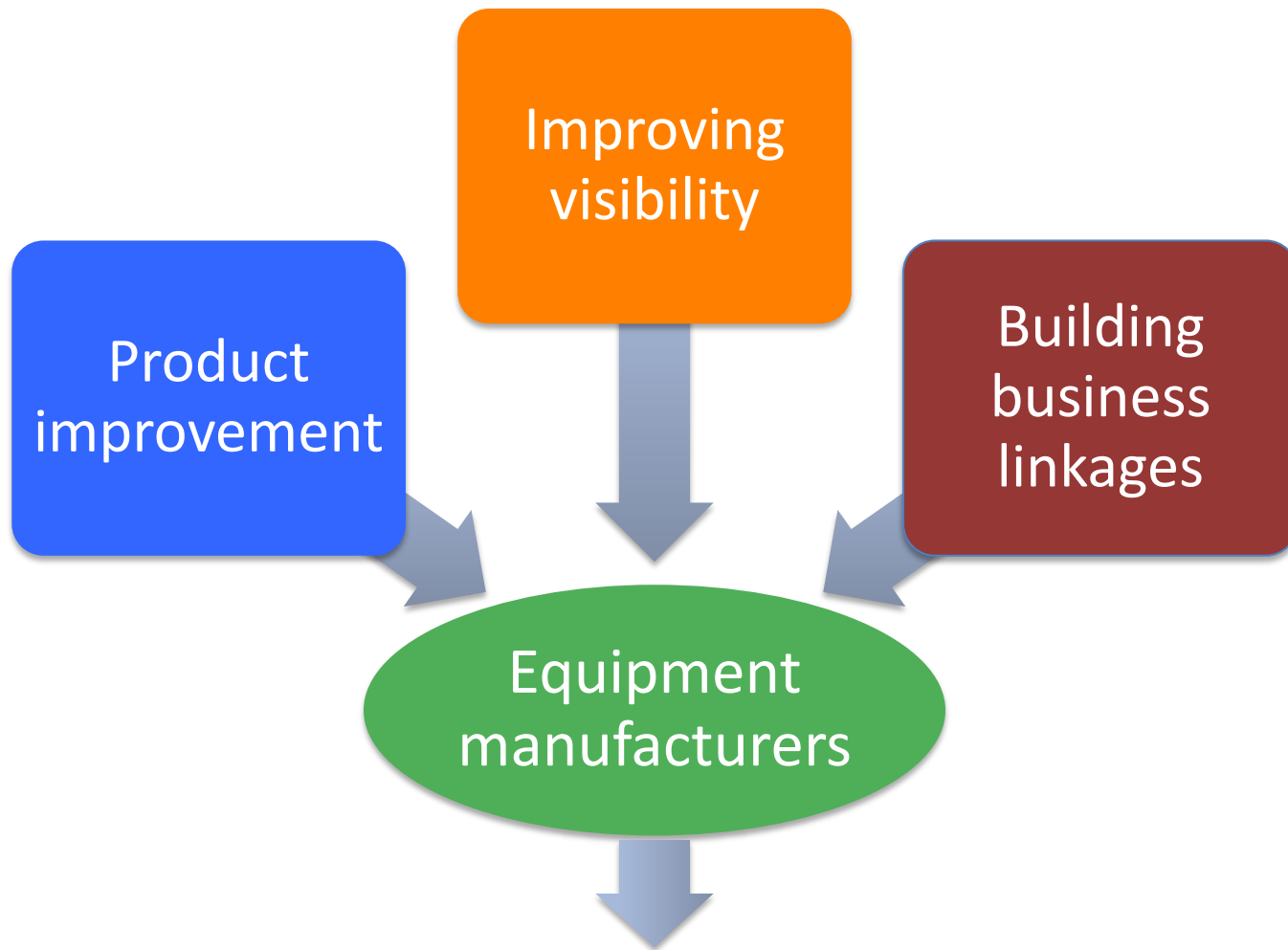
Production ecosystem	Technology adoption ecosystem
<ol style="list-style-type: none">1. Small scale unregulated industry2. Only 4 small scale manufacturers in Southern India supplying based on orders3. Product design was not standardised4. Improvised version of paddy processing machineries.5. Limited investment on promotion across India6. Inadequate institutional arrangements for long distance sales7. Inadequate competition, poor research input, and lack of a system for enforcement of standards	<ol style="list-style-type: none">a. Information on the technology has not reached widely, particularly Central & North Indiab. Lack of organised information and guidance for the new entrantsc. Lack of training support for processorsd. Lack of service providers for addressing repairs and maintenance
<p>➤ Business incubation approach attempted</p>	<p>➤ Capacity building of the end users attempted</p>



Business model



Onsite business incubation support model



Increased reach and scale of operations across India



Partnering with equipment manufacturers

The following equipment manufactures were identified and MoU was signed with them:

1. AVM Engineering Industries, Salem
2. VICTOR AGRO SALES, Salem
3. Perfura Technologies (India) Pvt. Ltd, Coimbatore
4. AGROMECH ENGINEERS, Coimbatore
5. KMS Industries, Coimbatore
6. Vishwa Agro Tech & Bio-Tech, Mysore



Product improvement support

- Products of six manufacturers were assessed
- Exposure to design standards and practices for grain processing equipment that are followed by leading equipment manufacturers
- Joint R&D involving technology developers (research institutions), technology adopters (manufacturers) and end users (processors)
- Technology transfer

Results

- Capacity of manufacturers on design improved
- Design modifications were made



Huller improvement made by AVM

- **Foot print, weight and height reduced-** women friendly
- **Safety improved-** reducing the space between moving parts and the outer guard, and by introducing an emergency switch
- **Stability improved-** reducing the overhang load on the pillow block
- **Flexibility improved-** Two motors used, power saved
- **Panel board added-** to make the unit as plug and play



Improvements made by AVM



Improvements made by AVM ...

Double chamber huller for kodo millet & medium scale -500 kg/hr huller developed and marketed



Huller Improvement by VICTOR AGRO SALES

- **Outflow channel widened** from hulling chamber for smooth flow of hulled materials
- **Damper reintroduced** in aspirator blower of dehuller
- **Stability improved** by reducing overhang load on the pillow block
- **Safety** improved by adding an outer guard for moving parts
- **Impeller rotation** made smoother, thereby reducing energy consumption
- **Hulling quality improved** by sticking rubber on one side of the impeller dome



Improvements by VICTOR AGRO SALES



Improvements by VICTOR AGRO SALES...

- Medium scale huller prototype with capacity of 300kg/hour; double chamber huller-100kg/hr & small scale-30kg/hr
- Developed prototype based on Otake huller

Destoner

- Divider introduced for better segregation of output
- Performance improved by changing the bed mesh hole size



Improvements by Perfura Technologies Pvt. Ltd.

HULLER

- Rolling out double chamber centrifugal huller developed by TNAU



PORTABLE GRADER

- New design grader with aspirator on wheels



Some improvements by Agromech Engineers

Huller

- Huller of 60-80 kg/hr developed
- Aspirator design was changed to reduce the mixing of husk with rice output
- In hopper, a grain level indicator was added
- Motor was mounted between the aspirator and the hulling chamber, **reducing the overall height of the machine**



Grader

- Development of interchangeable sieve grader

Destoner

- A sliding door was provided to facilitate ease of cleaning the covered base



Improvements by Perfura Technologies Pvt. Ltd.

Grader

- With interchangeable sieves

Destoner

- Motor box size increased; grain flow inflector was introduced



Improvements by Vishwa Agrotech & Biotech

Grader

- 3 deck interchangeable grader with slope adjustment mechanism



Improving visibility

- Website creation- facilitated for AVM & Victor
- DHAN weblink- profile of manufacturers uploaded
- Newspaper Advertisement in unrepresented regions - AVM & Victor
- Google advt.- Victor
- Flyer with details of processing equipment offered by 5 manufacturers shared via mail & in exhibitions



Building business linkages

Support for participating in Expos

- Perfura
 - MADDISSIA Food Tech -2017
 - Organics & Millets 2018
- VICTOR AGRO SALES
 - Tamil Nadu Agriexpo -2016, Madurai
 - Grain Tech-2017
 - World Food India-2017, Delhi
 - CODDISIA-2017, Coimbatore
- KMS
 - CODDISIA-2017, Coimbatore



Building business linkages...

- Linking fabricators with potential buyers **by sharing leads**
- Helped fabricators to reach uncharted areas in Uttarakhand, Madhya Pradesh, Karnataka, Odisha, Kerala, Maharashtra, Chhattisgarh, Rajasthan, Sikkim etc. **by using contacts with NGOs, FPOs and individuals working in this field**



Building linkages with Government

- Linking AVM and Perfura with 'Comprehensive Revival of Millets in the Farming Systems and in Household Consumption Project' of Andhra Pradesh Government
- Linking Perfura with Tamil Nadu Innovation Initiatives Project by TNAU
- AVM and Victor listed by Karnataka Government



Madurai Symposium

Perfura Technologies Private Ltd and VICTOR AGRO SALES shared about their products and AVM, Agromech and KMS Industries participated in “EMERGING TRENDS IN PROCESSING & VALUE ADDITION OF SMALL MILLETS, Madurai under the aegis of **‘Madurai Symposium’** and interacted with national level delegates on small millets



Supporting existing small millet processing units

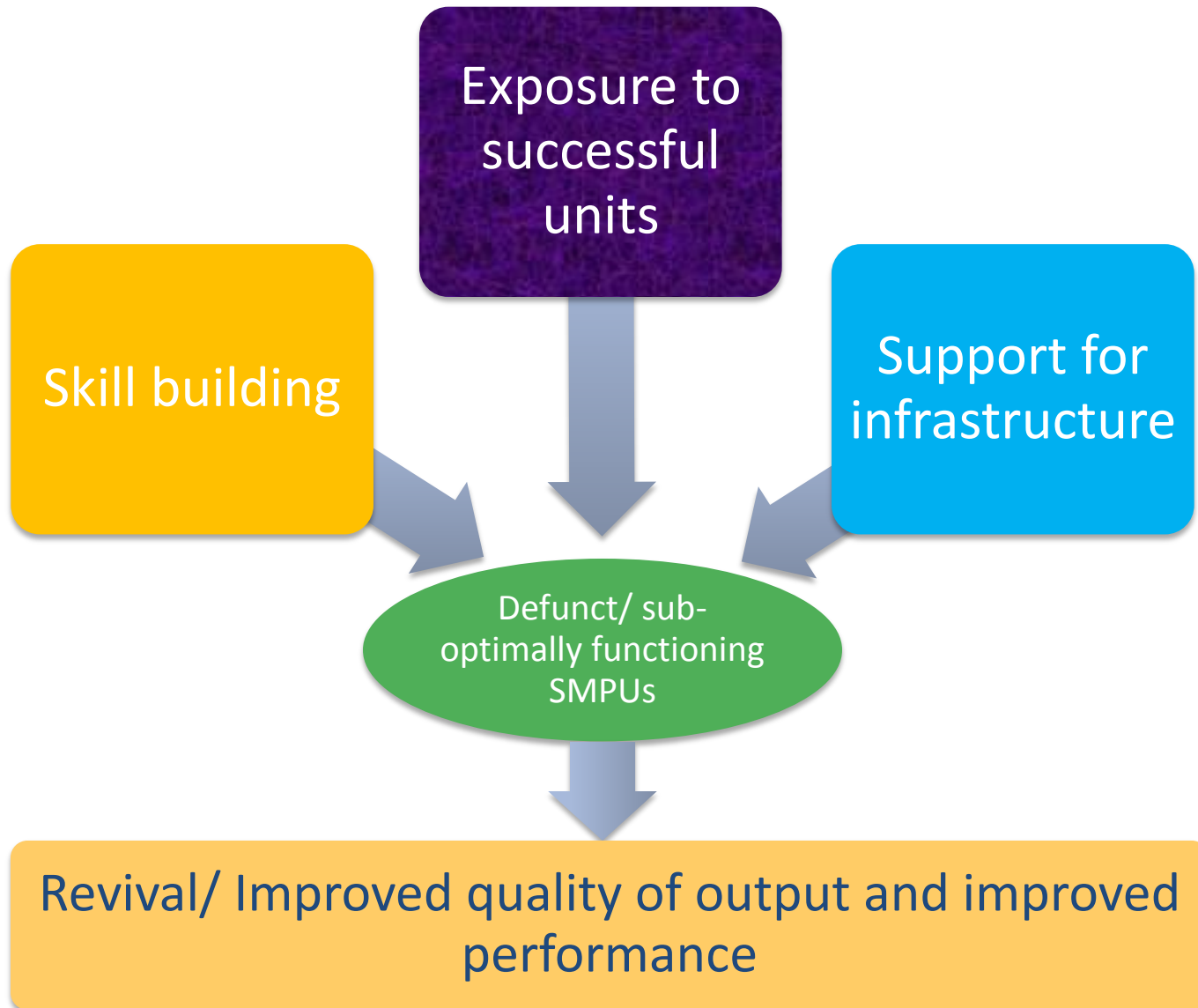
- Protocol was developed to study the existing community level SMPUs

Issues

- Improper machines and improper handling
- Lack of requisite machines, power problem, and manpower problem



Revival of SMPUs- Efforts taken



Skill building & Exposure



Training at Salem, Tamil Nadu



Training at Koraput, Odisha



Support for infrastructure



Fitting destoner at Pudur Nadu



Revival of machine at Kundali



Revival of machine at Peraiyur



Revival of machine at Mangalreву



Revival of huller at Pudur Nadu



Revival of FPO 's machine at Semiliguda



Results

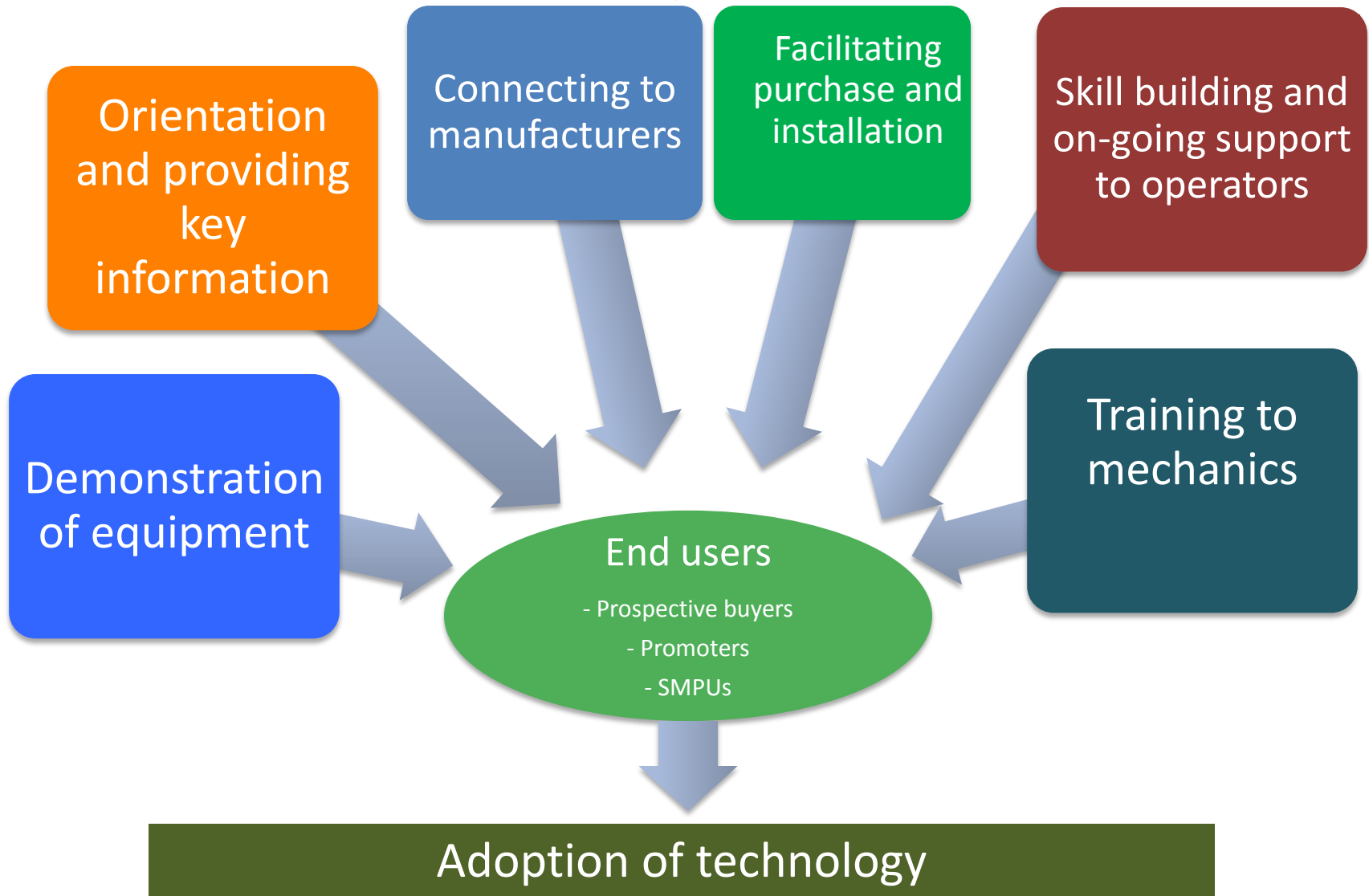
- 5 units revived in Odisha & 16 in Tamil Nadu

Learning

- Each unit has a different set of problems and needs specific efforts for revival
- Modalities for supporting setting up of village level custom hiring processing unit evolved
- Modalities for supporting setting up of regional level processing unit evolved



Capacity building of end users for sustained adoption



Demonstration

- **In strategic locations**
4 in Odisha, 3 in Tamil Nadu, 2 in Andhra Pradesh and 1 in Uttarakhand
- **Key organisations**
Odisha- Sabala, Living Farms, and Nirman
Chhattisgarh- Nirmaan
Rajasthan- Banyan Tree
Maharashtra- MAVIM
Uttarakhand- INHERE
- **Demonstrating in the key events**
Madurai Symposium 2017 & Exhibitions



Supporting the new entrants

- A guidance note covering the following is shared to potential buyers:
 - Purchasing machines based on scale
 - Testing the machine at the manufacturer site
 - Layout
 - Installation
 - Post-installation testing
- Exposure visit to running SMPUs and products offered by different manufacturers organised
- Potential buyers & new entrants joined in Facebook & WhatsApp groups(SM groups)



Capacity building

Total trainings-15

Total number of participants-345 (women: 59 and Men: 286)

NGOs supported-46; Government/Department-33

New Players-175; FPOs-30

SMPUs-61

Training to Mechanics

Training was imparted to mechanics from Tamil Nadu & Odisha at Victor Agro Sales's workshop in Salem



Improvement in performance of EMs

- Increased ability of AVM, Victor, and Perfura to serve distant markets beyond Southern India
- Positioning as providers of appropriate small millet processing equipment throughout India
- Increased ability of AVM and Perfura to liaise with government entities involved in procurement
- Widening of contact base and reach of all manufacturers
- Increase in production capacity by AVM
- 164 new units & 21 old units reached out of target of 200 units
- 52 districts in 10 states covered



Gender outcomes

- Drudgery reduction in the places where custom hiring centers were established
- Gender friendly/neutral machines
- Machines with better safety



Overall learning

- **Incubation approach was found to be suitable for improving small scale Ems**
- **But performance of EMs limited by internal and external factors**
 - On the internal side: Inadequate ability
 - to invest in significant modifications in the design of their equipment
 - to enhance their production capacity, to market their products in distant markets and to invest in capacity building of manpower
 - There is need to support access to capital at convenient terms
 - On the external side:
 - Limited by the slow growth of the demand for processing equipment, entry barriers pertaining to large-scale government bids, and a lack of support to meet R&D costs and for improvement of production capacity



Overall learning...

Facilitating adoption:

- More focused investment is needed on developing the utilisation ecosystems in these regions through:
 - (i) Local demonstration of SMPU
 - (ii) Capacity building on equipment operations
 - (iii) Facilitating access to quality equipment, and
 - (iv) Building local cadre of mechanicsto bring about a bigger change



Scope for scaling up the learning to make larger impact

- There is large scope for scaling up the learning from the project
- The incubator approach to improve production ecosystem can be replicated in Central and North India
- The working model to facilitate adoption can be replicated in major production regions
- Focused long term efforts and investment needed to bring about viable decentralised processing infrastructure across India
- Can be replicated in other countries in Asia & Africa





Thank You!



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