

# Case 10: Nano Ganesh: Adoption and Scaling of Irrigation Technology

## Teaching Note

### Today's Agenda

1. Part 1 – *Nano Ganesh: Will Farmers Adopt New Tech?*  
Focus: persuading early users in rural markets.
2. Part 2 – *Nano Ganesh: Scaling Irrigation Tech*  
Focus: expanding operations and financing growth.
3. Connect both parts through concepts of **innovation diffusion**, **behavioral adoption**, and **scaling strategy**.
4. Apply frameworks: **Technology Acceptance**, **Ansoff Matrix**, **Mission–Market–Means** alignment.

### Case Overview

**Nano Ganesh** is a mobile-enabled switch that allows farmers to remotely operate irrigation pumps. The product addresses unreliable power supply, long travel distances, and labor shortages in rural India.

Role	Decision	Key Question
<b>Amol Shinde (Rep)</b>	Promote adoption among traditional farmers	How to communicate value and reduce risk perceptions?
<b>Santosh &amp; Prasad Ostwal (Founders)</b>	Expand the enterprise	How to scale sustainably while preserving affordability and reliability?

### Linking the Two Cases

Stage	Central Challenge	Conceptual Lens	Outcome
<b>Part 1: Adoption</b>	Convincing risk-averse farmers to try the technology	Diffusion of Innovation, Farmers' Technology Acceptance Model	Proof of concept and user trust
<b>Part 2: Scaling</b>	Expanding distribution, funding, and operations	Ansoff Matrix, Business Model Design	Sustainable growth strategy

Both stages form a learning arc: *from behavioral change at the farm level to strategic scaling at the firm level.*

## Part 1 – Understanding Adoption

### Adoption Barriers

- **Technological:** limited electricity, poor network coverage, reliability concerns.
- **Behavioral:** resistance to change, risk aversion, reliance on peer norms.
- **Economic:** up-front cost despite long-term savings.

### Behavioral and Social Dimensions

Adoption depends not only on functional benefit but on *perceived credibility* and *social proof*. Local demonstrations and endorsements often matter more than technical specifications.

### Diffusion of Innovation Framework

**Stages:** Awareness → Interest → Evaluation → Trial → Adoption

Factor	Application to Nano Ganesh
<b>Relative Advantage</b>	Saves time, water, and electricity.
<b>Compatibility</b>	Must fit existing irrigation routines.
<b>Complexity</b>	Ease of use via simple mobile interface.
<b>Trialability</b>	Field demos lower perceived risk.
<b>Observability</b>	Visible outcomes (water flow, cost savings) reinforce trust.

Instructors can prompt students to identify which attributes Nano Ganesh communicates effectively and which require clearer messaging.

### Cost–Benefit Thinking

Using field data:

- A 5 HP pump running 8 hours/day for 7 months can save roughly 85,000 rupees (about US\$ 1,000) per year.
- Payback occurs within one to two cropping seasons.

Encourage students to connect economic reasoning with behavioral adoption:

Even when savings are clear, what makes people hesitate?

What mechanisms—demonstrations, warranties, peer networks—can bridge the gap?

### Communicating with Rural Consumers

Effective strategies emphasize:

- **Localization:** vernacular language, cultural references.

- **Community engagement:** trusted intermediaries, cooperatives, and local champions.
- **After-sales support:** training and maintenance to reduce uncertainty.
- **Two-way communication:** feedback loops that inform product refinement.

These approaches align with the **4 As framework**—Awareness, Acceptability, Affordability, Availability.

## Transition to Scaling

Once early adoption occurs, the challenge shifts from *convincing individuals* to *building systems* that enable widespread access.

Scaling requires operational efficiency, reliable financing, and channel partnerships.

Transition question:

How can OAAPL convert a successful pilot into a viable business serving thousands of farmers?

## Part 2 – Scaling Nano Ganesh

### Core Challenges

- Infrastructure limitations in rural markets.
- Need for capital to expand manufacturing and distribution.
- Competition from other IoT and irrigation technologies.
- Balancing affordability with profitability.

### Short- vs. Long-Term Priorities

- **Short term:** operational efficiency, targeted marketing, regulatory compliance, strategic alliances.
- **Long term:** R&D investment, localization, education programs, sustainable financing models.

## Applying the Ansoff Matrix

Strategy	Description	Nano Ganesh Application
<b>Market Penetration</b>	Deepen reach in current markets	Promotions, dealer networks, awareness drives
<b>Product Development</b>	Enhance or complement existing tech	Add sensors, water-use analytics
<b>Market Development</b>	Enter new regions	States with similar irrigation needs
<b>Diversification</b>	Move into adjacent domains	Remote monitoring for other sectors

Encourage students to evaluate which path offers the most leverage given OAAPL's resources.

## Financing and Investor Relations

Scaling requires a clear funding story:

- Identify aligned investors (impact funds, ag-tech accelerators).
- Present realistic growth projections and risk mitigation.
- Maintain transparency and steady communication with funders.
- Explore blended models (government grants, micro-finance, pay-per-use).

Discussion prompt:

What balance of equity, debt, and partnership funding preserves control while enabling scale?

## Business Model and Competitive Advantage

Five lenses (adapted from TG Exhibit 1):

1. **Value Proposition** – Reliable, affordable irrigation control for smallholders.
2. **Market Factors** – Broad B2C base with selective institutional partnerships.
3. **Capabilities** – Engineering know-how, field service network.
4. **Positioning** – Operational reliability and customer trust.
5. **Economics** – High volume, low margin, moderate leverage.

Prompt:

Which elements of this model create defensibility against imitators?

## Connecting Adoption and Scaling

Dimension	Early Stage	Growth Stage
<b>Customer Focus</b>	Farmer trust, usability	Channel partners, institutional buyers
<b>Key Constraint</b>	Behavior and awareness	Capital and infrastructure
<b>Metric of Success</b>	Number of adopters	Unit economics and reach
<b>Primary Risk</b>	Rejection or disuse	Overextension or dilution

Students can reflect on how early adoption patterns shape long-term strategic choices.

## Integrative Discussion Questions

1. How does understanding behavioral adoption improve scaling outcomes?
2. What short-term actions build toward long-term scalability?
3. How can OAAPL design partnerships that balance mission with market discipline?
4. What are realistic indicators of readiness to scale (technical, financial, social)?
5. How might the approach differ if expansion targeted global markets?

## Key Takeaways

- Technology adoption depends on social context as much as technical performance.
- Scaling requires alignment between **mission, market opportunity, and organizational capacity**.
- Sequencing matters: prove the concept locally, then build systems for broader reach.
- Sustainable impact emerges from steady, evidence-based growth rather than rapid expansion.
- Maintaining credibility and user trust is as vital as product innovation.

## Epilogue (Debrief)

By 2024, Nano Ganesh continues as a reference case for affordable ag-tech.

The progression from **adoption** to **scaling** illustrates that rural innovation succeeds when firms match ambition with realistic execution—grounded in farmer needs, adaptive learning, and disciplined resource use.