Final Report

# Barrier Analysis Report

## For Agri-SMEs to Inform Marketing, Sales, and Financing Strategies

**The Accelerating Sustainability in Cambodia's Agri-Food System (ASCA)**
Project code: KHMP000255
Procurement ELO folder no.: KHMC000405


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| Abbreviation | Full Term |
|---|---|
| **AC** | Agricultural Cooperative |
| **ADB** | Asian Development Bank |
| **AG** | Agricultural Group |
| **ASCA** | Accelerating Sustainability in Cambodia's Agri-Food System |
| **CBC** | Credit Bureau Cambodia |
| **CBF** | Carbon-Based Fertilizer |
| **CE SAIN** | Center of Excellence on Sustainable Agricultural Intensification and Nutrition |
| **DCA** | Development and Cooperation Agency |
| **EGE** | EGE Energy Cambodia |
| **EU** | European Union |
| **FAO** | Food and Agriculture Organization |
| **FGD** | Focus Group Discussion |
| **FI** | Financial Institution |
| **FNN** | Farmer and Nature Network |
| **GAT** | Green Agricultural Technologies |
| **GDP** | Gross Domestic Product |
| **GHG** | Greenhouse Gas |
| **IPM** | Integrated Pest Management |
| **KII** | Key Informant Interview |
| **KMF** | Khmer Modern Farming |
| **MAFF** | Ministry of Agriculture, Forestry and Fisheries |
| **MFI** | Microfinance Institution |
| **MSME** | Micro, Small, and Medium Enterprise |
| **NGO** | Non-Governmental Organization |
| **NPK** | Nitrogen–Phosphorus–Potassium |
| **PIN** | People in Need |
| **PPP** | Public–Private Partnership |
| **RUA** | Royal University of Agriculture |
| **ROI** | Return on Investment |
| **SMS** | Short Message Service |
| **SOTT** | SOTT Kasekor Chhlat |
| **TOR** | Terms of Reference |
| **UNEP** | United Nations Environment Programme |
| **USAID** | United States Agency for International Development |

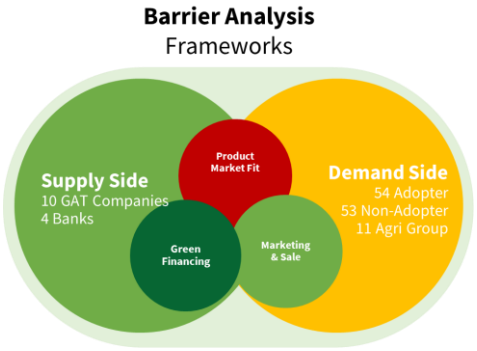
# 1.
# EXECUTIVE SUMMARY

## 1.1 PURPOSE AND OBJECTIVE OF THE BARRIER ANALYSIS

This Barrier Analysis examines the purchasing behavior, decision-making processes, needs, and constraints shaping the adoption of Green Agricultural Technologies (GATs) among Agri-MSMEs in Cambodia. The findings will be used to formulate an effective marketing, sales, and financing strategy that will support broader adoption of sustainable technologies and solutions provided by ten (10) Green Agriculture Technologies Companies under partnership with ASCA project.

## 1.2 THE ANALYSIS FRAMEWORK

In specific, the study adopts market system approach to:




**1. Identifying factors**
Influencing purchasing decisions among Agri-MSMEs.
**2. Understanding key influencers**
in the decision-making process.
**3. Assessing information sources**
used for purchasing decisions.
**4. Exploring perceptions and challenges**
related to end-user financing.
**5. Evaluating Agri-MSMEs' knowledge**
and understanding of climate change.

The strategy was to probe the following aspects of market system to understand kay aspect of its mechanism and operation that allows us to identify the issue and inform solutions in co-design multiple party process:

- **Product–market fit**: including selling vs non-selling products, comparative performance, after-sales service.
- **Marketing strategy**: channels, targeting, budgets, and performance management.
- **Sales and distribution channels**: sales force capability, performance management, conversion, rural outreach.
- **Financing**: payment modes, bank/MFI partnerships, financing barriers, perceived importance, and expansion opportunities.

The study draws data collected from:

- **107 MSMEs** (54 adopters, 53 non-adopters) across six provinces (Mondulkiri, Kampong Thom, Battambang, Kampot, Tbong Khmom, Kampong Speu).
- **11** agricultural groups/cooperatives through FGDs.
- **4** financial institutions through interviews (though we contacted 7 bank/MFI in total for the KII).
- **10 GAT** companies.

It uses both quantitative and qualitative approaches. Quantitative surveys capture awareness, satisfaction, and financing behaviors, while qualitative interviews and FGDs explored perceptions, social norms, and lived experiences.

Findings were validated with stakeholders through workshop and 1on1 meeting to ensure accuracy and relevance.

## 1.3 OVERVIEW OF KEY FINDINGS

The evidence shows a **clear and consistent pattern**.

### GAT adoption

is **commercially validated but technically constrained**. Across all respondent groups, GAT products are perceived as effective, reliable, and relevant to real farming challenges. Average scores for product features, ease of use, cost-saving potential, and climate benefits are high (around 4/5). However, adoption remains slower than potential because the **high price, upfront payment, weak access to finance, and underdeveloped marketing and sales systems** form a combined bottleneck.

### On the supply side

GAT companies show **strong technical capacity but weak commercial systems**. Marketing is the weakest dimension across companies, characterized by the absence of clear strategies, performance tracking, customer profiling, and ROI benchmarks. Sales and distribution rely heavily on direct outreach and ad-hoc partnerships, with limited measurement of conversion or efficiency. Financing is universally recognized as critical, yet current partnerships with banks and MFIs remain shallow, fragmented, and structurally misaligned with MSME realities.

### Contrary to common assumptions

**Lack of awareness or climate concern is not the primary barrier**. Climate concern is consistently high across adopters, non-adopters, agricultural groups, and GAT companies (around 4/5). Most non-adopters are already aware of GAT products. The binding constraints lie downstream: affordability, financing friction, weak market signaling, and limited after-sales maintenance capacity.

### The findings

point to a clear conclusion: **scaling GAT adoption in Cambodia now requires commercial system strengthening—not further proof of concept**. Effective marketing, structured sales processes, integrated financing solutions, and improved maintenance coverage are the decisive levers for accelerating adoption at scale.

# 1. Identifying Factors Influencing Purchasing Decisions among Agri-MSMEs

GAT adoption in Cambodia is constrained **not** by awareness, relevance, or willingness, but by a combination of high upfront cost, weak market conviction mechanisms, and structural financing and unfair competition. The market reacts positively to the products, but they're concerned about price and upfront cost and limited access to finance. This is complicated further by weak marketing and relatively weak sales/distribution by GAT companies along with threats of unfair competition by unregistered companies.

### 1.1 What Is Working (Positive Signals)

The data shows that fundamental demand conditions for GAT adoption are already in place:

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|---|---|
| **Demand** driven by real needs, not subsidies | 74% of adopters report purchasing GAT products due to operational needs rather than project incentives, confirming that adoption is not artificially induced. |
| **Product Value** perceived strong | GAT products score highly as solutions (≈4/5), with adopters rating product strength at 4.4/5, reflecting strong alignment on: (i) cost saving, (ii) functional features, (iii) ease of use, (iv) reliability. Non-adopters also largely agree with this assessment. |
| **After-sales service** is acceptable but not strong | After-sales service scores 3.8/5, suggesting it is not a deal-breaker but not a competitive advantage either |
| **Climate Risk** fully awareness | Across MSMEs, concern about climate change is strong (≈4/5), indicating that climate risk is well understood and internalized in business thinking. |

**Implication:**
The market does not suffer from lack of awareness, lack of relevance, or lack of perceived usefulness. GAT products broadly meet MSME needs.

**1.2 What Is Blocking Adoption (Core Barriers)**
Despite strong fundamentals, adoption is slowed by **three interlocking constraints**.
**(i) Price and Affordability (Primary Barrier)**

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|---|---|
| **Price** is the most decisive factor | • 56% of adopters and 58% of non-adopters cite prices as a significant consideration.<br>• Adopters rate product price extremely low (1.2/5), meaning price and upfront cost are perceived as very high. |
| **Upfront investment** is misaligned with MSME cash flow | Access to financing remains limited. |

**Implication:**
The adoption gap is driven by **affordability and cash-flow timing**, not by rejection of value.

**(ii) Weak Market Conviction (Marketing and Sales)**

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|---|---|
| **Marketing** does not convince | • Adopters rate marketing effort only around 3/5 (average)<br>• Non-adopters rate it even lower (below average) |
| **Current sales and distribution channels** perform acceptable relative to MSME preference | • However, review of the sales/distribution strategy of GAT companies indicates relatively weak. |

**Implication:**
Marketing and sales systems are not strong enough to translate product value into trust and action.

**(iii) Structural Market Constraints (Beyond Individual Firms)**

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|---|---|
| **Unfair Competition** distorts the market | Unregistered businesses sell cheaper products using misleading or poor-quality marketing, undercutting compliant GAT companies. |

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|---|---|
| **GAT Companies** are caught in a low-growth trap | • Sales are not growing fast enough to reinvest in After-Sales Services, marketing, sales and distribution systems<br>• This weakens their ability to compete on quality and solutions rather than price. |
| **Financing** is structurally constrained | All stakeholders agree financing is critical, but financing faces systemic barriers<br>• High cost of funds<br>• Inflexible regulations<br>• Credit limits and CBC constraints<br>• Small and fragmented market<br>• Limited risk-sharing mechanisms<br>• Shallow, poorly structured partnerships between GAT companies and financial institutions |

**Implication:**
The constraint is **systemic**, not behavioral. Neither MSMEs, GAT companies, nor banks are the sole bottleneck—misalignment across the system is.

## 2. Understanding key influencers in the decision-making process

Across adopter and non-adopter groups, the dominant pattern is consistent:

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| **MSMEs form opinions** and views around | • Neighbors and peers<br>• Community experience<br>• Physical demonstrations<br>• Direct engagement |
| **Online channels** function mainly as background awareness base | But the finish line is the good example by peers and neighbors, their community |

**Implication:**
Trust formation in the GAT market is **social and experiential**, not digital-first.

## 3. Assessing information sources used for purchasing decisions

**(i) Online Channel**
Facebook is the most dominant channel followed by YouTube. GAT companies position strongly on Facebook and YouTube is the right strategy when their target customers engage heavily with Facebook and YouTube as the 2nd channel.

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|---|---|
| **Facebook** is the dominant online channel: | • 100% used by GAT companies<br>• 39% of adopters and 32% of non-adopters get information from Facebook<br>• 100% of agricultural groups |
| **YouTube** is the second most relevant online channel, | • 10% of the GAT companies relies on YouTube<br>• 13% of adopters and 8% of non-adopters get information through YouTube |

**Implication:**
Facebook clearly dominates the online space, and YouTube is the only meaningful secondary online channel.

**(ii) Offline Channel**
Offline, trust-based channels consistently outperform online channels in influencing adoption:

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|---|---|
| **Demo**<br>are a major channel | • Used by 56% of GAT companies<br>• 15% of adopters and 8% of non-adopters get information<br>• Highly relevant for agricultural groups (45%) |
| **Fairs**<br>play a limited role for individual MSMEs | But they are **highly influential for agricultural groups (91%)**, reflecting collective purchasing and exposure dynamics. |
| **Agents**<br>matter more for adopters | (39%) than non-adopters (13%), suggesting their role is strongest once interest already exists. |
| **Neighbor/Peer**<br>Classified under "Other" | Adopter and non-adopter indicate that neighbor/peer classified under "others" as significant influence |

**Implication:**
Purchasing decisions are shaped primarily through **direct experience, interpersonal trust, and community validation**, not through passive information consumption. The companies are moving along this line but not enough – need more work.

## 4. Perceptions and Challenges Related to End-User Financing

**(i)**

| | |
|---|---|
| **Cash**<br>is the primary payment mode and dominate—by Necessity, not Preference | Cash is the primary payment mode:<br>• 74% of adopters<br>• 64% of non-adopters<br>• 45% of agricultural groups<br>Use of formal loans is negligible<br>• 2% of adopters<br>• 4% of non-adopters<br>• 9% of agricultural groups<br>**Interpretation:**<br>High cash usage does not indicate comfort with cash purchases; it reflects **lack of accessible alternatives**. |
| **Demand for Non-Cash Options** | **Installment and credit options** are more prominent among:<br>• Non-adopters (Credit 25%, Installment 26%)<br>• Agricultural groups (Installment 55%)<br>• Adopters show lower reliance on these modes, consistent with stronger liquidity or earlier commitment.<br>**Interpretation:**<br>Non-adopters are structurally more dependent on financing flexibility. Their lower adoption is linked to payment constraints, not lack of interest. |
| **Financing** | **Financing is rated as a major factor by:** |

| | |
|---|---|
| Is a decisive purchase factor | • 48% of adopters<br>• 60% of non-adopters<br>• 100% of agricultural groups<br>Only a minority rate of financing as “minor” or “average,” especially among non-adopters and groups.<br>**Interpretation:**<br>Financing is not a secondary consideration—it is central to the purchase decision, especially for those not yet adopted. |

**Implication**

The data shows a clear contradiction:

- Financing strongly affects purchase decisions
- Yet actual use of loans is extremely low

The mismatch between the importance of financing and its actual availability confirms that **end-user financing is a structural bottleneck**, not a behavioral one. Without simpler, faster, and better-aligned financing mechanisms, GAT adoption will remain slower than its underlying demand potential.

### 5. Evaluating Agri-MSMEs’ knowledge and understanding climate change.

We have ratings between 1 to 5 being the most.

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|---|---|
| **Climate Awareness**<br>Is universally high | Across all respondent groups, climate concern is consistently strong, with scores clustered around 4/5:<br>• GAT companies: 3.9<br>• Adopters: 4.1<br>• Non-adopters: 4.0<br>• Agricultural groups: 3.8<br>All groups were able to accurately describe climate-related events, indicating not only awareness but practical understanding.<br>**Interpretation:**<br>Climate change is a well-understood and accepted risk across the entire agri-market ecosystem. |
| **GATs are widely** recognized as climate solutions | Perceptions of GAT contribution to climate solutions are also high:<br>• GAT companies: 4.1<br>• Adopters: 4.1<br>• Non-adopters: 3.5<br>• Agricultural groups: 4.4<br>Even non-adopters rate GATs above average, while agricultural groups show the strongest conviction.<br>**Interpretation:**<br>Skepticism about the climate relevance of GAT products is not a material barrier, even among non-adopters. |

The persistence of adoption gaps despite strong climate knowledge confirms that constraints lie elsewhere—specifically in affordability, financing, market conviction, and system-level frictions already identified in earlier findings.

## 1.4 RECOMMENDATIONS

## A. GAT COMPANIES

| 1. Put in Place Marketing & Sales Strategy and Basic Performance Management | |
|---|---|
| Finding – Most GAT companies operate without:<br>• A clear marketing and sales plan<br>• Defined customer segments<br>• Performance tracking<br>• A mechanism to stop low-performing activities | **Recommendations:**<br>[] GAT companies should move away from ad-hoc marketing and opportunistic selling toward basic but disciplined commercial planning and performance management.<br>Each supported company should be required to develop a concise 2–3-page marketing and sales plan that clearly defines:<br>• priority customer segments (by crop, farm size, and geography),<br>• 2–3 core value propositions aligned with customer needs (e.g. cost saving, risk reduction, food safety, climate resilience),<br>• selected online and offline channels with indicative budget allocation,<br>• a small number of practical performance indicators (e.g. leads generated, demos conducted, quotations issued, unit sales).<br>[] To operationalize this plan, companies should adopt a light-touch monthly performance dashboard that tracks the full conversion funnel—from marketing activities to leads, quotations, and sales.<br>[] Monthly review meetings should be institutionalized to assess performance, identify bottlenecks, and discontinue campaigns or demos that show zero or unclear conversion after several cycles. Resources should be redirected toward activities that demonstrate traceable sales outcomes.<br>[] This level of discipline does not require sophisticated systems, but it is essential for learning, prioritization, and efficient use of limited resources. |

| 2. Rationalize Product Portfolio and Focus on Those of Good Selling | |
|---|---|
| **Finding**<br>Many GAT companies currently spread scarce marketing, sales, and technical resources across too many products, including those with weak or inconsistent demand. This dilutes impact and slows overall growth. | **Recommendations**<br>Companies should explicitly categorize their products into three groups:<br>• **Core performers**: products that currently drive the majority of sales and demonstrate clear market fit;<br>• **Emerging or experimental products**: smaller-volume products with potential but unproven demand;<br>• **Dormant or non-selling products**: products with little or no sales traction.<br>Marketing investment, dealer engagement, and financing discussions should focus primarily on **core performers**, as these products offer the fastest and most reliable pathway to scale. Emerging products should only be promoted through **small, time-bound pilot schemes** with clearly defined learning |

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| | objectives and success or failure criteria. Dormant products should be deprioritized during the project period.<br>Strategic focus—rather than product expansion—is critical for improving conversion rates and financial sustainability. |

| **3. Address Affordability Through Structured Financing Integration** | |
|---|---|
| **Finding**<br>The findings show that financing is a major determinant of purchase decisions, yet access to formal finance remains limited and fragmented. Reliance on cash purchases or informal company credit constrains adoption and exposes companies to unnecessary risk. | **Recommendations**<br>GAT companies, with support from the ASCA project, should form a coordinated group and, through ASCA's facilitation role, establish deep, long-term partnerships with one or two selected banks or MFIs that have a demonstrated focus on green technologies and the agriculture sector. This collective approach should aim to develop well-structured financing frameworks that address the current technical and market failures, including:<br>• fragmented lending → leading to small market share,<br>• surface-level and ad-hoc collaboration between GAT companies and financial institutions,<br>• limited data sharing, learning, and product refinement over time.<br>Rather than engaging multiple lenders on a case-by-case basis, concentrating engagement with a small number of committed financial partners will allow for clearer product design, more predictable processes, and reduced transaction costs for both lenders and borrowers. In parallel, GAT companies should integrate financing directly into their sales process, rather than treating it as a separate or external issue. Financing should be positioned as an integral part of the product offering. |

| **4. Professionalize Marketing Content and Channel Use** | |
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| **Finding**<br>Current practice of GAT companies focuses on Facebook and YouTube as channels are on the right track but not enough | **Recommendations**<br>Marketing should shift from **generic promotion to decision support** by:<br>• Prioritizing **proof-based content** (before/after results, ROI, payback, farmer outcomes).<br>• Using a **simple, consistent content rhythm** (e.g. education, testimonial, offer/demo).<br>• Embedding clear calls-to-action in all content (request demo, quote, financing info).<br>• Tracking basic responses and inquiries, not just views or likes.<br>Where possible, **shared marketing investments** should be used to amplify proven products. |

| **5. Strengthen Sales and Distribution Systems** | |
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| **Finding** | **Recommendations** |

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|---|---|
| Sales efforts are fragmented, and performance depends heavily on individuals rather than systems. | Companies should:<br>• Use cooperatives and agricultural groups to **cluster outreach and demos**, reducing cost per sale.<br>• Test **lead farmers or local agents** as first-line sales and follow-up points in remote areas.<br>• Introduce simple CRM practices to track leads, sales, and agent performance.<br>[] For rural outreach, cooperatives and agricultural groups should be used to cluster demonstrations and sales visits, reducing travel costs and increasing exposure. In remote areas, companies should test lead farmers or local agent models to provide first-line information, basic follow-up, and trust-building within communities.<br>[] Simple customer relationship management practices—tracking leads, quotations, sales, and agent performance—should be introduced to support learning and accountability. |

| **5. Improve After-Sales Service Coverage Strategically** | |
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| **Finding**<br>After-sales service is adequate but uneven, with high costs in remote areas. | **Recommendations**<br>After-sales service is a critical factor in trust, peer learning, and repeat adoption, yet coverage remains uneven and costly in remote locations. GAT companies should map existing customers by geography and classify them into **reachable versus high-cost service zones**. In high-cost zones, priority should be given to:<br>• training local technicians or lead farmers to handle basic maintenance,<br>• scheduling cluster service visits rather than ad-hoc responses,<br>• standardizing service protocols, response times, and documentation.<br>A simple system for tracking service requests, issues, and resolutions—potentially supported by a low-cost hotline—should be introduced to improve responsiveness and accountability. |

## B. PIN | ASCA Project

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| **1. Marketing Support** | Set up dedicated marketing program to support GAT:<br>• Tailored assistance to GAT companies from marketing strategies, performance management, content development, and then training them to internalize this capacity.<br>• A concept of shared marketing investment could be a good solution so that companies with clear product lines can take advantage of the project resources to push adoption of GAT products.<br>• Provide target support (marketing, demos, FI linkage) primarily on core performers and a small set of good working products instead of all categories. Put non-selling products into "parked" status for the duration of the project. |

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| | • Support field demo program of each GAT companies especially those who show strong connection between sale & demo |
| **2. Sale and Distribution** | • Continue to train sale representatives already developed by previous projects<br>• Provide market linkage support by connecting GAT company to target communities and farmer groups<br>• Support GAT Company to develop after-sale service system including system development and training. |
| **3. Financing** | • Facilitate a **co-design process** between a small group of committed FIs and selected GAT companies to shape 1–2 **standardized GAT loan products** (e.g. small equipment loan, seasonal input credit)<br>• Develop **short "product briefs"** for each GAT company: typical ticket size, typical client profile, indicative payback period. |

### C. Policy Maker

| | |
|---|---|
| **1. Enforce basic market rules to reduce distortion** | The dataset is explicit about unregistered businesses selling cheap products with bad marketing eroding trust.<br>• Strengthen enforcement on licensing/registration and minimum quality/warranty standards for relevant equipment categories.<br>• For certain high value and technical products, require licensed operators who have the right qualification, training and skills.<br>• Support consumer protection mechanisms that discourage "hit-and-run" operators. |

# 2.
# OVERALL FINDING

## 2.1 GAT Market

### 2.1.1 Prior Experience with Projects/NGOs – Benefit Types

Distribution of Benefits from 10 companies

- Marketing / branding support: 6/10 (60%)
- Market linkage / sales network: 5/10 (50%)
- Capacity building: 4/10 (40%)
- Financial support (grant/subsidy): 3/10 (30%)

**Benefits:**

NGO/project support focuses heavily on marketing visibility and market linkage, with far less emphasis on direct financial support.

- Market linkage typically includes linking companies to farmers/communities and expanding sales agent networks, often project-driven rather than company-driven (e.g., ECOSUN's "over 100 sale representatives", Dron Khmer's sales boost from a 50% subsidy, Husk Venture's "Link to customer").
- Marketing support covers promotional materials, branding campaigns, and marketing strategy support; ECOSUN, SOTT, Agro Solar, EGE Energy, Angkor Green, and Husk Venture all report this.
- Capacity building (training, coaching) appears, but ECOSUN's comment about "Lack business mindsets of sale representatives in the community/field requires a lot of training and coaching" indicates current efforts are not enough.
- Financial support appears in only 3 companies (e.g., CAVAC subsidy, grants from Khmer Entrepreneur and product development at Husk Venture) and is described as limited and small-scale.

**Implication for ASCA/PIN:**

- Companies are **highly dependent** on external actors for marketing and linkage; this is a structural vulnerability.
- Financial support is too limited to materially shift adoption on its own; if ASCA wants to scale, it must look beyond sporadic grants.

### 2.1.2 GAT Market Adoption, Trend and Driver

From the perspective of these 10 companies, GAT adoption is clearly rising. Nine of them explicitly say adoption is growing; words like "get adopted faster and on a scale" (Dron Khmer) and "There is a significant growth of GAT adoption" EGE Energy.

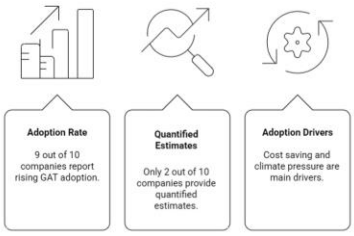
The **drivers** are consistent:

- **Cost saving**: cited by seven companies. Farmers "start seeing the benefit of cost saving" (Agro Solar) and SOTT reports cutting electricity costs by "50%".
- **Climate and environmental pressure**: Six companies tie adoption to climate risks and sustainability, with Angkor Green saying, "Because of climate change" and EGE Energy speaking of "Growing climate concerns".
- **Visibility and demos**: adoption often spreads by farmer-to-farmer observation and field demonstration.
- **Food safety and quality**: particularly for technologies like SOTT's processing solution, where "growing public concern about food safety" is explicitly mentioned.

But when it comes to numbers, the story is less solid. Only two companies provide actual market share estimates: Agro Solar reports around "70%" switching to solar pumps, Khmer Modern Farming estimates about "10%" net house adoption. For the rest, we have strong direction (upward) but weak quantification.

What this tells us:

The willingness and structural need for GAT are strong: cost pressure, climate risk, and food safety concerns. The barrier is how to systematically convert that interest into financed purchases, and how to measure what is truly happening beyond impressionistic "significant growth" statements.




Part 3.
GAT Market | Adoption is rising
**Key Findings**

**| 9/10**
companies report rising GAT adoption, but only

**| 2/10**
provide quantified estimates
Main adoption drivers (from company perspective):

- **Cost Saving – 7/10 companies**
cited by seven companies. Farmers "start seeing the benefit of cost saving" and "product cutting electricity costs by "50%".
- **Climate Pressure – 6/10 companies**
cite adoption to climate risks and sustainability "because of climate change" and "growing climate concerns".
- **Marketing and demos – 6/10 companies**
Farmer's awareness has strong weight in overall adoption often spreads by farmer-to-farmer observation and field demonstration.
- **Market stability** depends heavily on stable price of commodities

### 2.1.3 Sales Performance (2025) and Drivers

Performance Categories (Base = 10 Companies)

- Strong performers: 4/10 (40%) – SOTT, Khmer Modern Farming, Husk Venture, Angkor Green.
- Same performance: 4/10 (40%) – Dron Khmer, Agro Solar, EGE Energy, Harvest Center.
- Weak performer: 1/10 (10%) – ECOSUN reports clear decline due to dealer sales dropping.
- 1/10 not specified in the summary above (implicitly Agro Agape).

The "same" category hides turbulence:

- EGE Energy has lower revenue but higher unit sales, making "same" a poor proxy.
- Harvest Center experienced a small increase but still classifies performance as "same".


**Sales**
are influenced by both internal and external factors.

**Internally**
- **Marketing** is cited most often as a sales driver (6/10 companies)
- **Price and product features (** 5/10 companies)

**Externally**
- **Policy** is the single most cited external factor (8/10 companies) link their sales to policy in some way.
- **Market conditions – 5/10 companies** (commodity prices, competition, imports) are the second external driver.

**Weak enforcement** on unregistered businesses allows cheap products and "cheat marketing" (no tax obligation), which undermines trust in compliant companies. Companies observe that customers react more strongly to low prices than to marketing, sales/distribution or product solutions.

Part 3.
GAT Market | Trend and Drivers
**Key Findings**

### 2.1.4 Factors Contributing to Sales

**Product**

Base = 10 companies.

- Price is a sales factor for 5/10 companies
- Product features for 5/10
- Climate solution angle for 3/10
- Marketing for 6/10 (highest)
- Sales/distribution for 2/10
- Financing for 1/10
- "Other" (multi-purpose use) for 1/10

Who leans heavily on which?

- Marketing-heavy:
- Dron Khmer, ECOSUN, Agro Solar, Husk Venture, EGE Energy, Harvest Center
- Price-sensitive (as advantage or challenge):
- ECOSUN, SOTT, Husk Venture, Angkor Green, AGRO AGAPE
- Feature-driven:
- Dron Khmer, Khmer Modern Farming, Husk Venture, Harvest Center, AGRO AGAPE

Representative quotes:

- Dron Khmer: "2 main factors driving the growth: product features and marketing – the more promotion of products/service, more sales."

**External Factors**

Base = 10 companies.

- Policy matters for 8/10 companies
- Market conditions matter for 5/10
- Donor/project support mentioned by 2/10
- No one explicitly marks "technologies" or "other" in this section

Who highlights what?

- Policy + unfair competition: Dron Khmer, ECOSUN, EGE Energy, Harvest Center
- Policy + supportive frameworks: Agro Solar, Khmer Modern Farming, Husk Venture
- Policy + donor support: Husk Venture, Angkor Green

Policy is the single most cited external factor – 8/10 companies link their sales environment to policy in some way. Market conditions (commodity prices, competition, imports) are the second external driver (5/10).

Representative quotes:

- Dron Khmer: "registered companies operate at a disadvantage on high operating cost unregistered can operate freely and offer a better price and run cheat marketing and dominate the market."
- ECOSUN: "A lot of competition with new unregistered businesses flooding the market with cheaper products and cheat marketing."
- EGE Energy: "Policy: If Govt' policy mandate license to operate, it will create opportunity for registered business like EGE Energy."
- Harvest Center: "Policy at first Gov ban import license from China… now the Gov. open the license again)."

**Internal Factors**

- Team strength appears as a driver in 6/10 companies
- Strategy in 3/10
- Resources in 2/10
- Ability to execute in 2/10
- Navigate challenges explicitly in 1/10

Internally, most companies say the team is a strength, not a bottleneck.

- 6/10 explicitly cite Team as a factor (Dron Khmer, Agro Solar, Husk Venture, EGE, Angkor Green, Harvest Center).
- Strategy is mentioned by 3/10 (Khmer Modern Farming, Angkor Green, Harvest Center).

- Resources and ability to execute only appear in 2/10 each.
- Only Angkor Green explicitly mentions *all five* internal elements (team, strategy, resource, ability, navigate challenges).

Representative quotes (max 5):

- Dron Khmer: "Team. Drone Khmer Technology has strong team with right technical skills to compete in the market."
- EGE Energy: "Well trained staff/team to promote and offer timely technical solutions. A strong and responsive customer support team is essential…"

### 2.1.5 Customer Behavior

A. Price: Most Salient Behavior Driver (5/8 = 62.5%)

Price shows up in 5 of 8 valid responses. Behavior patterns around price are consistent:

- Customers hesitate when upfront investment is high, especially farmers.
- Smallholders are explicitly described as pulled toward low-cost options, often at the expense of quality and long-term performance.
- ROI (return period) is central: short payback improves acceptance; high initial cost slows decisions.

Illustrative quotes (exact, up to 5 total across topics):

- "Cambodia's solar market faces unfair competition due to unregulated pricing… Short-term ventures often introduce low-quality products and exit quickly, undermining trust."

B. Marketing & Sales: Major Shapers of Perception (Marketing 4/8 = 50%; Sales 2/8 = 25%)

Marketing is selected in 4 out of 8 observations, and sales/distribution in 2 out of 8. The qualitative content is sharp:

- Strong, credible marketing and sales can convince customers even under strong competition.
- Misleading or "cheat" marketing by others unregistered businesses cause distrust and distorts the market.
- Branding, content quality, and sales strategy directly influence who customers trust.

C. Others:

- Product Features & Quality: Important but Secondary to Price/Trust (3/8 = 37.5%)
- Climate Solutions: Recognized but Rarely a Primary Behavior Trigger (1/8 = 12.5%)
- E. Financing: Influences Uptake When Combined with Features & ROI (2/8 = 25%)
- Financing appears in 2 of 8 observations, but where it appears, its role is strong:
- Customers "respond… to product features and financing more. When these two conditions are met, see a good sale."


Part 3.
GAT Market | Customer Behavior
**Key Findings**

**1. Price – 5 of 8 companies**

**Most Salient Behavior Driver** shows up in 5 of 8 valid responses. Behavior patterns around price are consistent: Customers hesitate when upfront investment is high, especially farmers. Smallholders are explicitly described as pulled toward low-cost options, often at the expense of quality and long-term performance.

**2. Marketing - 4/8 companies**

**3. Sales – 2/8 companies**

Marketing is selected in 4 out of 8 observations, and sales/distribution in 2 out of 8. The qualitative content is sharp:

- Strong, credible marketing and sales can convince customers even under strong competition.
- Misleading or "cheat" marketing by unregistered businesses cause distrust and distorts the market.
- Branding, content quality, and sales strategy directly influence who customers trust.

## 2.2 Product–Market Fit

### 2.2.1 Selling vs Non-Selling Products

Strong selling:

- Solar pumping/energy: ECOSUN ("Only solar water pumping has a good sale"), Agro Solar ("We sell only solar pump"), EGE Energy ("Selling: solar pump and Solar energy").
- Drones: Dron Khmer ("Only Drone"), Harvest Center ("Best sale: Drone (still at a price that farmers can afford and be suitable for rice farmers)").
- Fertilizers: Husk Venture ("CBF and pellet fertilizer are the well-sale product"), Angkor Green ("Best sale: gardening tool, fertilizer and pesticide").

Non-/low-selling products (clear problem cases):

- SOTT Kasekor Chhlat: "Rice Husk Stove (no selling)".
- Husk Venture: "unwell sale is biochar because of difficulty ease of application".
- EGE Energy: "Non-selling: solar cool storage and solar appliance like charge".
- Harvest Center: "Lower sale: Tractor and harvester".

### 2.2.2 Product-to-Customer Need

**| GAT Companies**

- High average scores across companies:
  - Cost saving: 4.1/5
  - Features: 4.2/5
  - Ease-of-use: 4.1/5
  - Climate benefits: 4.2/5
- At the same time, **7/8** companies rate **price** low (1–2/5): customers see value but struggle with upfront cost.

Key conclusions from the dataset itself:

- GAT products are broadly solving the right problems. Technical and functional fits are strong.
- Upfront price and cash flow are the real adoption barriers. Without financing or phased payment models, adoption stays below potential.
- Portfolio pruning is needed. At least 4 companies have products that effectively do not sell.

- Operational support is weak. Even strong products (solar, drones) depend on reliable technical support and setup.

**| GAT Customers**

| Decision Factors | Adopters (% of 54) | Non-Adopters (% of 53) | Agriculture Groups (Score out of 11 groups) |
|---|---|---|---|
| • Price / Cost | 56% | 58% (too expensive) | 9/11 |
| • Product Features | 94% | 17% (poor features) | 11/11 consider "necessary features" |
| • Ease of Use | 76% | 13% (not easy to use) | 6/11 |
| • Reliability / Quality | 72% | 13% (not reliable) | 8/11 |
| • Climate Solution | 38% | 0% | Not mentioned |
| • Sales Representative Influence | 35% | Minimal | 5/11 ("reliable sale") |
| • Service Quality | Not highlighted by adopters | 2% (poor service) | 8/11 |
| • Financing | Not rated by adopters | Not cited | 4/11 |
| • Distribution / Accessibility | Not cited | Not cited | **0/11** |
| • Other Concerns | – | 30% "Other" | – |

1. Cost Is the Universal Barrier and Driver

   Cost shapes decisions for adopters (56%), non-adopters (58%), and is the highest-scoring concern for agriculture groups (9/11).
   This is unequivocal: GAT adoption depends on affordability, and without financing options or phased-payment mechanisms, uptake will stall.
2. Product Features and Reliability Drive Adoption—but Poor-Quality Blocks Non-Adopters

   Adopters overwhelmingly prioritize features (94%) and reliability (72%), indicating that technical performance is central to their decision. For non-adopters, dissatisfaction echoes this: 17% say features are poor, 13% say products are unreliable. This signals a perceived quality gap between what companies think they offer and what the broader market believes.
3. Ease of Use: A Strong Enabler for Adopters, a Barrier for Holdouts

   Adopters: 76% buy because products are easy to use. Non-adopters: 13% cite difficulty as a barrier. Agriculture groups: 6/11 rate ease of use as important. Ease of use shifts customers from interest → trial → purchase. Complexity slows adoption.
4. Climate Benefits Influence Only Those Already Convinced

   Adopters: 38% cite climate benefit. Non-adopters: 0%. Agriculture groups: not mentioned. Climate messaging is not a conversion tool—it reinforces existing adopters but does not attract new ones.
5. Sales Representatives and Distribution Are Weakest Links

   Adopters: only 35% influenced by sales reps. Agriculture groups: 5/11 find sales reps reliable. Distribution: 0/11 groups say distribution is strong. This is critical: awareness exists; interest exists, but physical access to products does not exist. It explains why good products still fail to scale.
6. Financing Awareness Is Low, but Need Is High

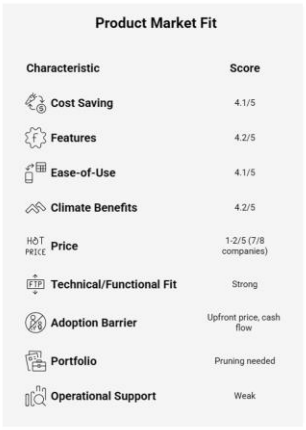
   Adopters did not highlight financing; non-adopters avoided it; but agriculture groups scored financing only 4/11—low but meaningful.

### 2.2.3 Comparative Performance vs Conventional

- 5/10 companies explicitly highlight **better performance** vs conventional.
- 6/10 highlight **cost advantage over time**.
- However, multiple comments stress the **capex vs opex tension**:
    - "Cost saving but require investment upfront at the purchase" (Dron Khmer and ECOSUN pattern).
    - Husk Venture: cost advantage "especially at the second production".
- Ease-of-use and reliability advantages are mentioned less systematically: only 3/10 companies explicitly discuss them in this comparative framing.

**Implication for ASCA:**

- The narrative that "GAT is better than conventional" is **inconsistent and incomplete** across companies.
- ASCA cannot assume that customers uniformly hear clear comparative messages on performance, cost over time, ease-of-use, and reliability.




**GAT Companies**

- High average scores across companies:
    - Cost saving: 4.1/5
    - Features: 4.2/5
    - Ease-of-use: 4.1/5
    - Climate benefits: 4.2/5
- At the same time, **7/8** companies rate **price** low 2/5: customers see value but struggle with upfront cost.
- GAT products are broadly solving the right problems(technical and functional fit is strong)
- **Upfront price and cash flow are the real adoption barrier**. **Without financing** or phased payment models, adoption stays below potential.
- **Product category fit:** Products that perform well tend to combine cost saving, strong features, ease of use and climate benefits.

Part 3.
GAT Product | Market Fit
**Key Findings**

### 2.2.4 After Sale Service

**| GAT Companies**

- Strength in technical support, weakness in maintenance. The data is very clear: companies rate technical support extremely high (4.4/5) and maintenance much lower (3.7/5). Maintenance is the bottleneck for scaling GAT technologies. Low maintenance capacity directly aligns with:
    - Technician shortages
    - Inability to cover field visits
    - Heavy cost of sending teams or setting up in provinces
- Guarantee and spare-part systems work well—where they exist. Scores cluster at 4–5, but 40% lack reported systems or do not track them.

**Implication for ASCA:**

- Support companies in building structured maintenance systems (scheduled visits, local partners, technician networks).
- Improve spare-part logistics and decentralization.
- Promote service standards and documentation, since half the companies do not provide full data.

**| GAT Customers**

| Service Dimension | Adopters (Score 1–5) | Non-Adopters (Qualitative Insight) | Agriculture Groups (FGD Insight) |
|---|---|---|---|
| • Overall Satisfaction | 3.85 | Not rated; service rarely experienced | Group note service varies by location |
| • Guarantee / Warranty | 3.41 | Not cited as barrier | Mixed clarity; limited awareness |
| • Spare Parts Availability | 3.43 | 2% cite service issues (minor) | Availability inconsistent in remote areas |
| • Maintenance Service | 3.33 (Lowest) | 13% cite reliability/quality concerns | 8/11 service rate important but uneven |
| • Technical Support | 3.43 | Not directly cited, but low trust implied | High need; mixed satisfaction |
| • Distribution & Reach (related to service) | Not rated | Not cited | **0/11** groups say distribution is strong |

1. Adopters are "moderately satisfied," but maintenance is an average

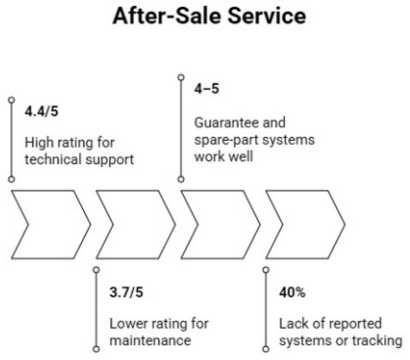
   Adopters give overall service a 3.85, yet every sub-dimension (guarantee, spare parts, maintenance, technical support) sits in the 3.3–3.4 band. This indicates that while service is *acceptable*, no category is performing strongly.

2. Non-adopters rarely experience service—but their complaints align with service weaknesses

   Non-adopters give service only incidental mention: 2% cite service issues and 13% cite reliability (often linked to poor support or slow response).

3. Agriculture groups highlight the biggest structural problem: poor service reach

   Agriculture groups rate service quality positively (8/11) *when it reaches them*— but service does not reach them consistently. The most critical indicator: 0/11 groups rate distribution as adequate. This means the issue is not the quality of service, but the absence of a functioning last-mile system that can deliver service, maintenance, and spare parts to them.




**GAT Companies**

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  - Technician shortages
  - Inability to cover field visits
  - Heavy cost of sending teams or setting up in provinces
- Guarantee and spare-part systems work well—where they exist.

**Scores at 4/5, but 40% lack reported systems or do not track them.**

Part 3.
GAT Product | After-Sales Services
**Key Findings**

## 2.3 Marketing

### 2.3.1 Strategy

- 3/10 companies explicitly say, "no clear marketing strategy."
- Another 2–3 list of activities rather than a coherent plan.

- Only Angkor Green, Harvest Center, Khmer Modern Farming, SOTT, ECOSUN, and Agro Agape (6/10) have something resembling a strategy, and quality varies.

Quotes:

- "No clear marketing strategy." — Dron Khmer
- "Organic marketing plan based on new learning." — ECOSUN
- "Digital marketing, campaign." — SOTT
- "No clear strategy." — Agro Solar
- "Our strategy is to quality of HR." — Angkor Green

**Pattern:** marketing is shallow, inconsistent, and often unstructured.

### 2.3.2 Marketing Performance Management

- Around 70% (7/10) do not have a performance management system.
- Only Angkor Green, Harvest Center, and SOTT measure or review marketing in any structured way.

Quotes:

- "No clear plan and system." — Dron Khmer
- "No clear system." — ECOSUN
- "Not applicable." — Agro Solar
- "No review of marketing performance." — EGE Energy
- "2 to 3 time a month to measure progress." — Angkor Green

Companies are running activities "blind": no clear metrics, no ROI, no funnel tracking.

### 2.3.3 Adjustments to Strategy (2025)

- 6/10 companies (60%) made **some adjustments**, mostly operational tweaks:
  - Reducing demos.
  - Adding digital marketing schedules.
  - Working with cooperatives.
  - Partnering with specific entities (e.g., Hou Yon).
- Only EGE Energy mentions a structural shift: "Want a marketing team focused marketing effort led by expert."

Most adjustments are reactive (cost pressure, trend following), not evidence-based redesign.

### 2.3.4 Target Customers & Prospecting

- Target customer definitions are mostly commodity-based ("rice farmers", "horticulture in net house", "coffee, pepper, cassava, cashew farmers").
- Some companies effectively target "everyone" ("No target", "Almost all commodities"), which is equivalent to no segmentation.

Prospecting systems are almost absent:

- 8/10 companies have no prospecting/profiling system: "No clear system", "Don't have", "No clear prospecting… just target rice farmers…".
- Angkor Green and Harvest Center are the only companies that indicate some structure via Telegram groups and technical staff.

This is arguably the largest single marketing weakness in the dataset.

### 2.3.5 Marketing Materials / Assets

**| GAT Company:**

Content Format: Video is dominating, but Quality and Purpose Vary

- 9/10 companies use video in some form; 8 give it a performance score.
- Average video score = 4.4/5 (8 companies) → they see video as a high-performing asset.
- Most rated assets are awareness/educational, not sales promotion.

Evidence:

- "Format: [5] Video and [5] testimony… [5] awareness and educational." — *Dron Khmer*
- "[5] Video [5] awareness." — *SOTT*
- "[5] Video [4] Testimony [3] Demo [5] awareness." — *Husk Venture*
- "Marketing content is mostly posters. [5] Video and [5] awareness and educational." — *EGE Energy*

Content Pattern 1: Testimony is Used, Demo Content is Underdeveloped

- Testimony content is present in 5/10 companies, with avg 4.0/5 – a strong asset.
- Only 2 companies rate demo content (Husk, Harvest); avg 3.0/5 – moderate at best.
- AGRO AGAPE mentions "video – demo/explanation" but gives no score.

Content Pattern 2: Branding and Differentiation are Almost Non-Existent

- Only one company gives a branding score: Harvest Center ([3] branding).
- ECOSUN calls its material "branding video and product," but without any rating.
- Everyone else talks about awareness/education, not brand positioning.

Content Pattern 3: Quality Gaps in Content Production

- ECOSUN openly admits weak technical capacity: "[2] simple video by the team without proper technical skills in content development and marketing."

**| GAT Customers**

| Marketing Dimension | Adopters (Score 1–5) | Non-Adopters (Qualitative Insight) | Agriculture Groups (FGD Insight) |
|---|---|---|---|
| • Overall Satisfaction | 3.85 | Moderate | Moderate |
| • Content Quality | 3.65 | Moderate awareness via neighbors & local events | Moderate (online + offline) |
| • Duration / Campaign Length | 3.59 | No specific comment | Moderate |
| • Format / Video | 3.54 | Moderate (video observed secondhand) | Moderate (video widely seen) |
| • Channels Used | 3.43 (Lowest) | 49% rely on neighbors/relatives; limited digital reach | Strong awareness via Facebook + fairs/demos |
| • Primary Awareness Source | Company campaigns | 49% rely on peer observation | 10/11 online + 11/11 offline events |
| • Offline Marketing | Used but not rated separately | Community promotional meetings observed | All 11 groups exposed |
| • Online Marketing | Mostly Facebook (moderate performance) | Minimal influence | 10/11 groups see ads/videos |

1. Adopters show moderate satisfaction, but no marketing category exceeds "good."

   All adopter indicators fall between 3.43–3.85, indicating:

   - Marketing performs adequately
   - But no asset stands out as strong or high impact
   - Videos and channels score lowest, confirming companies' weak content production capacity

   **This aligns with KII findings that most companies lack marketing strategy, lead capture, and quality control.**

2. Non-adopters rely more on *social proof* than on marketing channels.

   Non-adopters do not respond strongly to company marketing. Instead:

   - 49% learn from neighbors/relatives
   - Many first hear about GAT through community meetings or informal observation
   - Marketing satisfaction is only "moderate," and does not persuade them to purchase

3. Agriculture groups show full exposure (online + offline) but only moderate satisfaction.
   All agricultural groups encountered GAT materials:
- 10/11 through online content (Facebook, videos, graphics)
- 11/11 through offline channels (fairs, demos, agents)

   Yet every campaign component is rated moderate, not strong.

4. Channels are moderate across all groups.
   Adopters give the score (3.43) to channels. Non-adopters lean on word-of-mouth rather than company channels. Agriculture groups rely on both online and offline but see only "moderate" effectiveness. This highlights structural gaps:
- Low targeting
- No segmentation
- Lack of retargeting
- Poor integration of offline→ online follow-up
- Weak channel mix strategy

5. Video performs better than expected—but is not strong enough to influence buying decisions. Adopters rate video at 3.54; agricultural groups confirm heavy exposure, and non-adopters see videos indirectly. **This suggests: Video is widely used but quality, proof, and call-to-action are weak, videos raise awareness but rarely drive conversion**

Synthesis:
Across adopters, non-adopters, and agriculture groups, the following patterns emerge:

1. Marketing is visible but not persuasive. All groups see the content, but none find it strong or compelling.
2. Peer influence is more powerful than company campaigns. Demonstrations and neighbor usage outperform digital marketing influencing decisions.
3. Channels are misaligned with customer behavior. Companies push Facebook; farmers rely on demos, neighbors, and cooperative networks.
4. Content quality and depth need improvement. Moderate scores across all groups indicate room to strengthen clarity, relevance, and storytelling.
5. Offline demos remain the strongest tool, but expensive and inconsistent. Agricultural groups universally engage with offline events, signaling a need for structured demo programming.

### 2.3.6 Marketing Channels

**Online: Facebook is Dominant; Multi-Channel, Not Omni-Channel**

- 8/10 companies explicitly use Facebook.
- Some are multi-platform (Facebook + TikTok + Telegram + YouTube), but there is no evidence of an integrated funnel.

**Quotes:**

- "Our main focus marketing strategy is online, through Facebook, TikTok, and less on YouTube." — *Dron Khmer*
- "Not much printed but more on online marketing like Facebook." — *ECOSUN*
- "Our main focus marketing strategy is online, through Facebook." — *KMF*
- "[x] Online: Facebook, Linkin, telegram." — *Husk*
- "Through Facebook, TikTok, Telegram and YouTube." — *Harvest Center*

**Implications:**

- Facebook is the default digital channel.
- TikTok, YouTube, Telegram, and LinkedIn are secondary or experimental.
- There is no mention of:
  - Retargeting

- Structured content calendars per channel
- Systematic lead capture from these platforms

**“So, this is channel use, not channel strategy.”**

**Pattern: Offline Demo Still Central for Some, but Costly**

- 5/10 companies rely on offline demo (Agro Solar, KMF, Husk, Angkor Green, Harvest).
- 2/10 explicitly use fairs/exhibitions (KMF, Husk).
- Angkor Green goes as far as saying offline is still the best way.

**Quotes:**

- “Field demo _Cooperate with NGOs.” — *Agro Solar*
- “Provide demo with the AC and boot fee at exhibition sometime the price is too high.” — *KMF*
- “[x] Offline: Demo, fair, exhibition.” — *Husk*
- “Offline still the best way to promote with farmer by using Poster, demo.” — *Angkor Green*
- “[x] offline: demo.” — *Harvest Center*

**Implications:**

- Offline demo remains key for trust-building and adoption, which fits the nature of GAT.
- However, KMF explicitly flags cost as an issue: “boot fee at exhibition sometime the price is too high.”

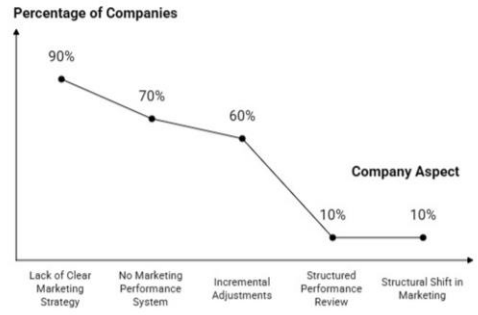
### 2.3.7 Marketing Budget and ROI

- 3/10 companies never calculate marketing budget (“Never calculate but it’s enough…” or similar).
- Another ~20% spend “very low cost” only.
- 6/10 have **no ROI benchmark**: “No benchmark – no discussion”, “No clear benchmark”, “0”.

One company bluntly states **“no money”** for marketing.

**Implications:**

- Marketing budgeting is ad-hoc; ROI is the biggest blind spot.
- Skills and budget constraints reinforce each other; companies cannot justify or optimize marketing spending.




- **Marketing strategy**

Almost all companies lack a clear marketing strategy or plan, with several stating explicitly “no clear marketing strategy”. Another 2-3 describe ad-hoc activities rather than a coherent plan, reacting to situations rather than following a defined approach.

- **Performance management**

Around 7/10 companies have no marketing performance system (“No clear plan and system”, “No review of marketing performance”). About 6/10 companies report incremental adjustments (fewer demos, more digital posts, more work with cooperatives or partners).

- **Marketing materials/assets**

Video is used by 9/10 companies; 8 rate it, with an average of 4.4/5, making it the main awareness/ education tool. Testimony videos are used by 5/10 companies and score on average 4/5. Demo content is underdeveloped, rated 3/5 by 2 companies. Branding content is almost invisible as an explicit dimension; only one company rates “branding”.

- **Target customers & prospecting**

Targeting is mostly commodity-based (“rice farmers”, “horticulture”) or location-/business-based, often effectively “everyone”. Prospecting/profiling systems are largely absent: 8/10 companies have no clear system. Only 2 show partial structure through technical staff and Telegram groups.

Part 3.
Marketing | Strategy and Performance Management
**Key Findings**

## 2.4 Sales & Distribution

### 2.4.1 Sale Performance

**Cluster 1 – Stable / On-Track Performers**

Who: Dron Khmer, SOTT Kasekor Chhlat, Khmer Modern Farming, Husk Venture, Angkor Green, EGE Energy (6/9 = 66.7%).
Common features:

- They do not describe 2025 as a crisis year.
- Several explicitly say results are on or around expectations:
  - "We think it's already in line with our expectation" (Dron Khmer)
  - "Overall sale result is around the expectation" (Husk Venture)
  - "Met expectation" (Angkor Green)
  - "The sale meets the target plan…" (Khmer Modern Farming)

But they are not passive. Every one of them mentions concrete adjustments:

- Channel & trust-building:
  - "No more sale at the field… engage with the Agricultural Cooperative group" (Dron Khmer)
  - "Demo is the good strategy to build customer trust." (Angkor Green)
  - "Focused door to door. Freelance – 3 sale reps" (EGE Energy)
- Capacity / structure:
  - "Improve team capacity" (Husk Venture)
  - "Will create the marketing team (set up the studio room is in consideration)" (Khmer Modern Farming)

**Cluster 2 – Underperformers (Weak or Below Target)**
Who: ECOSUN, Harvest Center (2/9 = 22.2%).
Plus Agro Solar as a special case (decrease linked to downturn).
Characteristics:

- ECOSUN: "Sale performance is weak so far but see opportunity"
- Harvest Center: "Below the target - around 60% reach the target."
- Agro Solar: "Sale has decreased… correlate with the economic downturn…"

Their adjustments are more defensive or remedial:

- ECOSUN doubles down on sales-force capacity building:
  - "More work to train and nurture existing sale force…"
- Harvest Center tries to push harder on presence and visibility:
  - "Personal branding of the sale team expands the opportunities."
- Agro Solar cuts cost to survive:
  - "Reduce the operation team and scale down the operation. That is why the company still be survive."

**Cluster 3 – Capacity-Constrained Growth (SOTT Kasekor Chhlat)**
SOTT is a unique case:

- Performance: "It reaches to our capacity of current operation."
- Adjustment: "Expanding production capacity is essential to support higher sales volume…"

### 2.4.2 Sale Strategy

No coherent strategy appears in multiple companies. Agro Solar explicitly states "No strategy". and almost other did not comment. Most common theme is direct marketing to agricultural communities:

### 2.4.3 Sale/Distribution Model

**| GAT Companies**

Average scores (where provided):

- **Direct sales** (9 companies):
  3.9/5 on average; 5/5 at Dron Khmer, EGE Energy, Angkor Green.

- **Agents/dealers** (8 companies):
  3.6/5 on average; 5/5 at ECOSUN, EGE Energy, Angkor Green.
- **Cooperatives/NGO/partnerships** (8 companies):
  3.6/5 on average; 4/5 at SOTT, Khmer Modern Farming, Husk, Angkor Green.
- **E-commerce** (8 companies):
  1.6/5 on average (clearly the weakest).

**| GAT Customers**

| Channel | Adopters (n, % share) | Non-Adopters (n, % share) | Agriculture Groups (n, % share) |
|---|---|---|---|
| Company (Direct Purchase) | 21 (39%) | 16 (30%) | 5 (45%) |
| Dealer / Depo | 20 (37%) | 29 (54%) | 3 (27%) |
| NGO / Agricultural Cooperative (AC) | 18 (33%) | 4 (7%) | 9 (82%) |
| Agents / Preferred Salesperson | 9 (17%) | 22 (41%) | 1 (9%) |
| Delivery / Home-based Fulfillment | 1 (2%) | 3 (6%) | 9 (82%) |

1. Dealer and agent networks dominate the non-adopter landscape and are critical points of intervention.
   Without structured partnerships and quality control, these intermediaries will continue to push low-cost alternatives.
2. Agricultural cooperatives and NGOs are the strongest channels for scaling, scoring 82% preference among groups.
   They provide trust, convenience, and collective decision-making leverage.
3. Delivery is a decisive enabler for rural access, especially for group-based farming systems.
4. Direct company sales matter most informed, confident adopters, but not enough for market expansion.
5. Sales strategy must be segmented:
   - Adopters: reinforce direct dealer channels.
   - Non-adopters: strengthen agent training, quality control, and community demos.
   - Agriculture groups: build AC partnership programs and structured delivery routes.

### 2.4.4 Sales Force Capability & Management

The majority lack a performance management system. More than half explicitly state “No clear system.” **Only 3/10 have clear sales performance metrics:**

- Husk: HR evaluations and line manager reports.
- Angkor Green: targets/KPIs plus regular reviews.
- Harvest Center: sales amounts reviewed twice a year.

Weak sales performance management is a systemic issue of

- Tracking and monitoring
- Managing sales pipelines
- Evaluating sale representatives.

### 2.4.5 Conversion Rates and Rural Outreach

- Only 4/10 companies report conversion
- 6/10 either do not measure or did not provide data

Rural outreach shows a split landscape:

- Some companies face real cost and distance challenges (Dron Khmer, ECOSUN, Angkor Green).
- Others report strong networks and no major challenges (SOTT, Khmer Modern Farming, Husk).
- EGE Energy does not reach remote areas; customers come to them.

- Harvest Center struggles with “Difficult to find new customers”.


- **Sales strategy**

Sales strategy is weakly articulated; at least one company states “No strategy”. Most focus on direct outreach to farming communities without clear segmentation or a structured sales process.

- **Sales/Distribution model**
  - Direct sales: used by 9 companies, at 3.9/5 score
  - Agents/dealers: used by 8 companies, at 3.6/5 score
  - NGO partnerships: used by 8 companies, 3.6/5 score.
  - E-commerce: used by 8 companies, 1.6/5 – score.
- **Sales Force Capability & Management**

Team strength is cited as an asset in 6/10 companies, but formal sales performance management exists in only 3/10 (clear metrics and review systems). Most report “No clear system” or equivalent.

- **Conversion rate**

Only 4/10 companies report any conversion data; 6/10 do not measure or did not provide it.

Part 3.
Sales | Strategy, Distribution
**Key Findings**

## 2.5 Financing & Partnerships

### 2.5.1 Payment Modes

**| GAT Company**

Internal credit is thus partial and inconsistent; risk sits on companies that are not designed as lenders.

- **Installments/credit terms:**
  6/10 companies offer some form of staged payment (e.g., “downpayment 50% and 50% after three months”; “offer 50% down payment with 3 to 6 months credit term”).
- **No credit term despite need:**
  3/10 (Dron Khmer, ECOSUN, Agro Solar) explicitly does not offer credit, even though they acknowledge financing is needed and would increase sales.

Quote:

- “Drone machine requires financing, but the company does not offer credit terms — summary of Dron Khmer situation.

**| GAT Customers**

| Payment Method | Adopters (n, % share) | Non-Adopters (n, % share) |
|---|---|---|
| **Cash** | 40 (74%) | 34 (64%) |
| **Credit Term** | 7 (13%) | 14 (26%) |
| **Installment with Company** | 6 (11%) | 14 (26%) |
| **Loan from Bank/MFI** | 1 (2%) | 2 (4%) |

### 2.5.2 Bank/MFI Partnerships

- 9/10 companies mention at least one bank/MFI/green finance program.
- However, several collaborations are labelled as **failed or ineffective**:
  - “Collaboration seems not work… did not help cross sale as expected under the MOU” (ECOSUN on LOLC).
  - “MOU with LOLC – failed” (EGE Energy).
  - “Used to cooperate with MFIs… process was often too complicated and didn’t always work effectively” (SOTT).
- There are some positive experiences:

- "AMK is good" (EGE Energy).
- "ACELEDA provides fast service." (Angkor Green).

Two dominant clusters:

(a) **Process complexity:**
- "Process of the bank or MFI sometime ways complicated" (Dron Khmer).
- "Process is not easy" (ECOSUN).
- "Too complicated" (SOTT).

(b) **Creditworthiness / risk management:**
- Existing loans: "low approval rate was because of existing loans of the customers" (Dron Khmer); "dealers already have existing loans are quite complicated" (Husk Venture).
- CBC issues: "80% on bad CBCs" (EGE Energy); "Farmer doesn't have CBC (fail in evaluation)" (Harvest Center).
- Collateral: "High collateral"; even "High collateral (CBC is in a good status)" (Angkor Green) signals frustration.

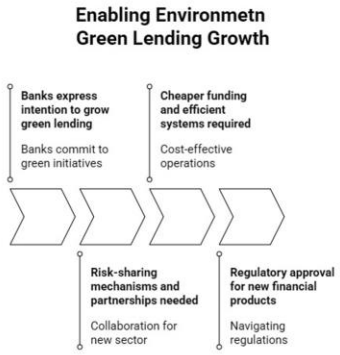
### 2.5.3 Importance of Financing and Expansion Opportunities

- 9/10 companies state financing is **very important** or critical:
  - "Very important – it helps sale" (Dron Khmer, ECOSUN).
  - "Very important. If we scale up our operations for commercial sales, partnering with a bank would be highly beneficial" (SOTT).
  - "Provide loan for farmer/user is so important… where the company also can increase sale" (Khmer Modern Farming).
- Expansion ideas include:
  - Using modern Agricultural Cooperatives to improve credit (Khmer Modern Farming).
  - Seeing FI partnerships as marketing opportunities ("It is an opportunity to do marketing with user" — Husk).
  - Expanding partnerships with banks and projects (Harvest Center).

**Companies' specific requests to FIs are limited and fragmented:**
- Faster process and lower interest.
- Solutions around CBC (e.g., longer-term reset for bad CBC, risk sharing, insurance).
- Willingness to provide referrals to MFIs/banks.

- 6/10 companies have **"0", "No comment", or "No good insight"** on concrete support needed from FIs, indicating that many firms know financing is a problem but do not yet have a clear model in mind.

**Implications:**
- Financing is structurally central to GAT sales.
- FI partnerships are common but underperforming; complexity and rigid risk filters (CBC, collateral) are the main chokepoints.
- Companies improvise internal installments but cannot scale or manage risk alone.
- There is a joint design gap: both FIs and companies need support to create specific, workable instruments rather than generic "faster, cheaper" asks.




Part 3.
Financing
**Key Findings**

- **Bank/MFI partnerships**

9/10 companies mention at least one partnership with banks/MFIs/green finance, but several collaborations are described as failed or ineffective (e.g., MOUs that did not lead to cross-sales). Two main pain points are: (i) complex processes ("process, too complicated", "not easy"), and (ii) tight risk filters (existing loans, "bad CBCs", high collateral), which exclude many farmers and dealers.

- **Importance of financing**

9/10 companies say financing is very important or critical for sales. Expansion ideas include using agricultural cooperatives, leveraging FI partnerships as marketing channels, and expanding collaborations with banks/projects.

- **Bank perspective (4 banks/MFIs interviewed)**

They indicate that agriculture and the green sector are not necessarily higher risk technically, but there are issues that slow progress. All four want to expand, but half explicitly require enabling conditions.

# 3.
# THE BARRIER ANALYSIS

## 3.1 ASCA Project

Funded by the European Union through the SWITCH-Asia program, ASCA aims to drive the transition to a more sustainable agri-food system in Cambodia. The project focuses on increasing the use of carbon-based fertilizers and Green Agricultural Technologies (GAT) to reduce Greenhouse Gas (GHG) emissions, improve resource efficiency, and promote economic growth in rural areas. Key objectives include reinforcing the decarbonization of agricultural value chains through the adoption of carbon-based fertilizers, GAT by rural MSMEs, and food loss valorization. Additionally, the project will enhance awareness of sustainable practices, encourage policy discussions, and foster stakeholder collaboration for the implementation of GAT solutions.

Davane Plc and CE SAIN were commissioned by the project to carry out the barrier analysis assignment that started in October 2025.

### Goal and Objectives

The ASCA project aims to accelerate the transition towards a sustainable, low-carbon agri-food system by combining innovation, market development, and stakeholder collaboration.

**Objective 1.**
Decarbonize Agriculture Value Chain

**Objective 2.**
Increase Awareness and Policy Engagement

**Objective 3.**
Strengthen Market Systems and Collaboration

**Partners**

- Husk Ventures (Cambodia) and
- The Farmer and Nature Network

**GAT Companies**

Partner with 10 GAT companies to help provide green technology solutions to MSMEs.

**Target Areas**

6 provinces: Mondulkiri, Kampong Thom, Battambang, Kampot, Tbong Khmom, and Kampong Speu

## 3.2. Purpose of Analysis

This Barrier Analysis Assessment was conducted under the Accelerating Sustainability in Cambodia's Agri-food System (ASCA) project to understand the opportunities and constraints shaping adoption of Green Agricultural Technologies (GATs) among micro, small, and medium enterprises (MSMEs). The study aimed to (i) explore MSME adoption behaviors and decision-making pathways, (ii) identify structural, financial, and behavioral barriers to uptake, and (iii) provide evidence-based recommendations for GAT companies, financial institutions, and project partners to strengthen product design, marketing, distribution, and financing mechanisms.

## 3.3. The Overall Approach

The strategy was to probe the following aspects of market system to understand kay aspect of its mechanism and operation that allows to identify the issue and inform solutions in co-design multiple party process:

- **Product–market fit**: including selling vs non-selling products, comparative performance, after-sales service.
- **Marketing strategy**: channels, targeting, budgets, and performance management.
- **Sales and distribution channels**: sales force capability, performance management, conversion, rural outreach.
- **Financing**: payment modes, bank/MFI partnerships, financing barriers, perceived importance, and expansion opportunities.

## 3.4 Methodology

The methodology for this Barrier Analysis combines quantitative rigor and qualitative depth to understand the complex factors influencing the adoption of Green Agricultural Technologies (GATs) among Agri-MSMEs in Cambodia. Structured within the Four-Fold Analytical Framework and complemented by mixed-methods data collection, the approach ensures that findings reflect both market-level dynamics and the lived experiences of MSMEs, GAT companies, agricultural groups, and financial institutions across the ASCA project's six provinces.

**Analytical Framework**

The study is guided by the **Four-Fold Analytical Framework**, which offers a step-by-step structure for assessing adoption barriers and developing actionable recommendations.

**Level 1: Market and Purchasing Behavior**

At this level, the study explores how MSMEs perceive GATs, how they obtain information, and how they make purchasing decisions. This includes assessing product–market fit, understanding perceived benefits and risks, and examining the influence of marketing, demonstrations, agents, and peer networks.

**Level 2: Illustrative Insights from Adoption and Non-Adoption Cases**

To move beyond general patterns, the study documents real examples of successful and unsuccessful adoption. These cases reveal practical realities—such as what builds trust, what discourages investment, or how social norms shape decision-making—and help clarify the contextual drivers behind adoption outcomes.

**Level 3: Comparative Analysis (Doers vs. Non-Doers)**

This level compares MSMEs who have adopted GATs with those who have not. The comparison highlights structural constraints (e.g., pricing, distribution), behavioral factors (e.g., trust, perception), and financial limitations (e.g., access to credit). It also identifies enabling factors

that differentiate adopters, such as exposure to demonstrations or stronger relationships with agents.

**Level 4: Validation and Co-Development of Solutions**
Preliminary findings are validated with PIN, GAT companies, and agricultural groups through workshops and consultative meetings. This ensures that the insights are accurate, relevant, and actionable—and that GAT companies can co-design improved marketing, sales, and financing strategies.

## 3.5 Sampling and Sample Size

The assessment applied a mixed methods design guided by a Four-fold Analytical Framework. Data collection included:

- **107 MSMEs** (54 adopters, 53 nonadopters—a total of 52 females) across six provinces (Mondulkiri, Kampong Thom, Battambang, Kampot, Tbong Khmom, Kampong Speu).
- **11** agricultural groups/cooperatives through FGDs.
- **10 GAT** companies and **4** financial institutions through interviews (though we contacted 7 bank/MFI in total for the KII). Quantitative surveys captured awareness, satisfaction, and financing behaviors, while qualitative interviews and FGDs explored perceptions, social norms, and lived experiences. Findings were validated with stakeholders to ensure accuracy and relevance.

**Geographic Coverage**
The assessment focuses on six target provinces selected for their agricultural importance, diversity of farming systems, and relevance to the ASCA intervention areas, including: Mondulkiri, Kampong Thom; Battambang, Kampot, Tbong Khmom, and Kampong Speu provinces.
These provinces represent varied agro-ecological landscapes, crop systems, and levels of market integration, providing a comprehensive picture of MSME behaviors across different contexts.

**List of GAT company**
The assessment covers Green Agricultural Technologies promoted by the ten GAT partner companies in the ASCA project. These include:

| Company | Age Class | Provinces | Product Category Summary |
|---|---|---|---|
| Dron Khmer Technology | 0–5 yrs | Tonle Sap, Takeo, Prey Veng | [] Drone machines [] Drone spraying services |
| ECOSUN | 10+ yrs | Nationwide | [] Solar pumps & solar energy appliances |
| SOTT Kasekor Chlat | 5–10 yrs | Tonle Sap, Nationwide reach | [] Solar dryers |
| Agrosolar | 0–5 yrs | Nationwide | [] Solar pumps |
| Khmer Modern Farming | 5–10 yrs | Nationwide (focus on Kampot and Kampong Speu | [] Net-house packages, fertigation, bio-pesticides |

| | | | |
|---|---|---|---|
| HUSK Ventures | 5–10 yrs | Nationwide | [] Carbon-based fertilizers, pelletized fertilizer, biochar |
| EGE Energy Cambodia | 5–10 yrs | Nationwide | [] Solar pumps, solar power systems, solar cold chain |
| Angkor Green | 10+ yrs | Nationwide | [] Machinery, fertilizers, irrigation, animal feed, warehouse installation, |
| Harvest Center / DCA | 5–10 yrs | Phnom Penh + 10 provinces | [] Drones, tractors, harvesters |
| AGRO AGAPE | 5–10 yrs | Koh Kong, Mondulkiri, Kampot, Siem Reap | [] Biochar system, biomass dryer, waste-to-value feedstock |

By examining this diverse set of technologies and business models, the study identifies adoption patterns, product gaps, and opportunities for enhancing technology scalability across rural MSMEs.

## 3.6 Data Collection and Tools

Multiple complementary tools were used to capture a holistic picture of GAT adoption.

**| Structured Questionnaires**

These were used with adopters and non-adopters to collect data on awareness, decision-making processes, price sensitivity, financing behaviors, and satisfaction levels.

**| Semi-Structured Interviews**

Conducted with GAT companies, financial institutions, and selected MSMEs, these allowed deeper exploration of marketing effectiveness, distribution of bottlenecks, perceptions of risk, and product performance in real-world use.

**| Focus Group Discussions (FGDs)**

FGDs with agricultural groups facilitated discussions on shared experiences, community norms, and group-level influences on technology adoption. These discussions were particularly useful in understanding peer influence and collective decision-making.

**| Key Informant Interviews (KIIs)**

KIIs with project teams and sector experts provided additional context on enabling environmental factors, market systems, and emerging opportunities for sustainable agriculture.

**| Digital Data Capture**

All quantitative and qualitative data were recorded using **KoboToolbox**, which enhanced data quality through real-time monitoring, automated checks, and minimized transcription errors.

**| Data Analysis Methods**

A combined **quantitative and qualitative analysis approach** ensured a thorough interpretation of the data.

**| Quantitative Analysis**

Survey responses were analyzed using descriptive and comparative statistics. This included frequency counts, cross-tabulations, and trend analysis to assess awareness levels, adoption of determinants, and financing behaviors. The data allowed for identifying key differences between adopters and non-adopters.

**| Qualitative Analysis**

Interview and FGD transcripts were coded thematically to identify emerging patterns related to perceptions of GATs, information sources, trust in suppliers, affordability constraints, distribution challenges, and social influences. Case studies were also developed to illustrate real examples of adoption and non-adoption.

**| Integration through the Four-Fold Framework**

All results were synthesized according to the analytical framework. This ensured that findings aligned with the project's conceptual approach and directly informed recommendations for marketing strategies, distribution models, and financing solutions.

**| Gender and Inclusion Considerations**

In line with ASCA's goals, the study intentionally included women participants, ensuring at least 40% female representation. The team also considered gender-specific barriers, such as access to information, decision-making roles within MSMEs, and financial constraints.

## 3.7 Quality Assurance

Strong quality assurance mechanisms were embedded throughout the study.

**| Enumerator Training and Tool Piloting**

Enumerators received training on research ethics, interview techniques, gender-sensitive interviewing, and the technical aspects of GATs. All tools were pilot tested to ensure clarity, relevance, and flow before being deployed.

**| Field Supervision and Monitoring**

The field coordinator supervised daily data collection, conducted random spot checks, and provided real-time troubleshooting. Digitally captured data enabled daily monitoring of inconsistencies or errors.

**| Data Verification and Triangulation**

Multiple data sources—MSMEs, GAT firms, agricultural groups, financial institutions, and desk review materials—were cross-checked to verify accuracy and consistency. Triangulation strengthened the validity and reliability of findings.

**| Stakeholder Validation**

Preliminary results were presented to PIN and GAT companies during validation sessions. Their feedback was used to refine interpretations, confirm accuracy, and ensure that recommendations were grounded in practical realities.