REPORT OF

IMPACT ASSESSMENT

2026

SHIRKE®

PLURIVERSAL RESEARCH AND ACTION

Agricultural Development Trust Baramati

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ABBREVIATIONS

ADT	Agricultural Development Trust
CNC	Computer Numerical Control
CSR	Corporate Social Responsibility
F&V	Fruit & Vegetable
FGD	Focus Group Discussion
FPO	Farmer Producer Organisation
IDI	In-depth Interview
KVK	Krishi Vikas Kendra
OBC	Other Backward Classes
SC	Scheduled Castes
SHG	Self-help Group
SPSS	Statistical Package for the Social Sciences
ST	Scheduled Tribes

EXECUTIVE SUMMARY

This impact assessment evaluates five CSR-supported facilities by B.G. Shirke Construction Technology Private Limited at the Agricultural Development Trust (ADT), Baramati, across two major grants of ₹5 crore each. The assessment engaged 1,078 stakeholders, including students, farmers, micro-entrepreneurs, self-help groups (SHGs), farmer producer organisations (FPOs), and startup incubates, across diverse geographical areas of Pune district. The findings demonstrate significant and measurable impact across skill development, livelihood improvement, innovation, and institutional strengthening.

Millet Processing Facility	
Skills Development	• Statistically significant improvement across all technical domains ($p < 0.001$). • Millet processing skill increased from 13.2% to 72.2% high ability among students; fruit & vegetable processing from 14.2% to 79.9%; bakery unit from 18.2% to 67.8%
Entrepreneurship & Business Outcomes	• 40% of trainees started new businesses; 54.2% improved existing businesses • 90.3% reported significant income increases • 100% reported increased production scale; 93.5% achieved improved packaging and market readiness • 82.3% of entrepreneurs commercially utilize the facility weekly
Product Diversification	• 82.8% engaged in millet-based products; 72% papad production; 31.2% pickles; expansion into bakery, snacks, and ready-to-eat products
Women Empowerment	• 74.2% of training participants were women; many now manage household finances independently and participate in decision-making

Dairy Processing Facility	
Skills Development	• Dramatic improvement in milk processing abilities. Pre-training: 75% reported low ability; post-training: 50% high ability, 45% medium ability (statistically significant)
Entrepreneurship	• 80% improved existing dairy businesses; 5% started new ventures • 88.2% engaged in milk production; 11.8% each in paneer, ghee, and cheese making • 58.8% earning >₹15,000/month; 35.3% earning ₹5,000–15,000/month
Student Outcomes	• 67.1% reported practical skill improvement to a large extent • 40.9% improved job readiness to a large extent; 51.7% to some extent • 93.3% increased confidence in lab work • 87.2% rated facility more useful than regular classroom practicals
Livelihoods	• 80% reported significant improvement in livelihood opportunities; strong endorsement with 95% recommending training to others

Soil Testing Laboratory	
Farmer Productivity & Income	• 93.2% reported increased crop yield post-recommendations • 54.5% reported income increases; 45.5% observed reduction in input costs • 40.9% improved soil quality; 27.3% better crop quality • 81.5% made farming practice changes based on soil testing
Accessibility & Trust	• 79.6% found reports very easy to understand • 96.3% report full confidence in test results • 85.7% rate ADT service as superior to alternatives (where comparisons possible) • 100% would recommend ADT services to others
Student Learning	• Soil analysis ability improved from 26.1% low/24.6% none to 56.5% high ability • 60.9% reported practical skill improvement to a large extent; 33.3% to some extent

	• 47.8% improved job readiness to a large extent; 44.9% to some extent • 92.8% increased confidence in lab work • 78.3% rated overall facility quality as excellent
Critical Facility Role	• 31.9% would rely only on theoretical learning in absence of facility; 34.8% unsure of alternatives, highlighting facility's indispensability

FabLab	
Prototype Development	• 80% of startups developed prototypes or improved product design • 50% of incubatees improved ability from medium to high (45% pre-training; 50% post-training) • Student prototype ability: low ability reduced from 43.6% to 5%; high ability increased to 43.6%
Business Acceleration	• 80% improved product readiness; 50% increased customer validation • 45% secured investment/funding opportunities; 40% achieved faster market entry • 30% generated revenue; 80% able to test/launch products in market • 65% received incubation support; 45% obtained grants; 35% achieved product commercialization • 30% received awards; 10% each filed/obtained patents and secured investment
Cost & Time Efficiency	• 60% reported significant cost reduction; 35% slight reduction (vs. external alternatives) • 55% reported significant time reduction in product development; 25% slight reductions
Student Learning	• 97.5% reported skill improvement to some or large extent • 74.4% found FabLab more useful than regular practicals • 33.3% improved practical skills to large extent; 66.7% to some extent • 87.2% rated training and guidance as excellent; 87.2% increased confidence in lab work
Access & Equity	• 85% of startups had no prior access to similar facilities, making FabLab critical for early-stage innovation

Auditorium (Institutional Asset)	
Infrastructure Development for Knowledge Dissemination	• 300-seat capacity facility with sustained high utilization • Cumulative reach: 29,180 individuals across four years (2022-23 to 2025-26) • Enabled large-scale programmes (200–300 participants per event) • Strengthened learning ecosystem through expert lectures and interdisciplinary engagement • Facilitated community outreach: farmer trainings, professional workshops, awareness sessions

The recommendations focus on strengthening and scaling existing gains by enhancing visibility and outreach, providing targeted entrepreneurship support, and improving follow-up and impact tracking. They emphasise expanding market linkages and access to credit, extending inclusion to the most marginalised groups, and building community-level capacity for sustained engagement. Additionally, recognising high-impact achievers can help motivate participants and create role models, while a gradual move toward financial sustainability can support long-term continuity of services.

INTRODUCTION

Corporate Social Responsibility (CSR) in India refers to the commitment of businesses to contribute to sustainable social, economic, and environmental development by working with communities to improve their existing conditions. While the concept of corporate philanthropy has long existed in India, CSR was institutionalized through the Companies Act, 2013, which made it mandatory for eligible companies to spend at least 2% of their average net profits on specified social development activities.

Over the past decade, total CSR spending has grown significantly – from around ₹10,000 crore in 2014–15 to over ₹34,900 crore in 2023–24 – reflecting both regulatory enforcement and increasing corporate commitment to social investment[1]. This expansion has positioned CSR as an important source of development finance, with cumulative spending exceeding ₹2 lakh crore since the mandate was introduced.

Sectorally, CSR investments continue to be concentrated in education, healthcare, and rural development, which receive the largest share of funding[2]. At the same time, emerging priorities such as climate action, renewable energy, skill development, and livelihood generation are gaining prominence, reflecting both national development goals and global sustainability agendas[3].

ABOUT THE COMPANY

B.G. Shirke Construction Technology Private Limited is a Pune-based, private company operating in the construction and infrastructure sector. Incorporated in 1994, the company is part of the larger Shirke Group, which has commenced its commercial operations in the year 1955 and having its expertise in civil engineering and infrastructure development.

The company has developed a strong presence across diverse infrastructure domains, including mass housing, industrial complexes, roads, bridges, airports, and institutional buildings. It operates as a multi-disciplinary engineering enterprise with capabilities spanning civil, mechanical, and electrical engineering, supported by in-house manufacturing units and research and development facilities.

With large-scale operations and integrated infrastructure, the company has contributed to India's industrial and socio-economic development through execution of major construction projects and adoption of technology-driven construction practices.

[1] https://responsenet.org/corporate-social-responsibility-csr-in-india-applicability-laws-implementation-amendments-examples-and-updates/

[2] https://economictimes.indiatimes.com/news/company/corporate-trends/csr-spend-trebles-in-a-decade-education-health-get-lions-share/articleshow/122326417.cms?from=mdr

[3] https://csrsummit.in/csr_community/single.php?id=39

CSR APPROACH OF THE COMPANY

The Corporate Social Responsibility (CSR) initiatives of B.G. Shirke Construction Technology Private Limited are aligned with its broader vision of contributing to inclusive development and community well-being. As a company operating under the framework of the Companies Act, 2013, it undertakes CSR activities focused on social infrastructure, skill development, and livelihood promotion. Through institutional partnerships, these interventions are designed to enable hands-on learning, technology access, scientific research, and capacity and enterprise development, particularly in agriculture and allied sectors.

By investing in infrastructure and institutional partnerships, the company aligns with its core business expertise and vision, while aiming to:

- enhance technical and entrepreneurial capabilities;
- support innovation and prototyping ecosystems; and
- enable livelihood opportunities and rural development.

Overall, the CSR approach of B.G. Shirke Construction Technology Private Limited seeks to align with emerging trends in India's CSR landscape, where companies are increasingly focusing on impactful interventions that combine infrastructure support with skill and enterprise development.

ABOUT THE NGO PARTNER

The Agricultural Development Trust (ADT), Baramati is a leading non-profit institution established in 1971 with the vision of transforming the drought-prone Baramati region into a model of agricultural and rural prosperity. It was founded to address challenges such as water scarcity, low agricultural productivity, and rural poverty, and has since evolved into a comprehensive development organization working across agriculture, education, research, and community empowerment.

Over the decades, ADT has adopted an integrated rural development approach that combines agricultural innovation, capacity building, and technology dissemination. Its initiatives include water conservation, demonstration farms, farmer training programs, and the promotion of allied activities like dairy, poultry, and agri-processing. The Trust also operates educational institutions from primary to postgraduate levels and collaborates with national and international organisations to translate research and advanced technologies into practical applications.

Today, ADT functions as a multi-sectoral ecosystem supporting farmers, students, women, and entrepreneurs through infrastructure, training, and innovation platforms. With a strong focus on sustainable agriculture and rural livelihoods, its interventions are designed to contribute to strengthening agricultural value chains, promoting innovation, and enhancing livelihood opportunities.

PROJECTS UNDER IMPACT ASSESSMENT STUDY

The study was commissioned by B.G. Shirke Construction Technology Private Limited to assess the impact of its two CSR projects granted to ADT, Baramati.

Table 1: CSR Projects Assessed for Impact

S.N.	Project Name	Completion Year	Financial Outlay
1	Carrying out Scientific Agricultural & Dairy Research Trials	2021	₹ 5 crore
2	Establish infrastructure of Research Centre mainly focusing on agriculture, food, and dairy domain (Millet)	2024	₹ 5 crore

PROJECT ACTIVITIES UNDER PROJECT 1 – ESTABLISH INFRASTRUCTURE OF RESEARCH CENTRE MAINLY FOCUSING ON AGRICULTURE, FOOD, AND DAIRY DOMAIN (MILLET)

The Millet Processing Facility at ADT, supported under this CSR project, is designed to promote value addition and processing of millets, aligning with the growing emphasis on nutritious and climate-resilient crops, boosted by the National Millet Mission of the Government of India and the International Year of Millets 2023. This facility comprises three units: millet processing, fruit and vegetable processing, and bakery unit. The facility provides hands-on training in processing techniques, enabling students, trainees and entrepreneurs to convert millets, fruits, and vegetables into market-ready products. This facility supports experimentation, skill development, local enterprise creation, and diversification of income sources for rural communities.

PROJECT ACTIVITIES UNDER PROJECT 2 – CARRYING OUT SCIENTIFIC AGRICULTURAL & DAIRY RESEARCH TRIALS

1. **FabLab (Fabrication Laboratory)**

The FabLab facility, particularly within the AIC–ADT incubation ecosystem, serves as a prototyping and innovation hub. It provides access to advanced tools such as 3D printers, laser cutters, CNC machines, and electronics equipment. The lab supports startups, students, and entrepreneurs in developing prototypes, testing ideas, and accelerating product development. It aims to play a key role in fostering innovation, especially in agri-tech and rural enterprise solutions, by enabling practical, hands-on experimentation and design.

2. **Soil Testing Laboratory**

With the support of this CSR project, ADT has established soil analysis facilities as part of its broader agricultural support system. The lab provides scientific testing of soil health parameters, such as nutrient levels, pH, and moisture content, enabling farmers to adopt data-driven farming practices. By promoting balanced fertilizer use and improved soil management, the soil testing lab intends to increase productivity, reduce input costs, and encourage sustainable agricultural practices.

3. **Dairy Processing Unit (Paneer, Ghee, Cheese)**

The Trust operates a well-equipped dairy unit. This project has facilitated the provision of milk processing machines at the centre, which includes processing of milk into value-added products such as paneer, ghee, and cheese. The facility extends hands-on training in dairy management, processing techniques, and quality control, to enable participants to develop skills for setting up and managing dairy enterprises. It also complements ADT's broader focus on livestock-based livelihoods and rural income generation.

4. 300-seater Auditorium

As part of CSR support, a 300-seating capacity auditorium equipped with modern infrastructure and advanced facilities has been established at ADT, Baramati. The auditorium was established to serve as a central platform for knowledge dissemination, capacity building, and institutional engagement. It is designed to host a wide range of activities including trainings, workshops, seminars, conferences, and community events, seeking to strengthen the overall learning and outreach ecosystem of the institution.

ABOUT THE RESEARCH AGENCY

B.G. Shirke Construction Technology Private Limited has appointed Pluriversal Research and Action (PRA), an independent third-party research agency, to conduct the Impact Assessment of the aforesaid projects undertaken by Agricultural Development Trust, Baramati. These projects have been funded by B.G. Shirke Construction Technology Private Limited under its CSR obligations, in accordance with Section 135 of the Companies Act, 2013 and the Companies (Corporate Social Responsibility Policy) Rules, 2014 framed thereunder.

PRA is a research and consulting organization that works at the intersection of development practice, policy, and evidence generation. The organization focuses on designing and conducting rigorous assessments, including impact evaluations, organizational development studies, and sectoral research, to support informed decision-making for development initiatives.

PRA adopts a mixed-methods approach, combining quantitative and qualitative tools to generate comprehensive and context-sensitive insights. Its work emphasises participatory and multi-stakeholder engagement, ensuring that diverse perspectives – particularly those of end users and communities – are meaningfully incorporated into designing, analysis and reporting.

With experience across sectors, such as agriculture, livelihoods, health, education, and skilling, PRA brings a strong grounding in field-based research, data analysis, and narrative building. Its approach places people at the centre of development, aiming to not only assess outcomes but also understand processes, experiences, and pathways of change.

METHODOLOGY

The impact assessment employed a rigorous, multi-stakeholder approach to uncover nuanced outcomes, with a strong people-centric focus on the 'social' dimension of CSR. The research design and key methodological considerations are outlined in this section.

OBJECTIVES OF THE STUDY

1. To assess the utilisation and accessibility of CSR-supported infrastructure at ADT under two grants of ₹5 crore each
2. To evaluate the effectiveness of facilities provided under Project 1, specifically the millet processing facility
3. To evaluate the effectiveness of facilities provided under Project 2, including the FabLab, dairy processing unit, soil testing laboratory, and the auditorium
4. To understand how these infrastructural facilities have contributed to enhancing participants' skills, technical capabilities, practical exposure, and employment opportunities.
5. To assess the overall impact of CSR interventions on training, innovation, and livelihood opportunities within the ADT ecosystem

RESEARCH DESIGN

A mixed-methods research design was adopted to enable a comprehensive assessment of the CSR projects. The study followed an ex-post facto approach, relying on recall-based and assumption-driven questions to estimate impact, as no baseline or prior needs assessment data were available for direct comparison. Additionally, a multi-stakeholder approach was incorporated to capture diverse perspectives across project components, allowing for triangulation of findings and a more robust understanding of outcomes and impact.

This study adopted People-centred Capability and Learning Framework to examine how infrastructure investments translate into meaningful changes in people's lives. The framework placed participants, such as women SHGs, students, farmers, entrepreneurs, incubatees, and institutional stakeholders, at the centre of the analysis, rather than limiting the assessment to physical outputs or infrastructure utilisation alone. It explored how access to infrastructure creates opportunities for learning, strengthens capabilities, enables the application of knowledge, and contributes to longer-term educational, livelihood, and institutional outcomes.

Figure 1: People-Centred Capability and Learning Framework

METHODS AND TOOLS FOR THE STUDY

Secondary Data: Data compiled by ADT on activities undertaken using the equipment and infrastructure developed under both CSR projects were analysed to understand the stakeholder groups reached and the sectors of engagement.

Primary Data: Quantitative and qualitative data were collected using multiple methods and tools designed for different stakeholder groups across projects, in alignment with the study objectives. The structured

questionnaires were developed using KoboToolbox, incorporating in-built validation checks and advanced features to ensure high data quality and minimize errors during data collection.

Table 2: Data Collection Framework

S.N.	Project	Participant Type	Tool Type	Description
1	Millet Processing Unit	Students/ Alumni	Structured Questionnaire (self-administered)	Assessed training experience, practical exposure to millet, bakery, and fruit and vegetable processing, application of theoretical knowledge, and confidence in performing processing tasks.
		SHG / FPO / Micro-entrepreneurs	Structured Interview Schedule (interviewer-administered)	Captured enterprise-level outcomes such as adoption of processing techniques, income changes, product diversification, and livelihood opportunities.
		Students & SHG/FPO	FGD / IDI Guides	Explored experiential learning, usefulness of training, challenges in scaling activities, and suggestions for improvement.
2	FabLab	Students/ Alumni	Structured Questionnaire (self-administered)	Assessed exposure to prototyping tools, frequency of usage, types of work undertaken, and learning outcomes in design and fabrication.
		Incubatees / Startups	Structured Questionnaire (self-administered)	Evaluated impact on product development, usage of FabLab machines, and outcomes such as cost, time, product quality, and market readiness.
3	Soil Testing Lab	Farmers	Structured Interview Schedule (interviewer-administered)	Assessed awareness and usage of soil testing services, changes in farming practices, and perceived benefits such as productivity and input optimization.
		Students	Structured Questionnaire (self-administered)	Captured practical learning, understanding of soil analysis techniques, and application in academic/field contexts.
		Farmers & Students	FGD / IDI Guides	Explored accessibility, usefulness of services, knowledge creation and application, and behavioural changes in farming practices.
4	Dairy Processing Unit	Micro-entrepreneurs	Structured Interview Schedule (self-administered)	Assessed training outcomes, role of dairy facilities in enterprise development, including production of paneer, ghee, and cheese, and income generation.
		Students/ Alumni	Structured Questionnaire (self-administered)	Evaluated training outcomes, practical exposure to dairy technologies, and confidence in performing processing tasks.
5	Key Stakeholders	ADT Officials	FGD/ IDI Guides	Captured institutional perspectives on implementation, utilization of infrastructure, challenges, sustainability, and overall impact.

SAMPLE COVERED IN THE STUDY

The study covered a total of 1,078 stakeholders of the CSR projects across a wide geographical area spanning multiple talukas of Pune district, including Baramati, Indapur, and other surrounding regions, covering several villages. A snapshot of the sample collected from participants through various data collection approaches is presented below.

DATA ANALYSIS AND REPORTING

The quantitative data were cleaned in Microsoft Excel and imported into the Statistical Package for the Social Sciences (SPSS) for analysis. Descriptive and inferential statistical analyses were conducted to ensure scientific rigour. Qualitative data from interviews and FGDs were thematically analysed through detailed review of each recording. The report presents triangulated quantitative and qualitative findings using appropriate visuals (charts, tables, and photographs), verbatim participant quotes, and descriptive narratives.

The mixed-methods analysis provides a comprehensive impact assessment of CSR projects. The analysis draws on a robust multi-stakeholder methodology, rich field data, and participant narratives, with a consistent focus on placing people at the centre of development.

Picture 1: Meetings with Officials of Agricultural Development Trust, Baramati

Picture 2: Data Collection in the Field

PROJECT – 1: MILLET PROCESSING FACILITY

PROJECT MILLET PROCESSING FACILITY

The Millet Processing Facility has been established as a comprehensive, multi-product food processing facility, equipped across nine specialised production lines and a dedicated packing line — enabling end-to-end processing of millets and millet-based products from raw grain cleaning through to finished, packaged goods. The unit also has fruit and vegetable processing and bakery processing machines.

The Millet Processing Unit, operational across two recorded years, has shown strong growth across all stakeholder categories between 2024-25 and 2025-26. SHGs reached through trainings grew from 64 to 82, while FPO engagement saw a dramatic increase from 28 to 96 — more than tripling in a single year. Individual users comprising micro-entrepreneurs and farmers nearly doubled from 52 to 98, and startup participation grew from 5 to 14 over the same period.

USER GROUPS	2024-25	2025-26
SHGs	64	82
FPOs	28	96
Individuals (micro-entrepreneurs/ farmers)	52	98
Startups	5	14
Students	310	490
Government Officials	0	6
International Trainees (Malawi Government)	0	147

Figure 2: Stakeholders reached through Millet Processing Facility

Degree student outreach, the largest single learner group, expanded significantly from 310 to 490. Notably, two new learner categories were introduced in 2025-26 — government officials and Malawi trainees — the latter being a particularly significant development, indicating that the unit's training model has begun attracting international interest and cross-border knowledge exchange. Cumulatively, the facility reached 146 SHGs, 124 FPOs, 150 micro-entrepreneurs, 19 startups, 800 students, 6 government officials, and 147 trainees from Malawi across its first two years of recorded operation, pointing to a facility that is scaling rapidly and diversifying its reach well beyond its initial target communities.

Table 3: Machineries provided at Millet Processing Facility

Line	Equipment	Purpose
Primary Millet Processing	Aspirator cum De-stoner cum Grader, De-huller, Polisher, Grader/Shaker, Platform Weighing Scale, SS Collection Bowl, SS Tables, SS Trolleys	Cleaning and destoning of raw grains; removal of husk; polishing; grading and weighing; collection, holding and shifting of material
Bakery	Spiral Flour Kneading Machine, Muffins & Cookies Dropping Machine, Triple Deck Oven, Rotary Baking Oven, Pav Moulds, Bread Moulds, Flour Atta Mixing Machine, SS Bowl, SS Tables, MS Trolleys	Dough mixing and kneading; manufacturing of cookies, muffins, pav and breads; baking; shaping; mixing of raw material; packaging and shifting of products
Suji / Semolina	Screw Conveyor, Vibro Sifter, Roaster Machine, Rawa Cooling Blender, Bucket Conveyor, SS Trays, SS Tables	Transferring and lifting of material; removal of dust and dirt; heating and cooling of product; holding and packaging of materials
Flour / Atta	Auger Filler, Screw Conveyor, Band Sealer, SS Tables, SS Trolleys	Filling, transferring and sealing of flour/atta; holding, packaging and shifting of material
Pasta & Vermicelli	Extrusion Machine, Automatic Static Dryer, SS Tables	Manufacturing and drying of pasta and vermicelli; holding and packaging of materials
Papad	Trays	Holding of finished products
Masala	Masala Making Machine, Collection Bowl	Grinding and mixing of spices; collecting the final product
Ladoo	Ladoo Making Machine, SS Trays	Manufacturing and holding of ladoos
Chakali	Chakali Making Machine, SS Trays	Manufacturing and holding of chakali
Packing	Four Head Packing Machine, Air Compressor, Metal Detector, Vacuum Packing Machine, SS Table, SS Trolleys, SS Rack	Packaging of all product types; compressed air supply; detection and removal of metal contaminants; airtight sealing; holding, shifting and storage of goods

Picture 3: FGD with Students who used Millet Processing Facility

Findings – Millet Processing Facility

MILLET & FOOD PROCESSING TRAINING – STUDENTS

DEMOGRAPHIC PROFILE OF STUDENTS

A total of 530 students who received training at the Millet Processing Unit responded to the survey. Nearly all (98.3%) were from various colleges of the Agricultural Development Trust (ADT), while a small proportion came from other nearby institutes. Extending access to this facility to students from other colleges is an important step toward expanding educational opportunities particularly for those who may not have access to such infrastructure at their own institutions.

GENDER & AGE

The gender distribution of survey participants shows that 59.1% were male and 40.9% were female, indicating a slightly balanced participation. The age distribution of participants indicates that most of the participants (70.2%) were in the 20–24 age group, while 28.9% were below 20 years, and less than one percent were aged 25 years or above. This suggests that the intervention largely catered to students and early-stage learners, aligning with its focus on building skills among youth.

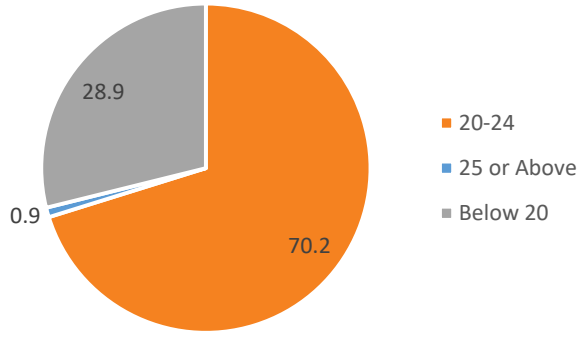

Figure 4: Age-group

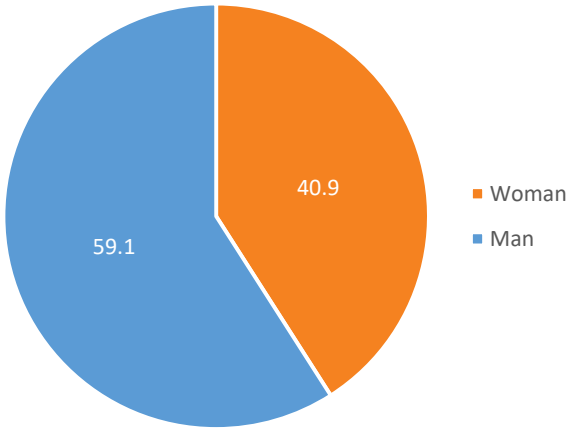

Figure 3: Gender

SOCIAL CATEGORY

The social composition of participants shows that 44.7% belonged to the unreserved category, followed by 38.5% from OBC communities, 12.6% from SC, and 4.2% from ST groups. This distribution indicates that the program has been able to reach participants across diverse social categories, including representation from historically marginalized communities, reflecting a reasonably inclusive outreach.

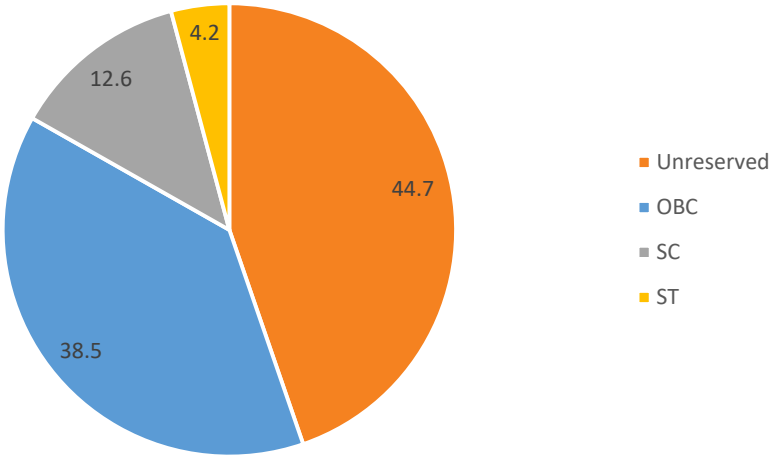

Figure 5: Social Category

DEGREE & DISCIPLINE DURING TRAINING

The data indicates that the training program predominantly catered to undergraduate students, with 98.3% of participants pursuing a bachelor's degree at the time of training, while only a small proportion were enrolled in master's (1.3%) and doctoral (0.4%) programs. This suggests a strong alignment of the intervention with early-stage higher education learners. In terms of academic background, a majority of participants (92.6%) were from the agriculture discipline, a small proportion were from Home Science (6.4%) and Food Technology (0.9%). This reflects that the training primarily engaged undergraduate students from core agriculture streams, building their foundational awareness of the significance of millet crops.

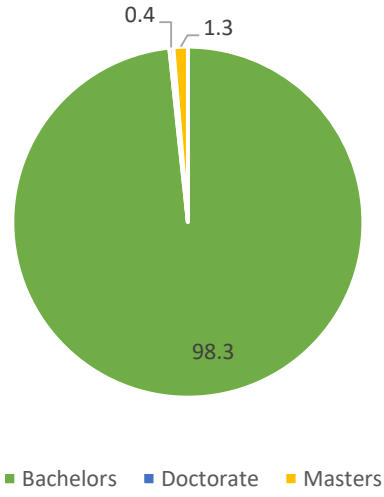

Figure 7: Degree Level during the Training

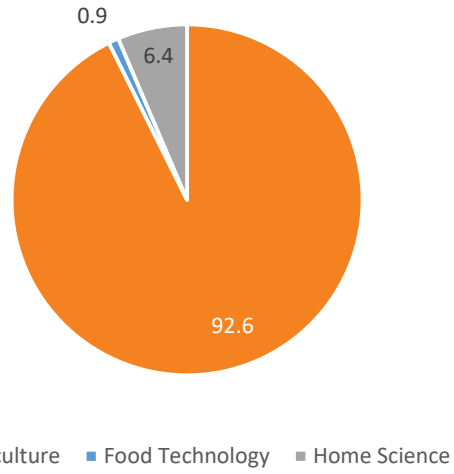

Figure 6: Discipline of Degree

TRAINING UNITS ATTENDED & PARTICIPATION

The distribution of training across different processing units indicates that 59.8% (317 out of 530) of the students received training at the Millet Processing Unit, 45.1% (239 participants) at the Fruit & Vegetable Processing Unit, and 27% (143 participants) at the Bakery Unit. The data also reflects that a proportion of participants attended training in multiple units, indicating integrated exposure across different processing domains.

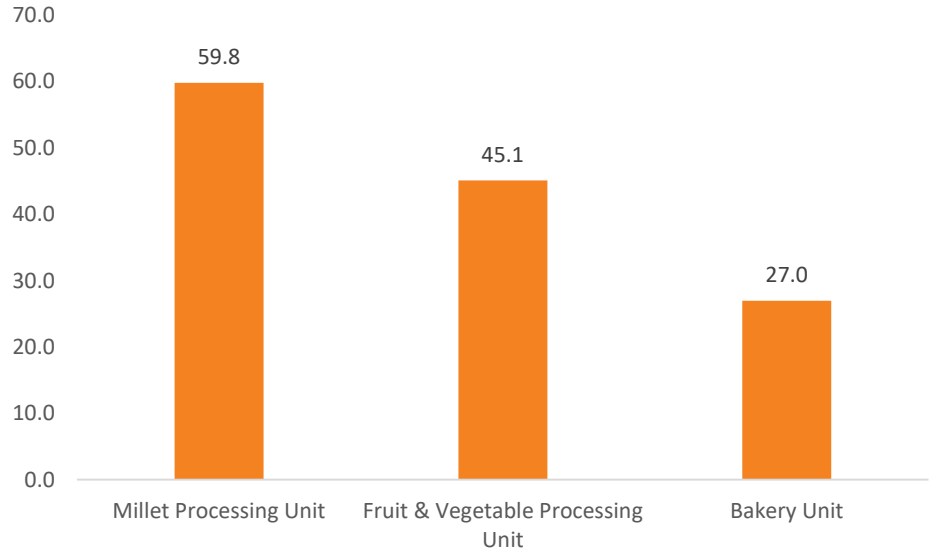

Figure 8: Access to Training on Various Processing Units

Among 317 participants trained at the **Millet Processing Unit**, nearly all were involved in key activities – 98.7% in cleaning, grading, and sorting, 97.2% in processing activities such as milling or flaking, and 99.4% participated in developing millet-based products.

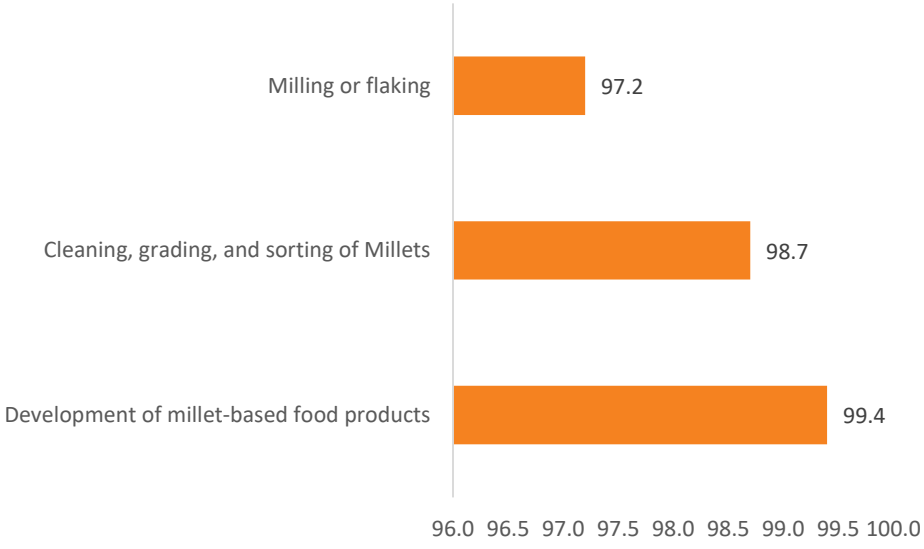

Figure 9: Exposure to Millet Processing Activities (n=317)

Among 239 participants trained at the **Fruit & Vegetable Processing Unit**, nearly all reported receiving hands-on training in processing of fruits and vegetables (99.2%), cleaning and processing them (99.6%), and preparing value-added products such as pickles, jams, sauces, or preserved items (98.3%).

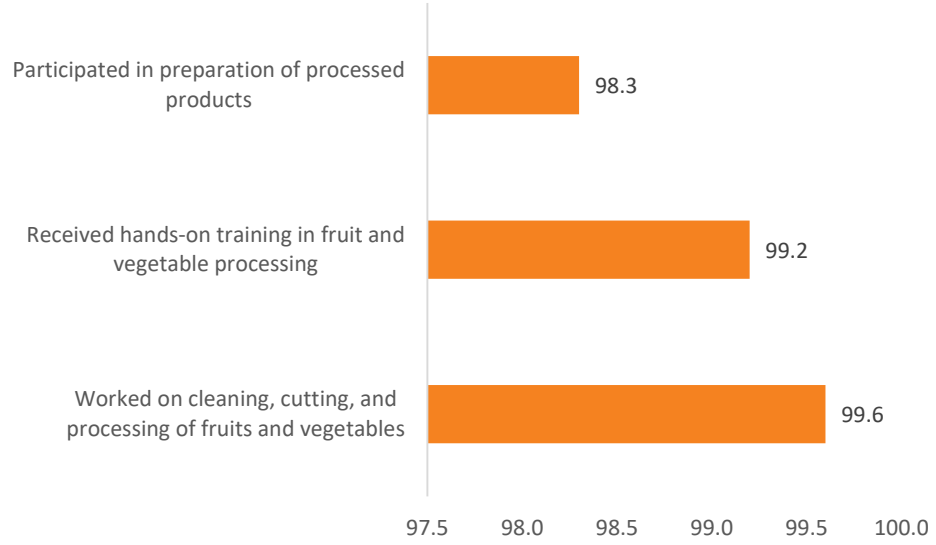

Figure 10: Exposure to Fruit & Vegetable Processing Activities (n=239)

Among 143 surveyed participants trained at the **Bakery Unit**, almost all of them received hands-on training (99.3%), worked on following standardized baking procedures like measuring ingredients (98.6%), and participated in preparation of bakery products such as bread, cookies, croissants, or cakes (98.6%).

Figure 11: Exposure to Bakery Unit Activities (n=143)

Focused group discussion with students reflected the depth of exposure during their six-month internship at the Millet Processing Unit, where they participated in all training and production activities and also developed an innovative product of their own.

"We understood how to use specialised equipment, how to measure and add the exact proportions to get the taste right. We received expert guidance from the staff and took feedback from each other. After 2-3 trials we were able to perfect the taste and texture of our products." – ADT College Students

SKILL DEVELOPMENT: BEFORE AND AFTER TRAINING

Across all three units, a clear shift in the students' self-reported ability is observed from before to after the training. In the Millet Processing Unit (n=317), the proportion of students reporting high ability increased from 13.2% before training to 72.2% after training, while those reporting low ability declined from 28.1% to 1.9%.

In Fruit & Vegetable Processing (n=239), students reporting high ability increased from 14.2% to 79.9%, with low ability reducing from 23.4% to 0.4%. Similarly, in the Bakery Unit (n=143), students with high ability increased from 18.2% to 67.8%, while low ability decreased from 31.5% to 2.8%. Wilcoxon Signed-Rank Tests confirmed all improvements as statistically highly significant ($p < 0.001$).

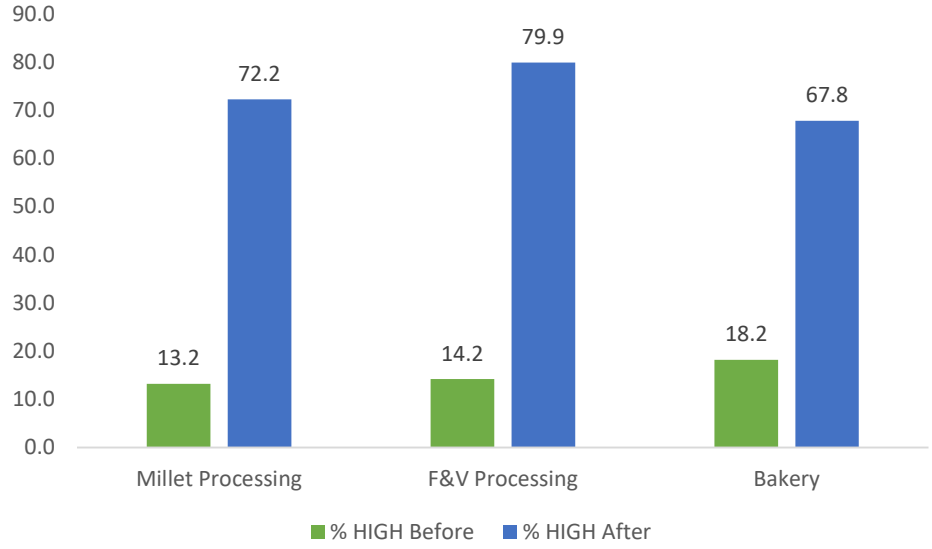

Figure 12: Skill Level – Before vs After Training

Table 4: Processing Skill Distribution – Before and After Training

Skill Domain	n	Before the Training			After the Training			Result
		LOW	MED	HIGH	LOW	MED	HIGH	
Millet Processing	317	89 (28.1%)	186 (58.7%)	42 (13.2%)	6 (1.9%)	82 (25.9%)	229 (72.2%)	**p < 0.001 *****
Fruit & Vegetable	239	56 (23.4%)	149 (62.3%)	34 (14.2%)	1 (0.4%)	47 (19.7%)	191 (79.9%)	**p < 0.001 *****
Bakery	143	45 (31.5%)	72 (50.3%)	26 (18.2%)	4 (2.8%)	42 (29.4%)	97 (67.8%)	**p < 0.001 *****

*LOW = cannot perform independently; MED = can perform with some support; HIGH = can perform completely independently. *** = p < 0.001 (Wilcoxon Signed-Rank Test).*

Students shared the critical skills they gained at millet, fruit and vegetable, and bakery units – ranging from technical and practical skills to soft skills, contributed to their holistic development.

"We learnt to use different types of machinery to make our products, such as dough makers, dough rollers, food dehydrators, and baking ovens. We also gained skills beyond production and product development, including collaboration, team work, management, and supply chain management. These additional skills will certainly benefit us in the future." – ADT College Students

Compared to other internships, students found this experience more comprehensive and industry-oriented, with end-to-end skills gained in production. The unit effectively bridged the gap between theory and practice.

"I had done internship at another unit…but they had very limited equipment…The exposure I got here compared to the previous one is much more. Not only did I learn processing but even hands-on production experience...from preparing flour, measuring the ingredients, operating machines, and doing full-fledged production of papad, powdered premixes, bakery items, juices, etc. - all on our own. This is full industry production experience." – ADT College Students

PRODUCT DEVELOPMENT, BRANDING, AND MARKET READINESS

Almost all participants reported exposure to key aspects of product development and market readiness during the training. A majority participated in recipe development and product standardization (98.1%), followed hygiene and food safety practices (99.8%), worked on packaging and labelling (99.4%), and received training on branding and marketing (98.5%).

In terms of skill improvement, there is a clear shift in self-reported abilities before and after the training. For maintaining hygiene and food safety standards, the proportion reporting high ability increased from 12.1% before training to 79.1% after training, while those reporting low ability decreased from 20.8% to 1.3%. Similarly, for recipe standardization and consistency, high ability increased from 14.3% before training to 78.3% after training, with low ability reducing from 26.8% to 1.3%.

Figure 13: Product Development, Branding & Market Readiness

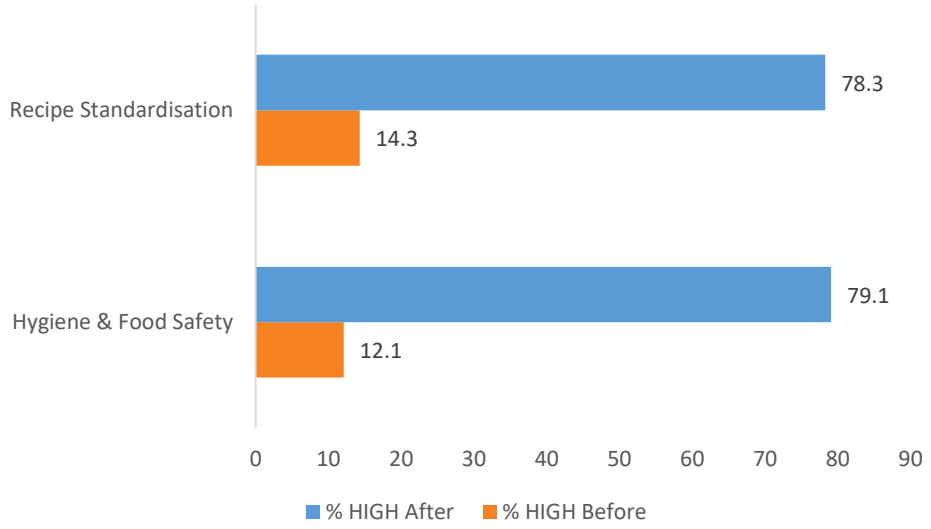

Figure 14: Skill Level – Before vs After Training

These changes are statistically significant ($p < 0.001$), indicating a strong shift from low and medium levels of ability to high levels of independent performance following the training.

Table 5: Product Development Skill Distribution – Before and After Training

Skill Domain	n	Before LOW	Before MED	Before HIGH	After LOW	After MED	After HIGH	Result
Hygiene & Food Safety	530	110 (20.8%)	356 (67.2%)	64 (12.1%)	7 (1.3%)	104 (19.6%)	419 (79.1%)	**p < 0.001 *****
Recipe Standardisation	530	142 (26.8%)	312 (58.9%)	76 (14.3%)	7 (1.3%)	108 (20.4%)	415 (78.3%)	**p < 0.001 *****

*LOW = cannot perform independently; MED = can perform with some support; HIGH = can perform completely independently. *** = p < 0.001 (Wilcoxon Signed-Rank Test).*

This is substantiated by qualitative findings. During discussions, students enthusiastically shared the hands-on experience they gained across the entire process – from production to packaging and marketing. This helped them understand real-world applications beyond classroom learning.

> *"We learnt processing to production, packing, labelling, safety measures like wearing caps, gloves to cover hair from contaminating the food product - they taught us how hygiene should be maintained at all costs. We even gained marketing skills in the Bhimthadi exhibitions like how to talk to customers, how to convince them to buy your products, how to plan and meet high-demand products like cream roll, papad, cookies, etc." – ADT College Students*

The Millets Processing Unit also functions as an innovation hub, kindling new ideas. Students worked on a variety of products and experimented with new ideas, such as fruit essence, strawberry cream roll, mix fruit jam, coco-melon juice, tomato ketchup, millet-strawberry pastry cup, blue tea premix, and orange cookies. This helped build both technical skills and creativity in product development. Students improved their

products through repeated trials – sometimes up to nine trials, learning from mistakes and refining their approach. This strengthened their problem-solving and practical skills.

KNOWLEDGE GAINS: BEFORE AND AFTER TRAINING

Students self-assessed their knowledge before and after the training on a three-point scale: No Knowledge, Partial Knowledge, and Adequate Knowledge. Self-reported knowledge improved sharply across all three areas – millet nutrition, fruit and vegetable processing techniques, and bakery processes. Before training, fewer than 1 in 6 students had adequate knowledge in any subject; after training, more than 5 in 6 did. The knowledge gain in millet nutrition was the largest (+74.4 pp), followed closely by F&V techniques (+70.0 pp) and bakery processes (+69.6 pp). The share with no knowledge at all dropped from an average of 26.4% before training to just 1.8% after.

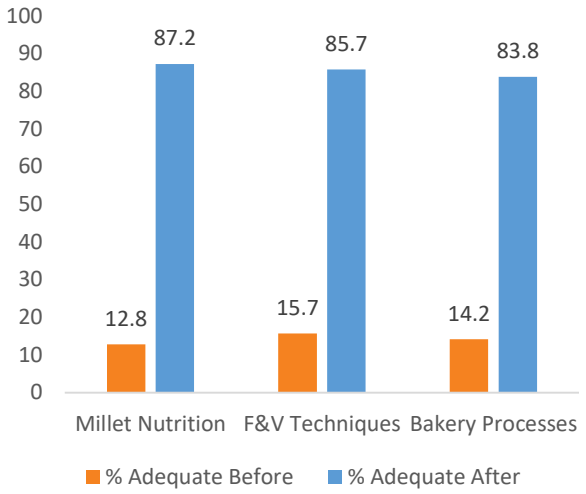

Figure 15: Knowledge Gain — Before vs After

Table 6: Knowledge Level Distribution – Before and After Training (N = 530)

Knowledge Area	Before			After			
	No Knowledge	Partial	Adequate	No Knowledge	Partial	Adequate	Change in Adequate Knowledge
Nutritional Benefits of Millets	152 (28.7%)	310 (58.5%)	68 (12.8%)	10 (1.9%)	58 (10.9%)	**462 (87.2%)**	+ 74.4 pp
F&V Processing Techniques	113 (21.3%)	334 (63%)	83 (15.7%)	12 (2.3%)	64 (12.1%)	**454 (85.7%)**	+ 70.0 pp
Bakery Processes & Preparation	155 (29.2%)	300 (56.6%)	75 (14.2%)	7 (1.3%)	79 (14.9%)	**444 (83.8%)**	+ 69.6 pp

pp = percentage points. All improvements significant at p < 0.001 (Wilcoxon Signed-Rank Test).

This knowledge gain was reflected in student narratives, where they demonstrated an understanding of the nutritional benefits of millets.

"We prepared a variety of millet products, from papad to multigrain idli premix. While rice has mainly starch, millets are much more nutritious and are also a protein-rich food. Ragi is a positive millet with multiple benefits." – ADT College Students

PRACTICAL LEARNING AND APPLICATION

Most participants found the training useful and practical. About half (49.8%) said it helped them apply learning to real-life food processing to a large extent, while a similar proportion (49.4%) said it helped to some extent, with less than 1% reporting no impact. A strong majority (68.7%) felt they received sufficient hands-on exposure to a large extent, and 30.8% to some extent. Importantly, nearly two-thirds (64.5%) reported high confidence in independently carrying out millet processing tasks, while 35.3% felt somewhat confident, and almost no participants reported lack of confidence.

Through exhibitions and sales, students interacted with different types of customers and understood how markets function. This gave them confidence to engage in real business situations. Students also highlighted the uniqueness of this opportunity compared to peers in other colleges, where practical exposure is limited. The ability to independently develop products fostered creativity and expanded career aspirations.

"We got an excellent platform. We demonstrated team work skills, managed the stalls, customers, and finances. The best thing about the processing unit was that they followed learning-by-doing method – they would tell us and allow us to do it all on our own. This practical method led to our deep understanding of each aspect." – ADT College Students

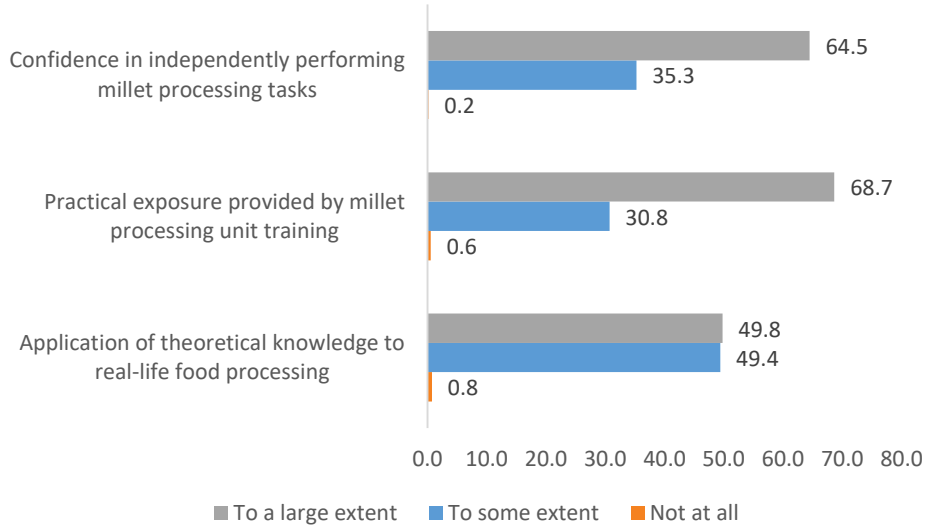

Figure 16: Practical Learning and Application

QUALITY OF FACILITIES AND SUPPORT

Most participants rated the training facilities and environment positively. Around 70.6% rated the availability of raw materials as excellent, while 29.2% rated it as average, with almost none reporting poor availability. Similarly, 71.9% rated the functioning of machines and equipment as excellent and 27.9% as average. The quality of training and guidance provided by faculty and staff was rated excellent by 73.2% of participants and average by 26.6%. The overall learning environment followed the same pattern, with 73.2% rating it as excellent and 26.6% as average, and negligible responses indicating poor experience across all aspects.

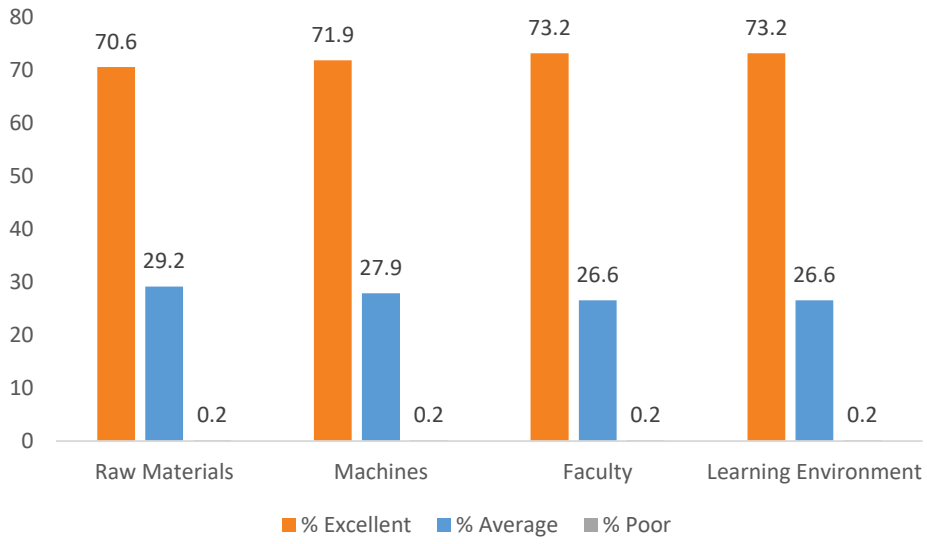

Figure 17: Facility Quality Ratings

Strong institutional support by staff further strengthened learning, reflecting the importance of mentorship in building confidence and technical skills. Student feedback highlights the processing unit as an enabling, hands-on learning environment with integrated access to diverse machinery and infrastructure. This streamlined setup enhanced both efficiency and breadth of exposure.

"The advantage is that all the machines and equipment are available in one place itself for all these different kinds of products each of us chose to prepare. We did not have to go different places for bakery, jams, or papad - everything was available under one roof." – ADT College Students

SKILL APPLICATION AND POST-TRAINING ACTIVITY

Most participants reported using the food processing skills acquired during the training, with 70.6% using them sometimes, 23.8% often, and 5.7% rarely. In terms of post-training engagement, 26.2% reported starting their own business, 23.4% joined an existing enterprise, and 16.8% joined their family business, while 33.6% had not engaged in any enterprise-related activity.

Of the 530 students who received training at the Millet Processing Unit, 66.4% engaged in some form of enterprise or employment activity after completing the programme. This includes 26.2% who started their own business, 23.4% who joined an existing enterprise, and 16.8% who became part of their family business, while 33.6% had not engaged in any enterprise-related activity at the time of the survey.

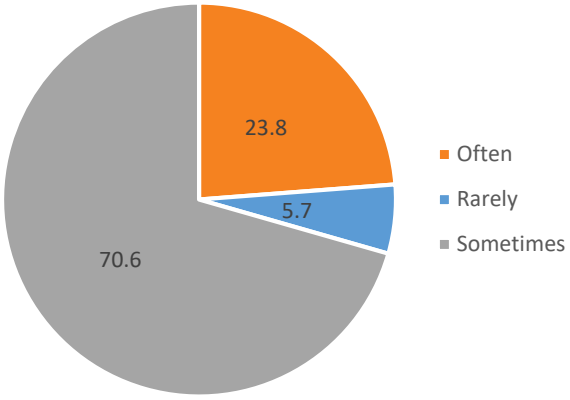

Figure 19: Currently using Food Processing Skills

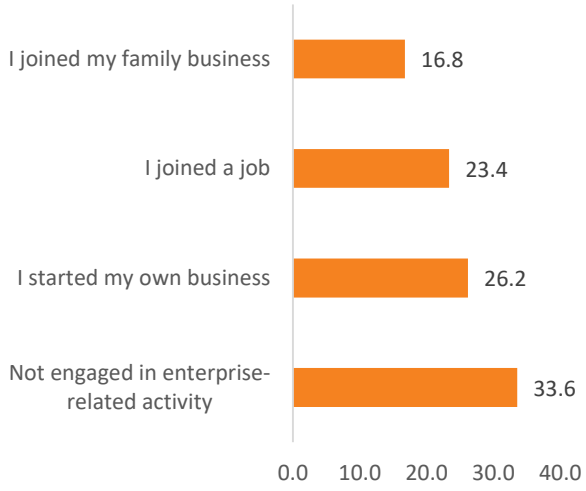

Figure 18: Post-Training Pathway

Taken together, these findings indicate that a majority of trainees transitioned into some form of economic or productive engagement following the training. The fact that over one-fourth (26.2%) initiated their own business highlights a notable level of entrepreneurial uptake, suggesting that the training supported not only skill development but also the ability to apply these skills in independent income-generating activities.

At the same time, the 33.6% who have not yet engaged in enterprise-related activities likely include students who are still in the process of completing their education or planning for higher education, indicating that the training may be contributing to future readiness rather than immediate economic engagement for this group.

For New Business

Among those who reported starting their own business (n=139), 52.5% are producing millet-based products, 38.1% are engaged in fruit and vegetable processed products, and 32.4% are producing bakery products. A smaller proportion, 8.6%, reported producing ready-to-eat or ready-to-cook products.

These findings indicate that millet-based products form the primary focus for a majority of new entrepreneurs, with a substantial proportion also diversifying into fruit and vegetable processing and bakery products. The presence of multiple product categories suggests that some entrepreneurs are engaged in more than one type of product line, reflecting diversification in enterprise activities.

Figure 20: Type of Own Business (n=139)

Business Changes Experienced After Applying Improvements

Among participants who were engaged in existing businesses or jobs (n=213), 47.9% reported improvements in packaging and labelling, 39% reported improvements in processing techniques, and 38.5% reported improvements in existing recipes. Additionally, 31.9% introduced new millet-based products, while 23.9% adopted food safety or hygiene practices. Only 3.8% reported that they had not introduced any improvements. Among participants who reported joining their family business (n=89), 47.2% experienced improvements in existing recipes, 39.3% in packaging and labelling, and 36% in processing techniques. Additionally, 27% reported introducing new millet-based products, while 18% adopted food safety or hygiene practices. Only 3.4% reported no changes in their business.

Figure 21: Business Improvements Introduced (n=352)

Figure 22: Changes experienced in Existing Business (n=89)

These findings suggest that the training contributed to both product-level and process-level enhancements, with a strong focus on improving quality, presentation, and techniques, while also enabling the introduction of new products in existing enterprises.

CAREER AND ENTREPRENEURIAL OUTCOMES

Most participants reported that the training contributed positively to their academic and professional growth, with 58.9% stating it was useful to a large extent and 40.6% to some extent, while only 0.6% reported no usefulness. A strong majority (92.6%) expressed interest in working in the food processing sector in the future, with only 1.1% not interested and 6.2% unsure.

In terms of outcomes, 87% reported that the training helped them secure a job, internship, or income opportunity, while 7.2% indicated it was not applicable as they were pursuing their degree, and 5.8% reported no such benefit. Additionally, 96.2% reported an increased interest in starting a food-related enterprise after the training, with very few reporting no change (3.6%) or decreased interest (0.2%).

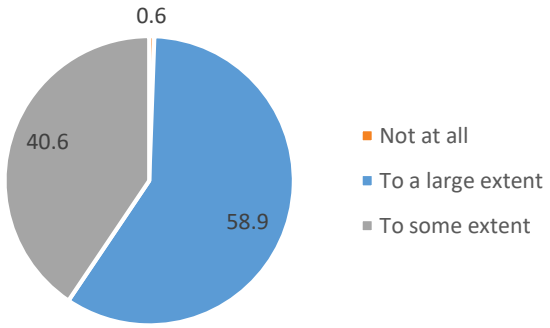

Figure 26: Training Usefulness for Academic & Professional Growth

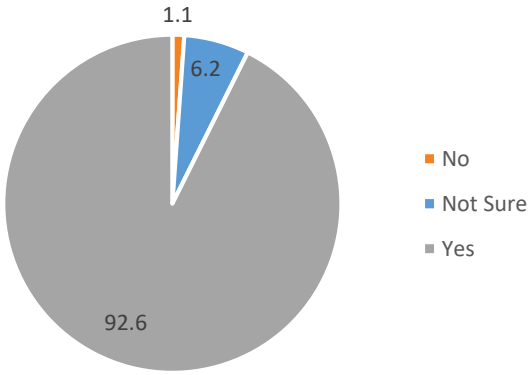

Figure 25: Future Career Interest in Food Processing Sector

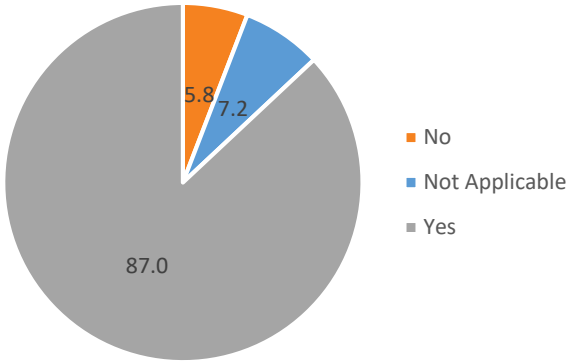

Figure 23: Training Impact on Securing a Job/ Internship

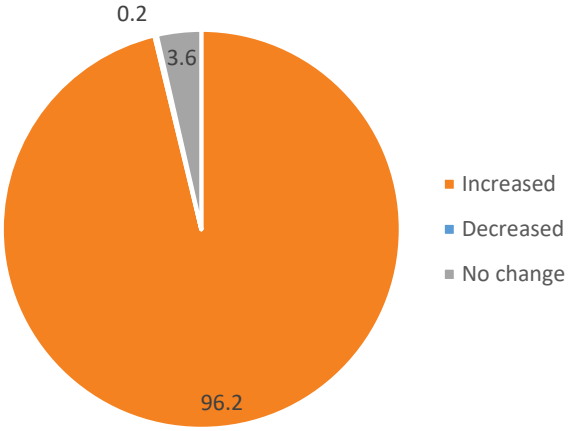

Figure 24: Training Impact on Interest in Starting Food Enterprise

Further, 95.5% of participants reported feeling capable of starting a small food processing business, while 3.8% were unsure and 0.8% did not feel capable. These findings reflect a strong shift in both career orientation and entrepreneurial readiness among participants following the training.

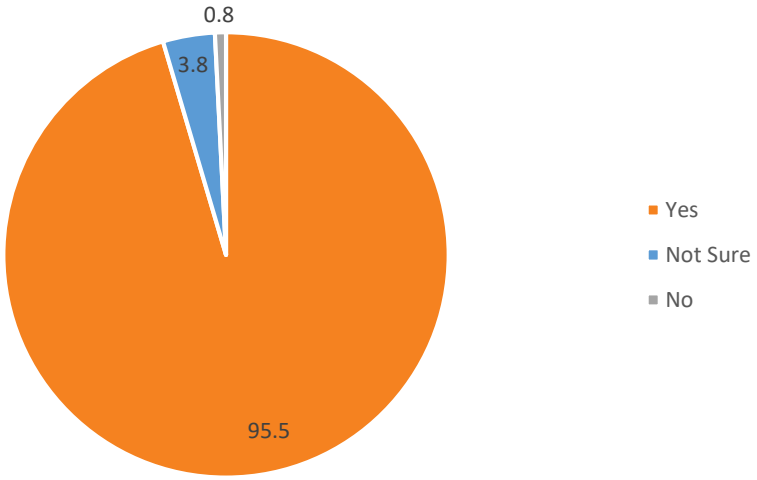

Figure 27: Perception of Capability to start a Food Processing Business

The experience helped students aspire for new career options, including entrepreneurship and applied research. It broadened their thinking beyond traditional career paths.

> *"I am very much interested in research. Before the internship I used to think research means in a lab setting. But after starting the internship at Millets unit, I realised, I can do research even in this field. If we have this kind of machinery and have an innovative idea, then we can bring a unique well-researched product in the market. It will not only have high sales, it will also have health benefits for the consumers. So, an opportunity is created in this line." – ADT College Students*

Overall, student feedback reflects high satisfaction, with the units serving as a strong platform for experiential learning, skill-building, and career exploration.

MILLET & FOOD PROCESSING TRAINING – SHG / FPO MEMBERS

A three-day training on millet and food processing was delivered to members of Self-Help Groups (SHGs), Farmer Producer Organisations (FPOs), and micro-entrepreneurs. A total of 120 members participated in the survey.

DEMOGRAPHIC PROFILE OF PARTICIPANTS

The profile of participants indicates that 40.8% were in the 31–40 age group, followed by 26.7% in 41–50 age group, 18.3% above 50 years, and 14.2% in the 21–30 age group. A majority of participants were women (74.2%), with men comprising 25.8%.

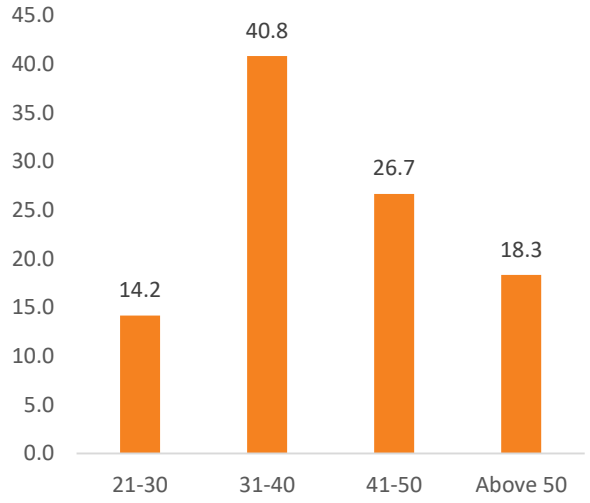

Figure 29: Age-group

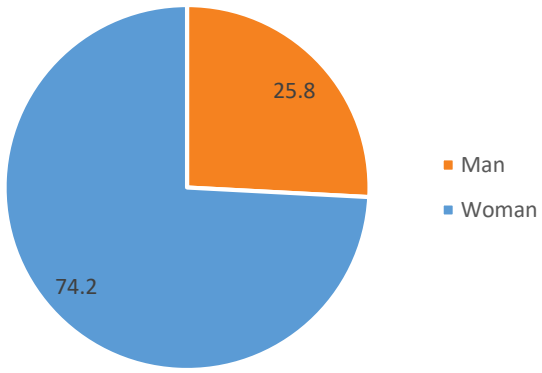

Figure 28: Gender

Most participants were SHG members (75.8%), followed by FPO members (22.5%) and a small proportion of micro-entrepreneurs (1.7%). In terms of social category, 48.3% belonged to OBC, 46.7% to the unreserved category, 3.3% to SC, and 1.7% to ST. Educationally, 32.5% had secondary education (up to 10th), 28.3% were graduates or above, 18.3% had senior secondary education, 16.7% had primary education, and 4.2% had no formal education.

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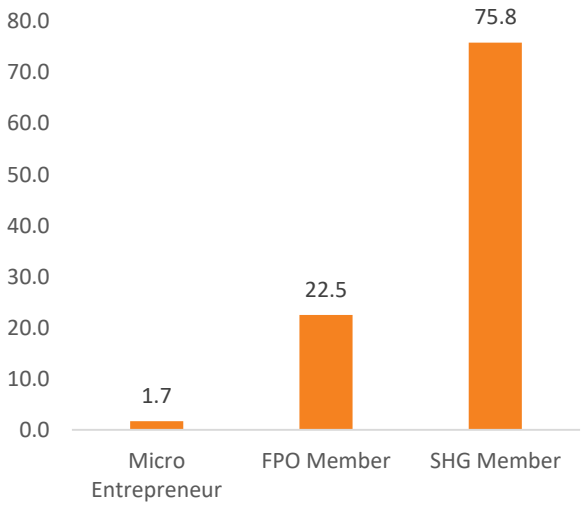


Figure 30: Group type of Survey Participants

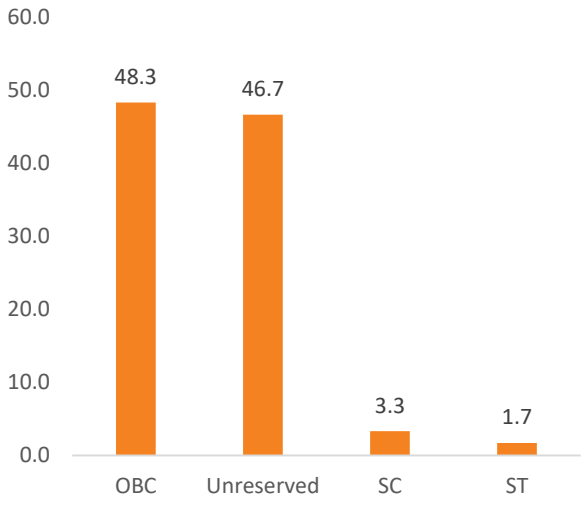


Figure 32: Social Category

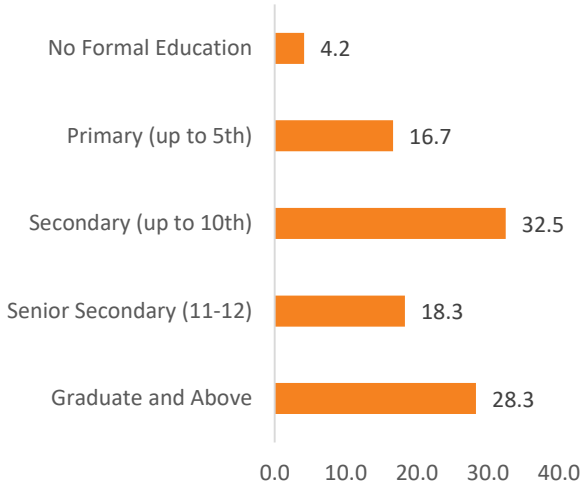


Figure 31: Educational Qualification

TYPE OF FOOD BUSINESSES BEFORE TRAINING

In terms of business engagement, 53.3% were involved in pickles/papad production, 49.2% in millet-based products, and 48.3% in snacks, while smaller proportions were engaged in processed foods (14.2%) and dairy products (10.8%). About 13.3% reported not being engaged in any food business.

Among those engaged in business activities (n=104), 51% had more than two years of experience, 23.1% had 1–2 years, 13.5% had less than 6 months, and 12.5% had 6–12 months of experience.

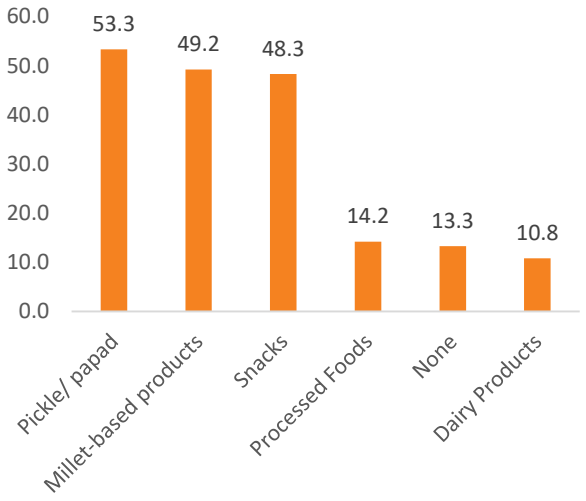


Figure 33: Type of Business

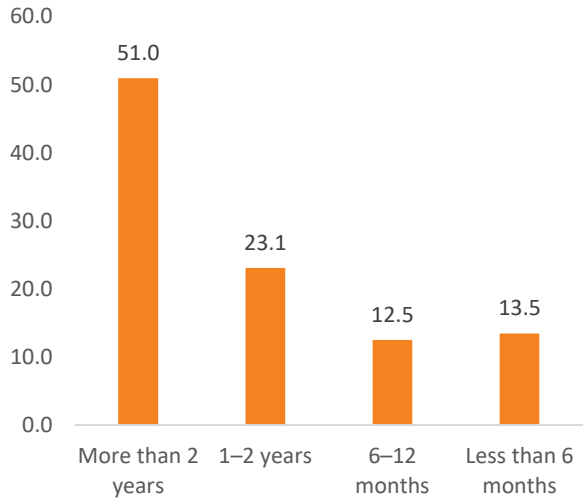


Figure 34: Years of Engagement in Business

Women participants shared they started their entrepreneurial journey with very limited knowledge and unstable incomes. Coming together as SHGs and receiving regular guidance helped them slowly build

confidence and enter business. For many, this was not just about earning, but also about becoming more independent and having a stronger voice in their households.

"Earlier, we did not know anything. Our financial condition was not as stable as it is today. We slowly came together and under constant guidance and support from Sharda Mahila Sangh and Bhimthadi, we set up our business." – Women entrepreneurs, Nimgaon village, Indapur

TRAINING CONTENT AND QUALITY

The training exposure covered multiple aspects of food processing and business readiness. A majority of participants (92.5%) reported learning millet processing, followed by 70% who learned about packaging and labelling. Around 63.3% reported learning about government schemes and business planning, and 51.7% were exposed to branding and marketing. In addition, 42.5% learned about licensing and regulations, and 30.8% reported learning fruit and vegetable processing.

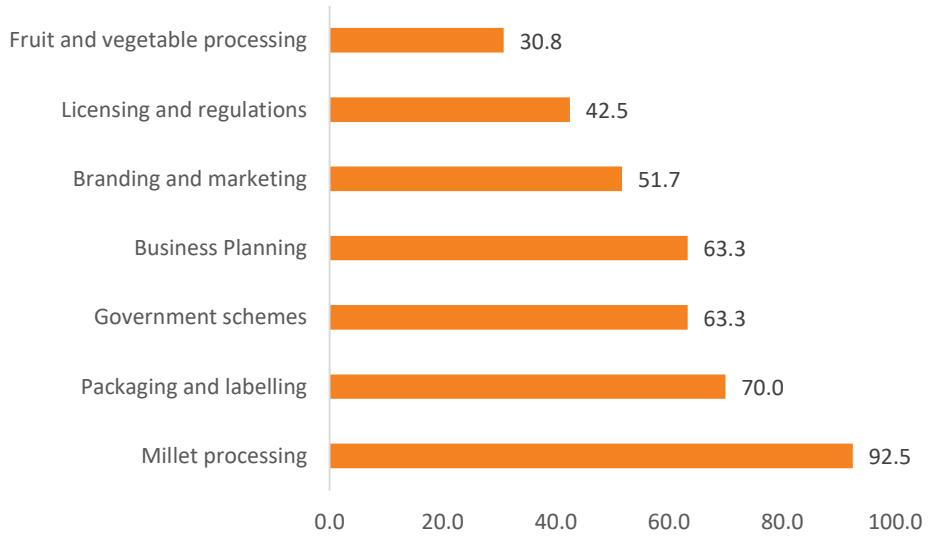


Figure 35: Exposure during Millet Processing Training

Women learnt to make a wider range of millet-based products and improved quality through repeated practice and recipe standardisation. Participants also learnt simple changes like better packaging and labelling helped improve customer interest and sales potential.

"After many failed attempts and trial and error, we managed to get the millets kurdai right in taste and texture. We noted down the measurements of each ingredient and have now standardised our recipes, so every time they have the same taste." – Women entrepreneurs, Songaon village, Baramati

These findings indicate that the training primarily focused on core processing skills, while also covering important aspects related to market linkage and enterprise development, with varying levels of exposure across topics.

The overall perception of the training quality is highly positive, with 98.3% of participants rating it as excellent and only 1.7% as average. In terms of usefulness for business, 75% reported the training to be extremely useful, and 23.3% found it very useful, while 1.7% moderately useful. These findings indicate a very high level of satisfaction with both the quality and practical relevance of the training, suggesting that it effectively met participants' expectations and business needs.

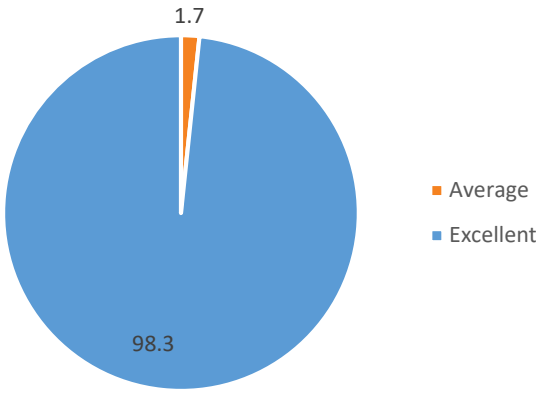


Figure 36: Overall Quality Rating of the Training

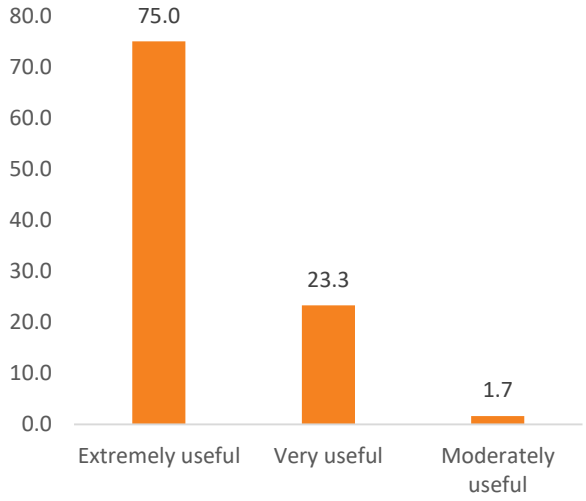


Figure 37: Usefulness of Training for Business

SKILL DEVELOPMENT: BEFORE AND AFTER TRAINING

Participants rated six business skill areas on a three-point scale: "Not at all", "Partially", and "Fully", both before and after training. Across all six skill areas, there is a clear shift in self-reported ability levels from before to after the training. Before the training, a majority of participants reported either no ability or only partial ability across most domains. For instance, 100% reported no ability in processing millet-based products, identifying markets, and preparing business plans, while similar patterns were observed for other skills.

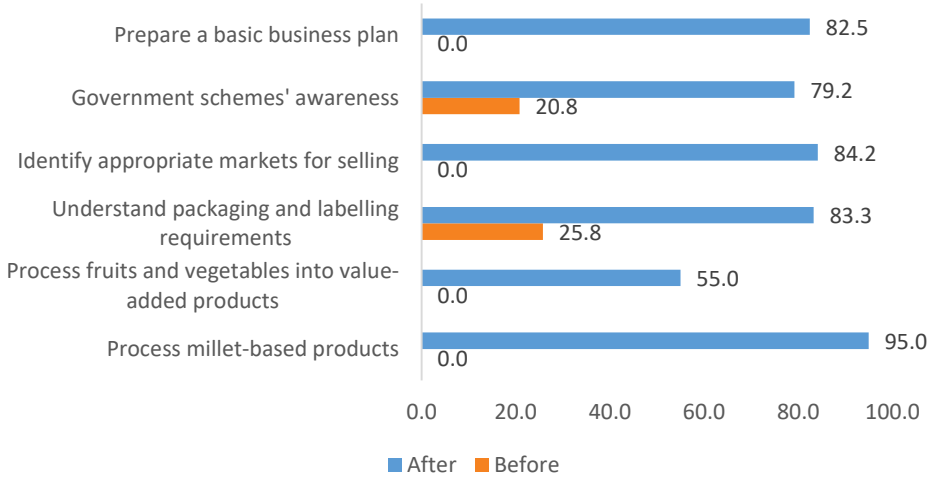


Figure 38: Knowledge Levels - Before vs After

In contrast, post-training, a substantial proportion of participants reported being fully independent across all domains, while the proportion reporting no ability reduced to negligible levels across all areas. The share of participants reporting full ability increased to 95% for millet processing, 55% for fruit and vegetable processing, 83.3% for packaging and labelling, 84.2% for market identification, 79.2% for awareness of government schemes, and 82.5% for business planning.

In discussions, women entrepreneurs demonstrated how the hands-on, end-to-end training program helped them understand the full process of making food products – from raw grains to final output. It introduced improved methods and strengthened their technical knowledge, enabling them to move beyond traditional ways of working.

> *"In the training, we learnt how to process grains from the basics and make different products – from removing the husk of the harvested crops to polishing, preparing flour, and making final products. For example, millets papad (ragi), rice flour papad (khiche), urad dal papad, whole wheat papad (kurdai), and so on. We also learnt how to make these using unpolished grains and dry them in the dryers, which are especially useful during the monsoon." – Woman entrepreneur, Nimgaon village, Indapur*

All assessed skill domains show a statistically significant improvement post-training (Wilcoxon Signed-Rank Test, $p < 0.001$). Z-scores ranging from -8.869 to -10.652 indicate a consistent and substantial upward shift in self-reported abilities across participants. The direction of change confirms that post-training competency levels are significantly higher than baseline levels.

When triangulated with descriptive findings, this reflects a systematic transition from low and partial ability to high levels of independent performance across technical (processing), operational (packaging), and business-oriented (market linkage, planning) competencies, demonstrating strong program effectiveness in enabling end-to-end skill development.

Table 7: Skill Distribution Before and After Training

Skill Area	Before the Training			After the Training			Result
	Not at all	Partially	Fully	Not at all	Partially	Fully	
Process millet products	100	0	0	0.8	4.2	95	**p < 0.001 *****
F&V processing	100	0	0	20.8	24.2	55	**p < 0.001 *****
Packaging & labelling	74.2	25.8	0	0.8	15.8	83.3	**p < 0.001 *****
Market identification	100	0	0	0.8	15	84.2	**p < 0.001 *****

Skill Area	Before the Training			After the Training			Result
	Not at all	Partially	Fully	Not at all	Partially	Fully	
Government scheme awareness	79.2	20.8	0	1.7	19.2	79.2	**p < 0.001 *****
Business planning	100	0	0	4.2	13.3	82.5	**p < 0.001 *****

*NOT AT ALL = cannot do this; PARTIALLY = can do with difficulty/partial success; FULLY = can do this confidently and completely. *** = p < 0.001.*

POST-TRAINING BUSINESS ACTIVITY

The post-training outcomes indicate that a majority of participants translated the training into business-related actions. About 54.2% reported improving their existing business, while 40% started a new business, and only 5.8% did not engage in any business activity.

These findings suggest a strong conversion of training into economic activity, with most participants either strengthening existing enterprises or initiating new ventures. Qualitative insights further substantiate this shift, highlighting increased production and market engagement at both individual and SHG levels.

> *"Many women started receiving orders for sandage, papad, kurdai at an individual level, and our SHG also got more orders. We prepared thalipeeth premix (mixed pulses spiced flour) and laddoos on order after the training." – Woman entrepreneur, Nimbut village, Baramati*

Among participants who started a new business (n=48), 58.3% reported initiating it within one month of completing the training, 29.2% within 1-3 months, and 12.5% after more than three months. These findings indicate that a majority of participants were able to translate the training into entrepreneurial action within a short time frame, reflecting quick uptake and application of the skills acquired.

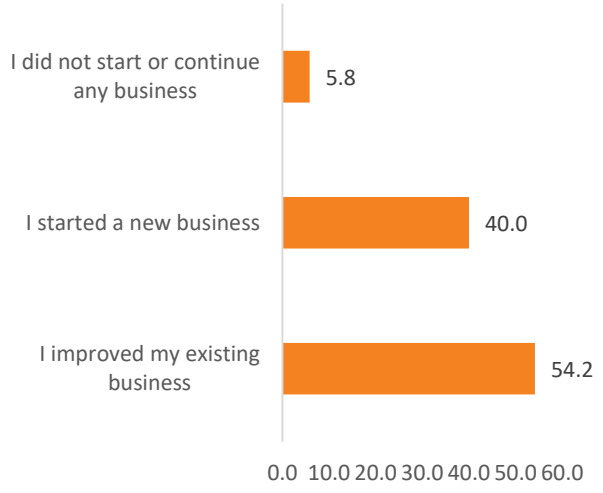


Figure 39: Pathways after the Training

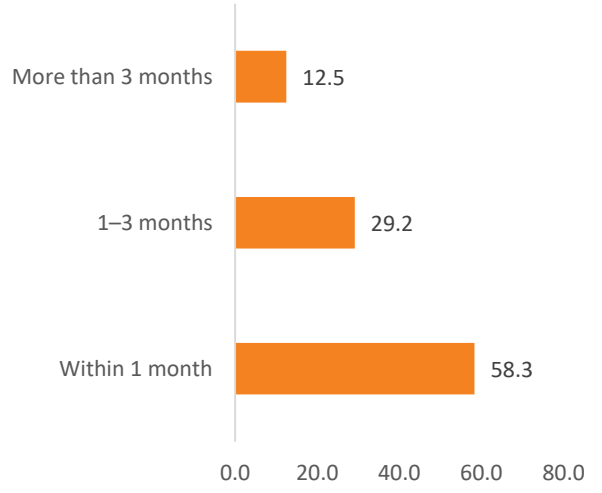


Figure 40: Time taken to start a New Business Post-Training (n=48)

PRODUCTS CURRENTLY PRODUCED AND EMPLOYMENT-GENERATION

Among participants who started a new business (n=48), majority engaged in papad production (89.6%) and millet-based products (81.3%). Additionally, 35.4% reported producing pickles, 22.9% chips or snacks, 14.6% bakery products, and 12.5% pasta or noodles. These findings indicate that millet-based products and traditional items such as papad and pickles form the core of enterprise activities, with some diversification into snacks and bakery products. All these range of products included use of millets such as ragi, jowar, and bajra. Non-millet products included whole wheat, wheat bran, maize, rice, sabudana (tapioca pearl), potato, urad, moong, and other pulses.

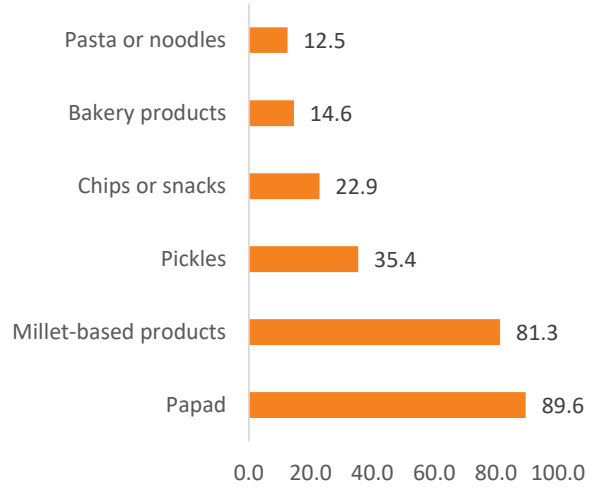


Figure 41: Product-line in New Business (n=48)

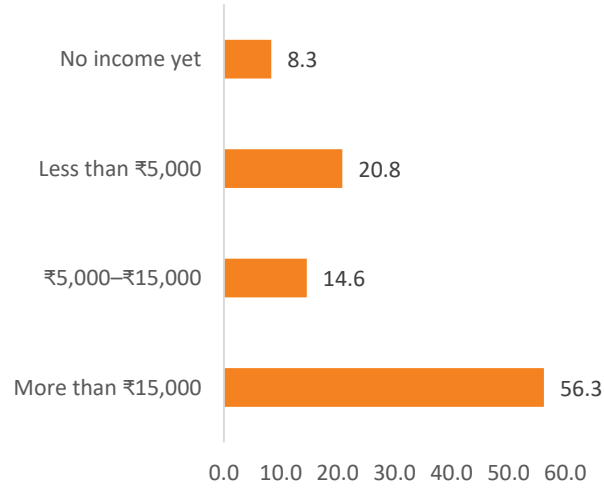


Figure 42: Monthly Income from New Business (n=48)

Among participants who started a new business (n=48), over half (56.3%) reported earning more than ₹15,000 per month. Meanwhile, 14.6% earned between ₹5,000–₹15,000, 20.8% earned less than ₹5,000, and, 8.3% had not generated any income yet.

In terms of employment generation, 77.1% reported engaging more than five people in their business (including themselves), followed by 12.5% employing 4–5 people, 4.2% employing 2–3 people, and 6.3% operating individually. A majority of enterprises are generating moderate to higher income levels and are contributing to employment creation beyond self-employment. Women entrepreneurs shared extending what they learnt to others in their village. This has created more livelihood opportunities, especially for women who cannot step out, and strengthened the overall community.

"This has not only helped a few of us but many women in our village who needed livelihoods. We share our learnings and even train those who cannot step out of their homes, helping them start home-based businesses. We also take their products to exhibitions and sell them, so they can earn and support their families." – Women entrepreneurs, Nimgaon village, Indapur

Almost 98% of the new business holders reported that the training was very important in enabling them to start their enterprise, while only 2.1% considered it slightly important.

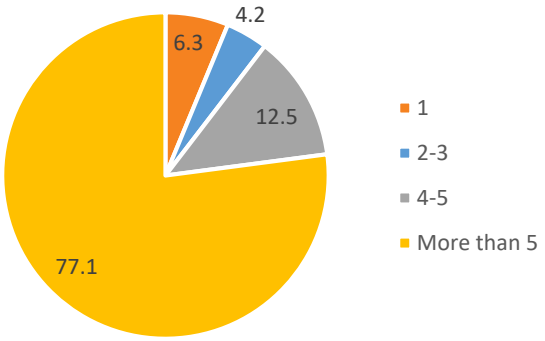


Figure 44: Employees in New Business (n=48)

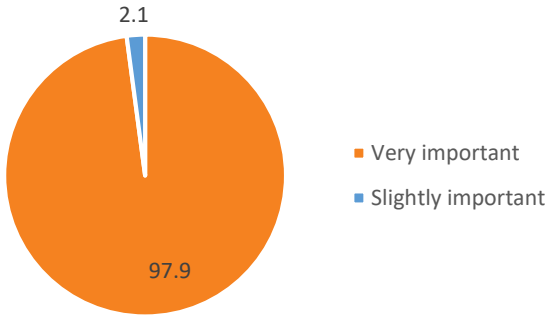


Figure 43: Importance of Training to Start New Business (n=48)

Further, exposure to exhibitions and larger markets enabled women to better understand customer demand and build confidence in selling their products. Managing high-volume sales further reinforced the potential for business growth.

"We did business of Rs. 4,70,000 within a year after training. This was during the Bhimthadi Jatra. We felt really thrilled and motivated to do more. We gained the self-confidence that we can run a home-business and even step out to expand, because we managed such high sales and sold out all our stock." – Women entrepreneurs, Songaon village, Baramati

These findings highlight the critical role of the training in facilitating business initiation, indicating that it was a key enabler for most participants in translating skills into entrepreneurial activity.

IMPACT OF TRAINING ON EXISTING BUSINESS

Among participants who improved their existing businesses after the training (n=65), 63.1% reported introducing new products. A large majority (92.3%) reported improvements in product quality, and 75.4% reported improvements in packaging and branding.

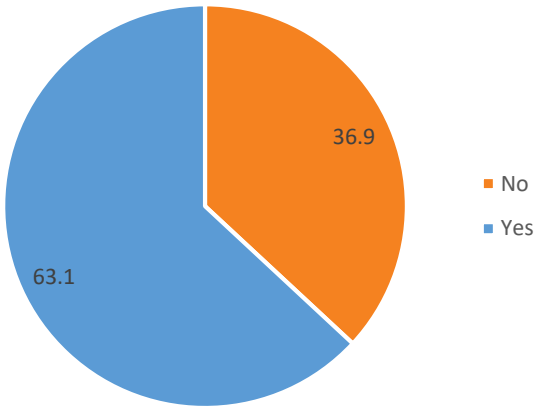


Figure 45: New Products Introduced Post-Training (n=65)

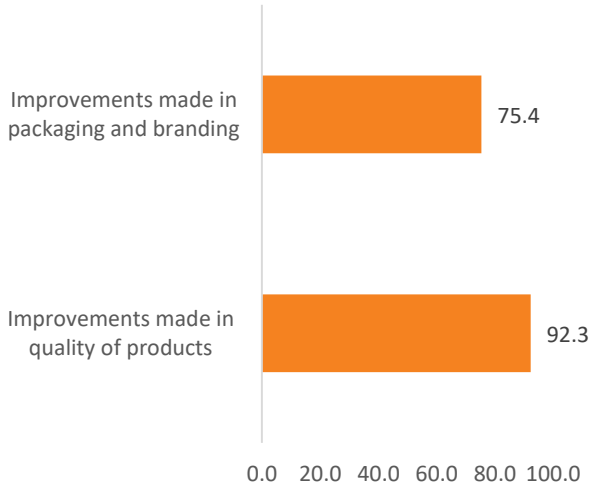


Figure 46: Improvements in Existing Business Post-Training (n=65)

In terms of business performance, 93.8% reported an increase in sales, while 6.2% reported no change. Similarly, 92.3% reported an increase in profits, with 7.7% indicating no change.

"Earlier, we could earn upto Rs. 30,000-40,000 per month. Now, after the training and use of millets production facility, we are able to earn upto Rs. 70,000-80,000 every month." – Women entrepreneurs, Nimgaon village, Indapur

These findings indicate that the training contributed not only to product and process improvements but also translated into tangible business outcomes, particularly in terms of increased sales and profitability.

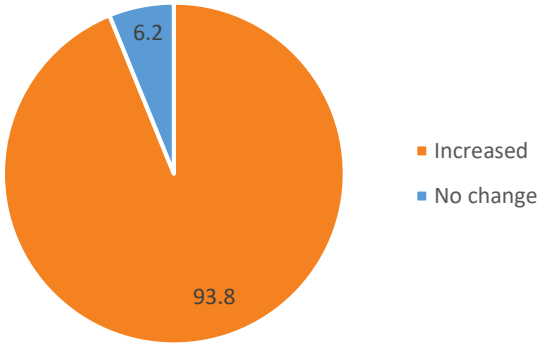


Figure 48: Changes in Sales after Completing the Training (n=65)

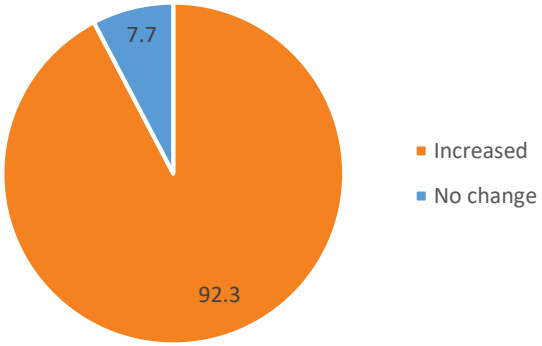


Figure 47: Changes in Profits after Completing the Training (n=65)

COMMERCIAL USE OF MILLET PROCESSING FACILITY

Among participants who started or were engaged in existing business (n=113), 82.3% reported using the processing facilities at ADT Millet Processing Unit for commercial purposes such as manufacturing and packaging. Among participants using ADT facilities for commercial purposes (n=93), the Millet Processing Unit was the most widely utilized, with 91.4% reporting its use, followed by the Packaging Unit (65.6%) and the Flour Processing Unit (29%). Lower utilization was observed for the Fruit and Vegetable Processing Unit (16.1%), Bakery Unit (14%), and Kitchen Studio (10.8%). In terms of usage frequency, 73.1% reported using the facilities weekly, 14% monthly, and 12.9% occasionally, indicating regular engagement with the infrastructure.

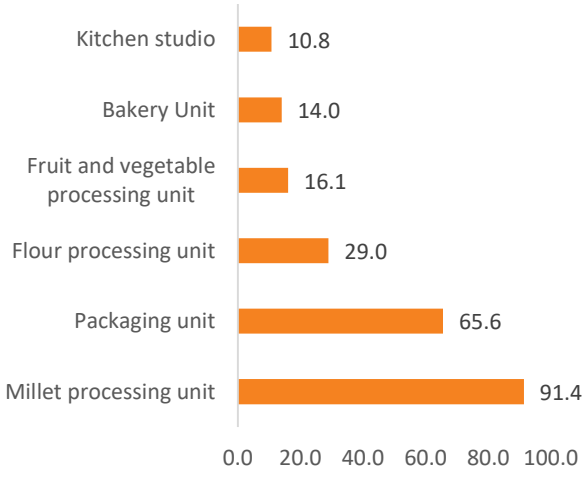


Figure 49: Processing Units Used for Commercial Purpose (n=93)

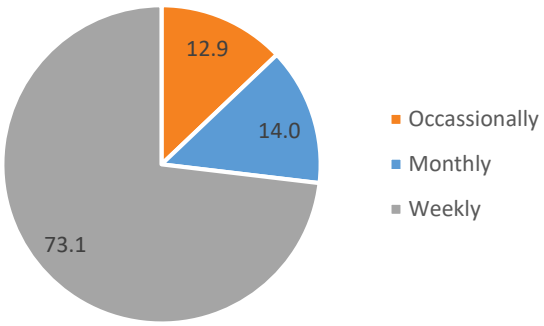


Figure 50: Frequency of Commercial Use of Facility (n=93)

Regarding product development, 82.8% (n=93) reported developing or improving millet-based products, followed by papad (72%) and pickles (31.2%), with smaller proportions working on snacks (15.1%), pasta/noodles (12.9%), bakery products (11.8%), ready-to-eat products (6.5%), and dehydration (3.2%).

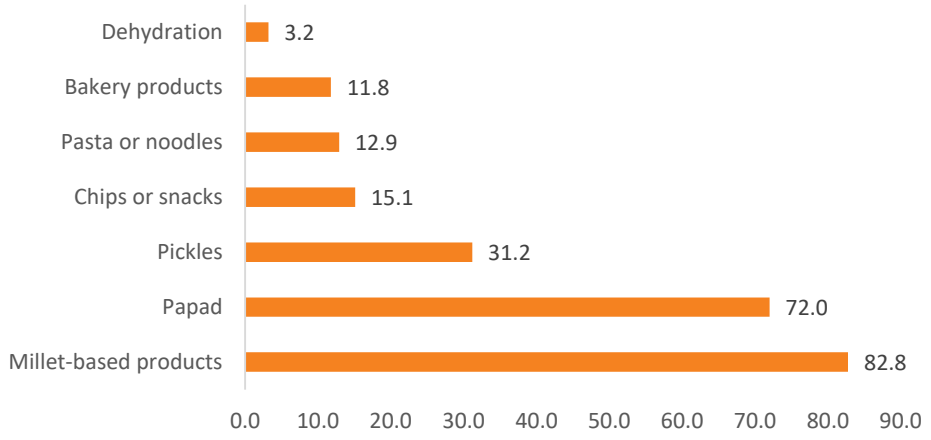


Figure 51: Commercial Product Development/Improvement at Facility (n=93)

A large majority reported improvements in key enterprise aspects, including recipe and product quality (96.8%), packaging and market readiness (93.5%), and testing, labelling, and compliance (80.6%). All participants (100%) reported that using these facilities helped increase their production scale. Additionally, 90.3% reported a significant increase in income after commercially using Millet Processing Unit, while 9.7% reported a slight increase.

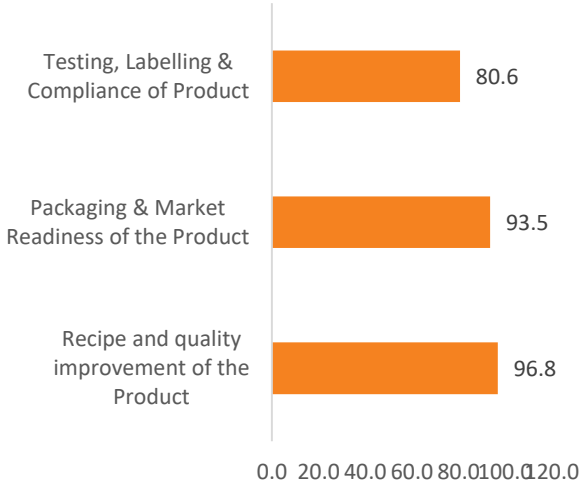


Figure 53: Areas of Improvement using the Facility (n=93)

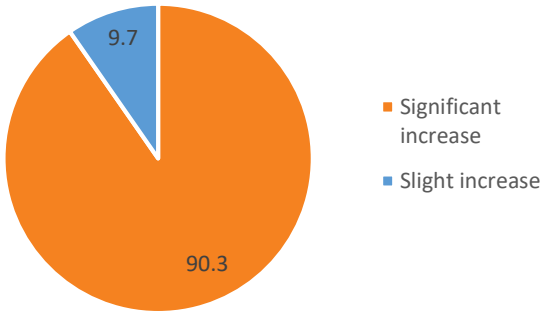


Figure 52: Impact on Income using the Facility (n=93)

Women-led SHGs accessing the processing unit for commercial purposes narrated how it helped address key production challenges, particularly papad drying during monsoons and scaling up output. Access to shared infrastructure also enabled enterprises to maintain consistent quality, which is critical for business growth.

"In the monsoons and winters, we use the dryers at the unit in Baramati, as we cannot sun-dry the papads. This also increases the shelf-life, enhancing the quality and taste of our products. Customers appreciate our homemade, chemical-free products. We are now able to produce in larger quantities compared to only home-based production." – Women entrepreneurs, Nimgaon village, Indapur

These findings indicate that the ADT facilities are not only widely utilized but are also contributing to improvements in product development, quality, market readiness, and overall business growth.

OVERALL IMPACT

A majority of participants (60.8%) reported having attended similar trainings prior to this program. Among them, 95.9% (n=73) rated the ADT training as much better compared to other trainings, while 4.1% felt it was the same.

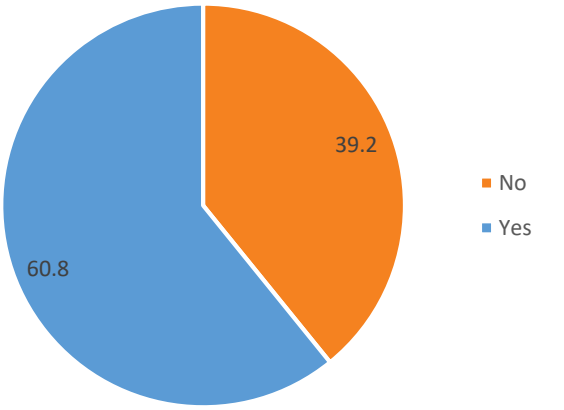


Figure 54: Previous Training Exposure

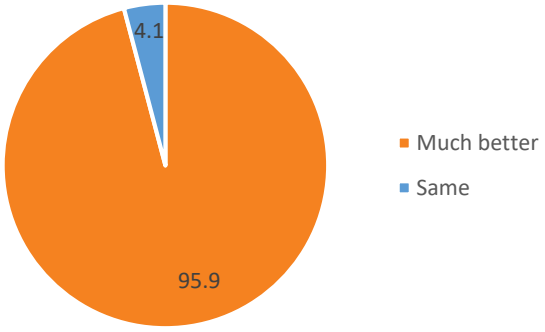


Figure 55: Comparison of ADT with Other Trainings (n=73)

In terms of outcomes, 91.7% reported that the training significantly improved their livelihood opportunities, with the remaining 8.3% reporting slight improvement. All participants (100%) stated that they would recommend the training to others.

Overall, the impact of the training was rated as excellent by 93.3% of participants, 5.8% rated it as good, and only 0.8% as average. These findings reflect a very high level of perceived effectiveness and satisfaction, along with strong endorsement of the training program.

Women reported clear improvements not only in income but also in confidence and independence. Many are now able to manage expenses, travel for work, and take decisions, showing a shift in their role within the household.

"Earlier, our world revolved only around the chulha and children, but now a whole new world has opened up." – Woman entrepreneur, Nimgaon village, Indapur

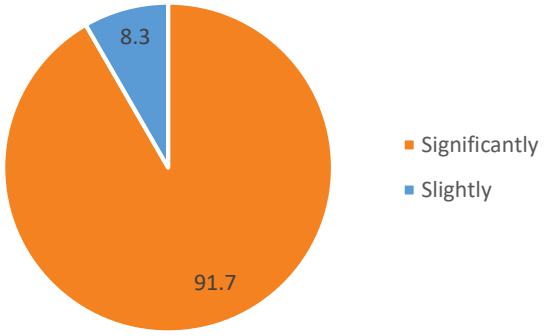


Figure 57: Training Impact on Improving Livelihood Opportunities

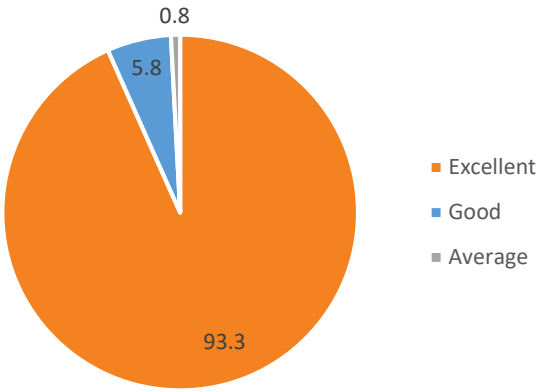
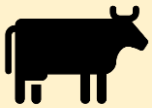


Figure 56: Overall Impact of the Training

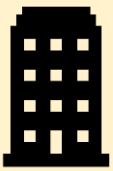
PROJECT 2 – INFRASTRUCTURAL DEVELOPMENT FOR SCIENTIFIC RESEARCH AND KNOWLEDGE DISSEMINATION



Dairy Processing Unit

Soil Testing Laboratory

FabLab Facility



Auditorium

DAIRY PROCESSING UNIT

DAIRY PROCESSING UNIT

The Dairy Processing Unit has been equipped with three dedicated processing machines: Paneer, Ghee, and Cheese making. Each machine is designed for the production of a specific milk-based product — together enabling an integrated, end-to-end dairy value-chain training environment for farmers, students, SHGs, and FPOs associated with the facility.

Across the five years since the completion of the project, the dairy processing facility has engaged four distinct user groups with varying patterns. Farmer numbers grew gradually from 60 (2021-22) to 70 (2025-26), totalling 318 farmers. Student engagement dipped from 50 (2021-22) to 52 in both 2024-25 and 2025-26, amounting to 227 students in all. SHG participation rose from 2 (2021-22) to 4 (2025-26), while FPO engagement moved from 3 (2021-22) to 4 (2025-26) — together reflecting a diverse but stable community institutional base across the period.

Table 8: Stakeholders reached through Dairy Processing Unit

User	2021-22	2022-23	2023-24	2024-25	2025-26
Farmers	60	62	62	64	70
College Students	50	35	38	52	52
SHGs	2	5	6	3	4
FPOs	3	2	4	5	4

Findings – Dairy Processing Facility

DAIRY PROCESSING – MICRO ENTREPRENEURS

ADT's Dairy Processing Facility provides training in three modules – ghee, paneer, and cheese making to individual dairy farmers, micro entrepreneurs, SHGs, FPOs. All 20 participants attended training in all three modules.

DEMOGRAPHIC PROFILE OF PARTICIPANTS

Participants represented diverse demographic groups. The survey of trainees indicates an evenly distributed age composition, with 30% each in the 21–30, 31–40, and 41–50 age groups, and 10% above 50 years. Participants were predominantly men (85%), with women comprising 15%. A majority (70%) belonged to Other Backward Classes (OBC), while 30% were from the unreserved category.

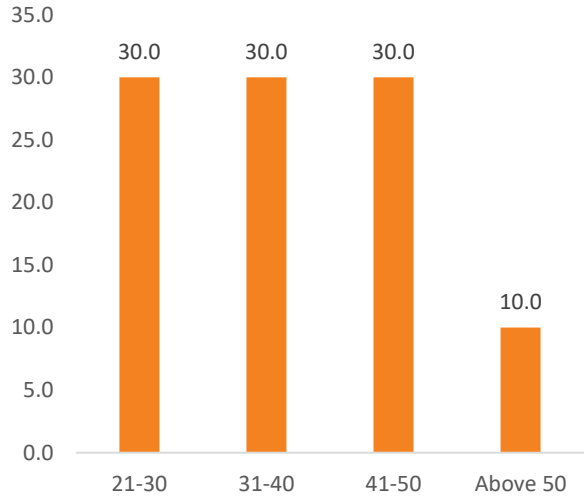


Figure 58: Age-group

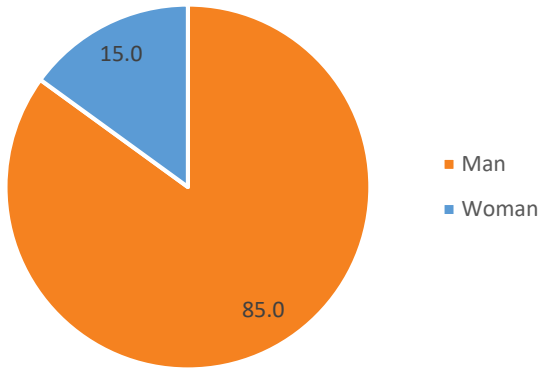


Figure 59: Gender

In terms of education, 45% had graduate-level qualifications, while the remaining participants were distributed across secondary (25%), senior secondary (20%), and primary or no formal education (10%), reflecting a mix of educational backgrounds.

All participants (100%) were micro-entrepreneurs (farmers/individuals), indicating that the training reached its intended target group.

ADT staff shared that a structured mobilisation and registration process is in place to maximise reach to the intended target groups. This involves circulating pamphlets through multiple channels, including WhatsApp groups, social media platforms, and the website. Micro-entrepreneurs are specifically reached through SHGs connected with the Bhimthadi Foundation, while individual farmers and FPOs are mobilised through the existing training database of the KVK and the Dairy Processing Unit.

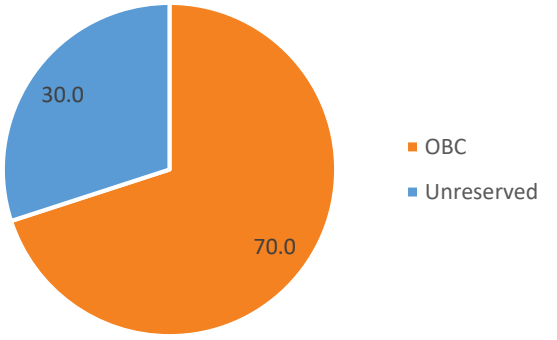


Figure 61: Social Category

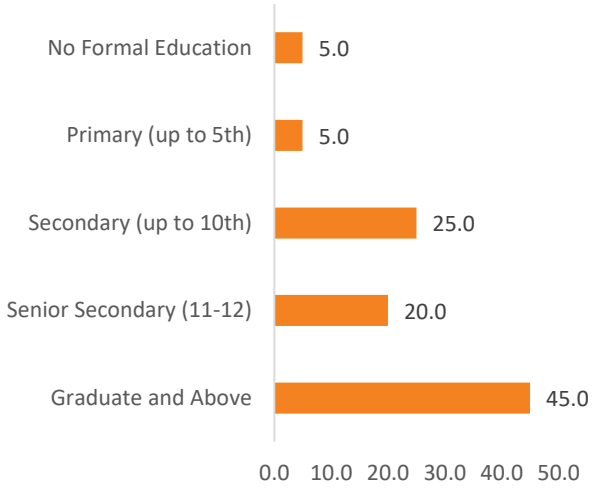


Figure 60: Educational Qualification

TRAINING CONTENT

All 20 participants attended all three processing modules and covered all five learning components — product preparation techniques, hygiene and quality standards, packaging and storage, pricing and marketing, and business planning (100% across all topics). All except one participant (95%) reported receiving hands-on training on dairy processing equipment.

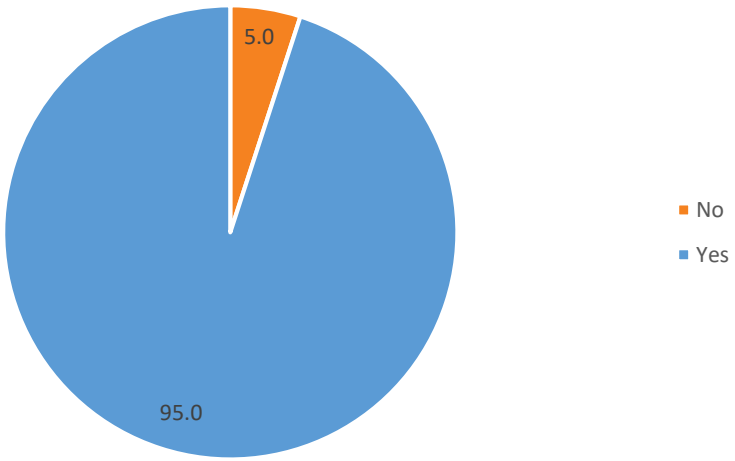


Figure 62: Hands-on Training Experience

The training involves step-by-step explanations of each machine, its purpose, and functions. With handholding support from the dairy processing staff, participants then receive hands-on experience in each process.

SKILL IMPROVEMENT: BEFORE AND AFTER TRAINING

A clear improvement is observed in participants' technical abilities. Before using the dairy processing facilities, 75% reported low ability and 25% reported medium ability in processing milk into value-added products, such as cheese, paneer, or ghee, with none reporting high ability. After the training, 50% reported high ability, 45% medium ability, and only 5% remained at low ability, indicating a substantial shift towards higher levels of competency. The Wilcoxon test confirms this change is statistically significant ($p < 0.001$).

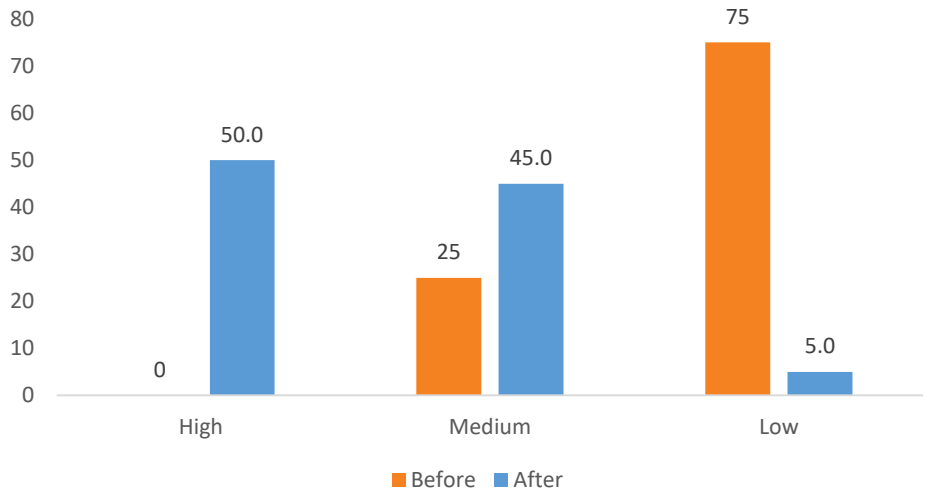


Figure 63: Ability to Process Milk into Value-added Products - Before vs After

POST-TRAINING BUSINESS ENGAGEMENT

Post-training outcomes indicate strong translation of learning into practice among participants. About 80% reported improvements in their existing businesses, while 5% started a new businesses; 15% did not initiate any activity. Two participants who were not yet engaged in entrepreneurial activity expressed interest in starting a dairy business. Among participants currently engaged in business (n=17), all were involved in dairy-related activities, with 88.2% engaged in milk production. A smaller proportion reported producing value-added products such as paneer (11.8%), ghee (11.8%), and cheese (5.9%).

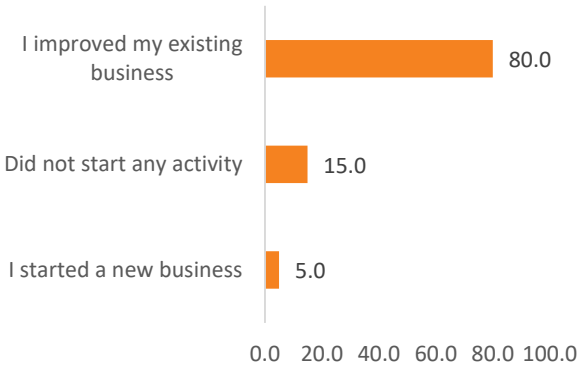


Figure 64: Post-Training Business Engagement

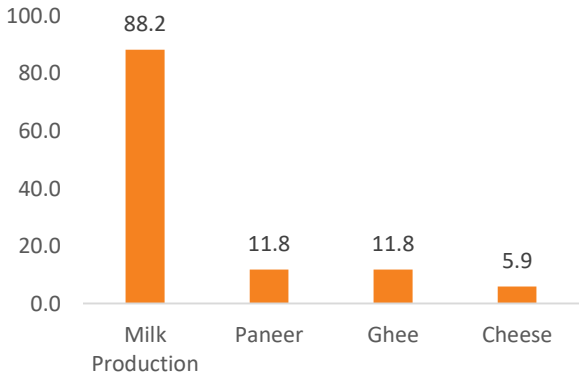


Figure 65: Product-line of Business (n=17)

In terms of market linkages, 82.4% sold their products in local markets, and 35.3% sold directly to customers, with some using both channels.

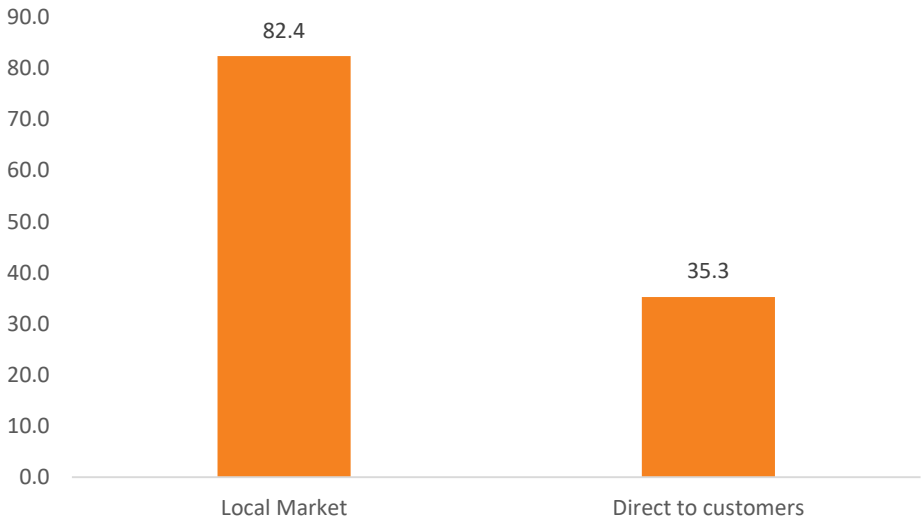


Figure 66: Market Source for Selling Products (n=17)

Income patterns indicate that 58.8% of participants earned more than ₹15,000 per month, 35.3% earned between ₹5,000–₹15,000, and 5.9% earned less than ₹5,000. Employment generation remains modest, with 58.8% reporting engagement of 2–3 people and 41.2% operating individually.

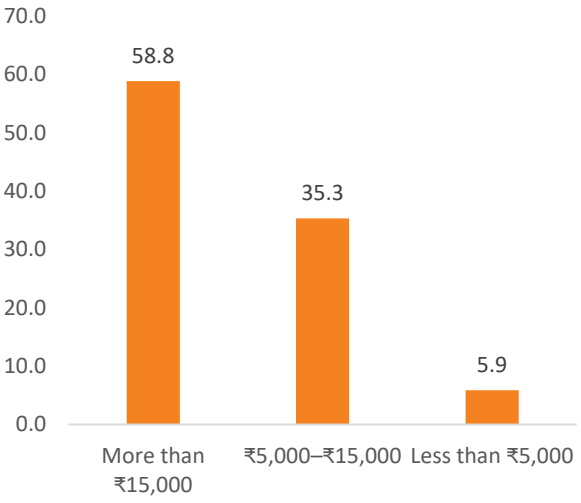


Figure 68: Current Monthly Income from Business (n=17)

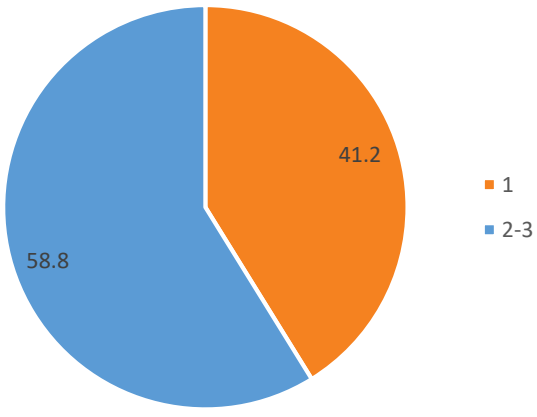


Figure 67: Employees in Current Business (n=17)

IMPACT AND SATISFACTION

The training was rated highly by participants, with 95% rating the overall quality as excellent and 5% as average. In terms of usefulness, all participants found the training beneficial for their business, with 55% reporting it as extremely useful and 45% as very useful.

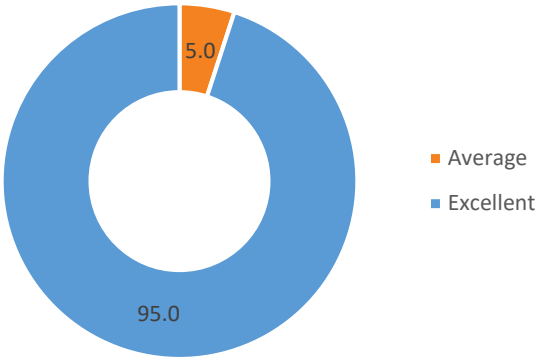


Figure 70: Rating of Overall Quality of the Training

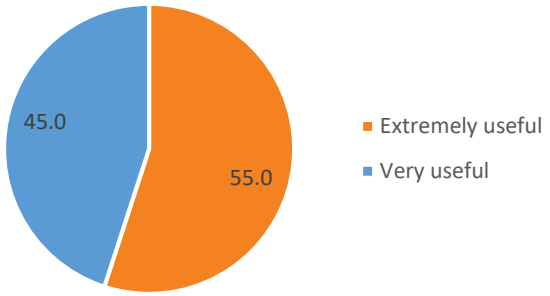


Figure 69: Training Usefulness for Business

The training played an important role in business outcomes, with 82.4% reporting it as very important for starting or improving their business. All participants engaged in business (n=17) reported improvement in product quality. Further, 94.1% reported an increase in income after the training, indicating a strong positive effect on economic outcomes. Less than 6% reported no change in income.

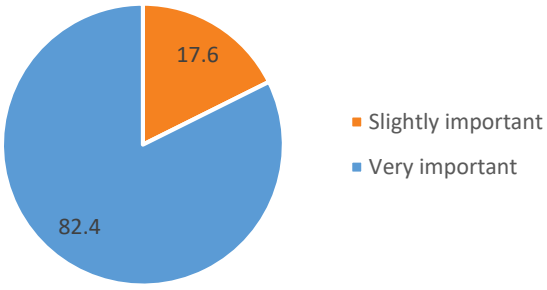


Figure 72: Importance of Training for Business Initiation/Improvement (n=17)

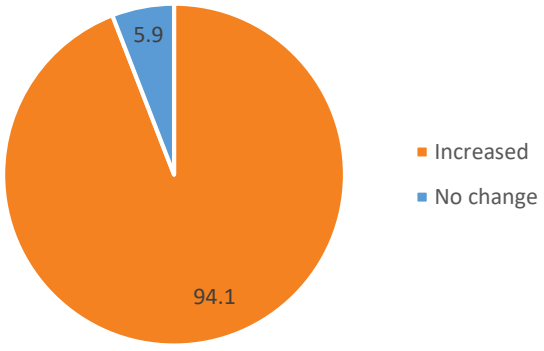


Figure 71: Change in Income after the Training (n=17)

A majority of participants (70%) reported that they had not attended any similar training prior to this program, while 30% had prior exposure. Among those with previous experience (n=6), all (100% of valid responses) rated the ADT training as much better. All participants (100%) indicated that they would have sought training elsewhere if this facility was not available, highlighting the demand for such capacity-building opportunities. In terms of outcomes, 80% reported that the training significantly improved their livelihood opportunities, while 20% reported slight improvement.

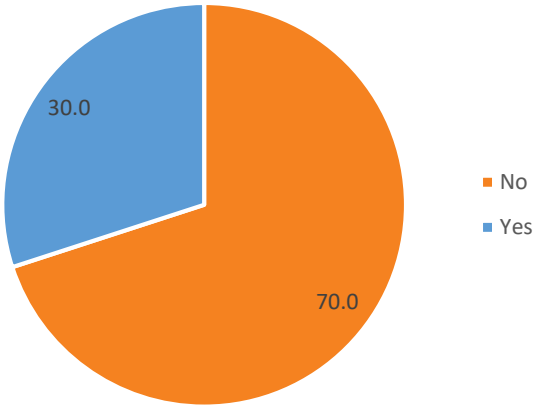


Figure 74: Previous Training Experience

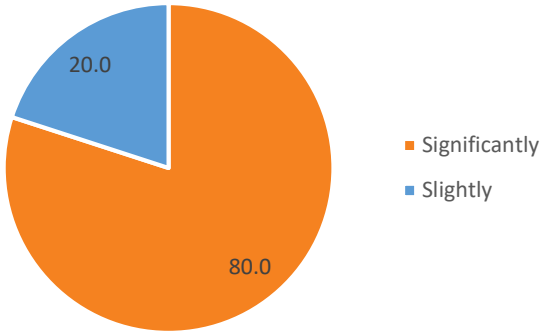


Figure 73: Training Impact on Improving Livelihood Opportunities

The training received strong endorsement, with 95% willing to recommend it to others. Overall impact ratings were very high, with 95% rating the training as excellent and 5% as good, indicating a consistently positive perception of the program's effectiveness.

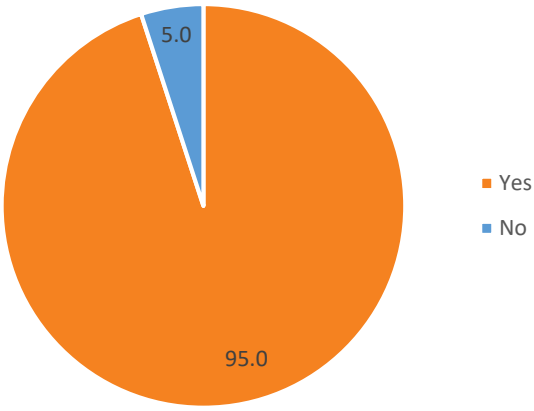


Figure 75: Recommend the Training to Others

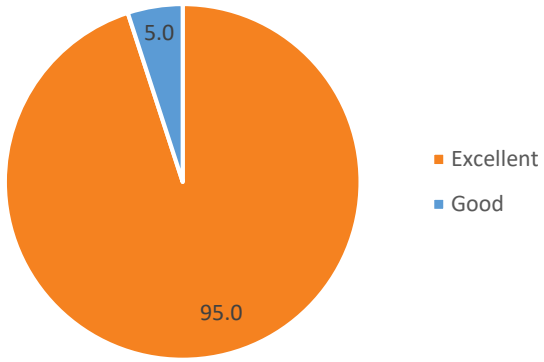


Figure 76: Impact of the Training

DAIRY PROCESSING – STUDENTS

A total of 149 students who received training in dairy processing using the available facilities participated in the survey.

DEMOGRAPHIC PROFILE OF STUDENTS

Across age groups, usage was heavily concentrated among younger participants. Among those who used the facility, 94% belonged to the 20–24 age group, followed by 4% in the 25–30 age group, and 2% below 20 years. Nearly 60% student respondents were girls and remaining were boys. A majority of the students (53.7%) belonged to the unreserved category, followed by 38.3% from OBC, 6% from SC, and 2% from ST categories.

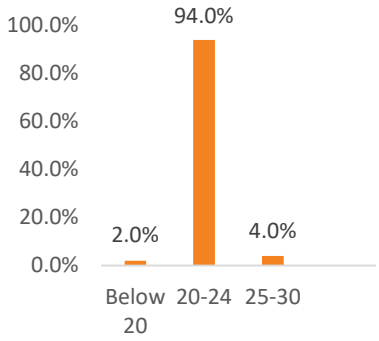


Figure 79: Age-group

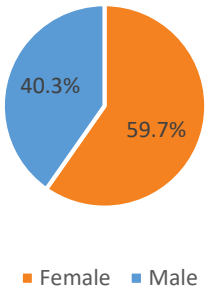


Figure 77: Gender

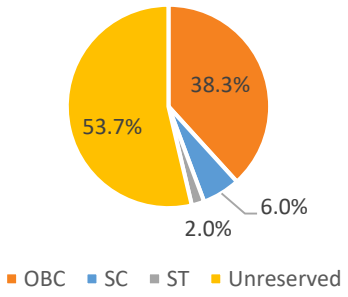


Figure 78: Social Category

In terms of education level, 79.2% of users were at the bachelor's level, and 18.1% were pursuing master's degrees. Very small proportions were from diploma (2%) and PhD (0.7%) levels, suggesting that the facility is primarily utilized by undergraduate students. By discipline, usage was almost entirely concentrated among agriculture students, who constituted 98.7% of users. Across years of study, usage was highly concentrated among students in advanced years, with 78.5% of users in the 4th year. Smaller proportions were from 1st year (10.7%), 2nd year (5.4%), 3rd year (2%), and 5th year (3.4%), suggesting that engagement with the facility is more prominent at later stages of academic progression.

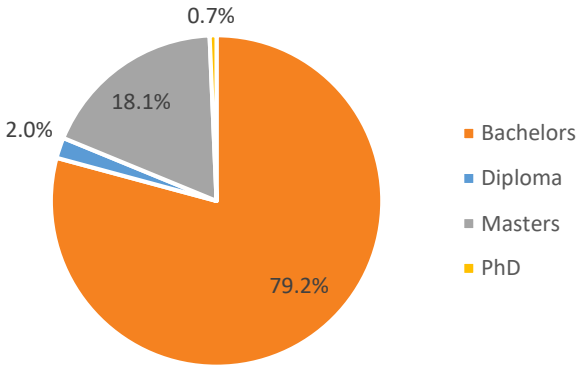


Figure 81: Degree Level

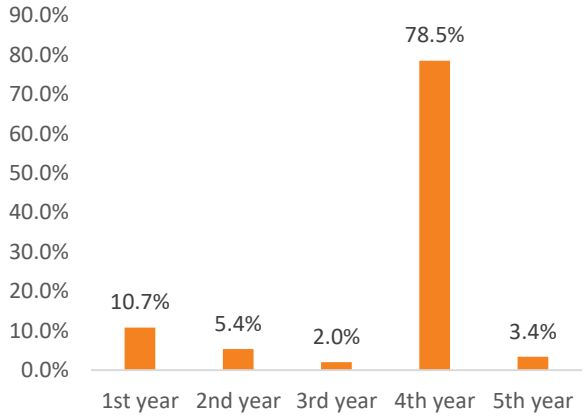


Figure 80: Year of Study

EXPERIENCE AT THE DAIRY PROCESSING UNIT

Exposure to equipment was high, with all trained students (100%) using the paneer-making machine and 99.3% using the ghee-making machine, while 54.4% also used the cheese-making machine, suggesting broader but slightly varied exposure across product lines.

In the baseline self-assessment, participants indicated moderate to low prior capability, with 27.5% reporting low ability and 9.4% no prior ability, while 47.7% rated themselves at a medium level and only 15.4% at a high level. Following the training, there is a marked shift, with 64.4% reporting high ability and 34.9% medium ability, and negligible proportion (0.7%) remaining at a low level, demonstrating significant improvement in practical competencies related to value-added dairy processing.

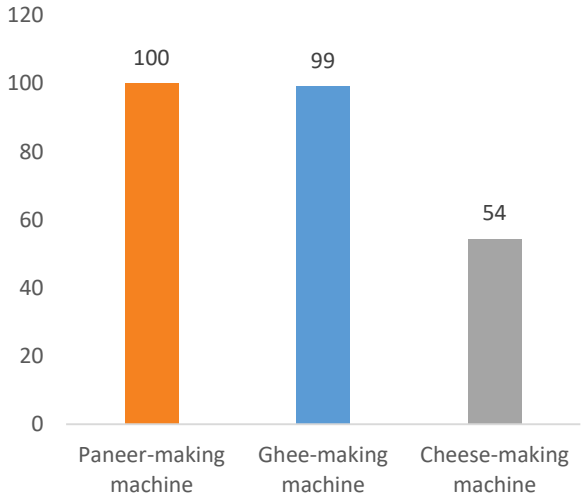


Figure 83: Dairy Processing Machines used by Students

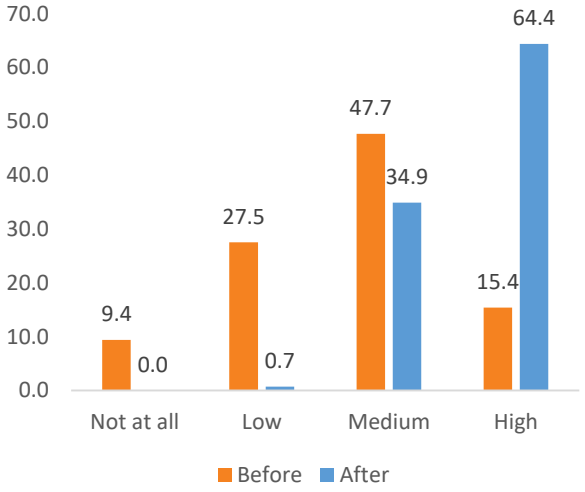


Figure 82: Ability to Process Milk into Value-added Products Before vs After

In terms of application, 25.5% reported using these skills daily and 26.8% weekly, while 35.6% used them on a need basis, indicating both regular and situational application of acquired skills.

Perceived learning outcomes are strong, with 57% reporting improvement “to a large extent” and 41.6% “to some extent,” reflecting near-universal gains in practical skills. Additionally, 87.2% of students found these facilities more useful than regular classroom or practical teaching, reinforcing the value of hands-on, experiential learning in enhancing technical proficiency.

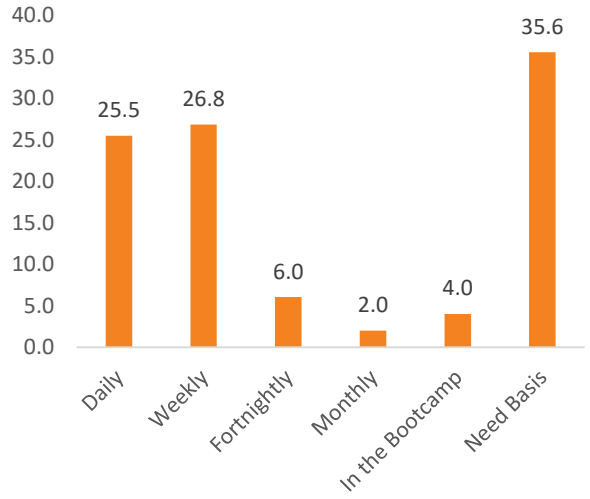


Figure 85: Frequency of using Dairy Processing Skills

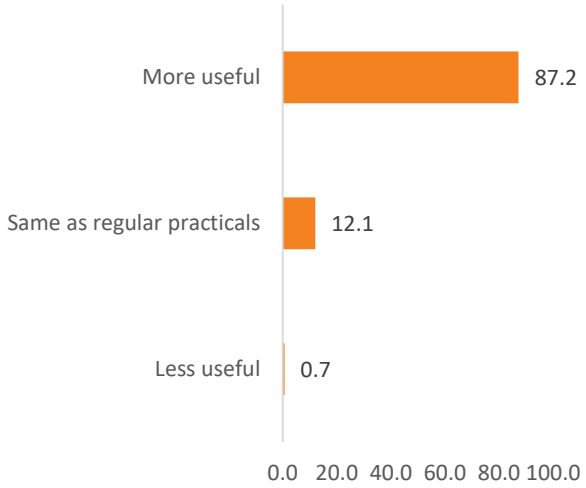


Figure 84: Usefulness of Dairy Processing Facilities compared to Regular Practicals

OVERALL IMPACT

Among students of the dairy processing facility, 67.1% reported that their practical skills improved to a large extent, while 32.9% reported improvement to some extent, with no users indicating no improvement. In terms of job readiness, 40.9% of students reported improvement to a large extent and 51.7% to some extent, while 7.4% reported no improvement.

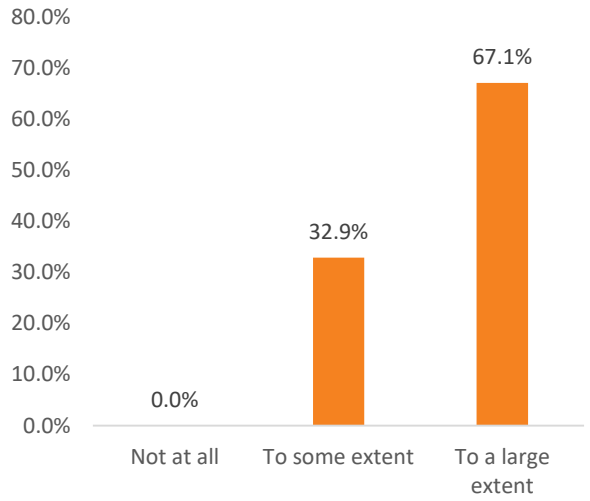


Figure 87: Improvement in Practical Skills

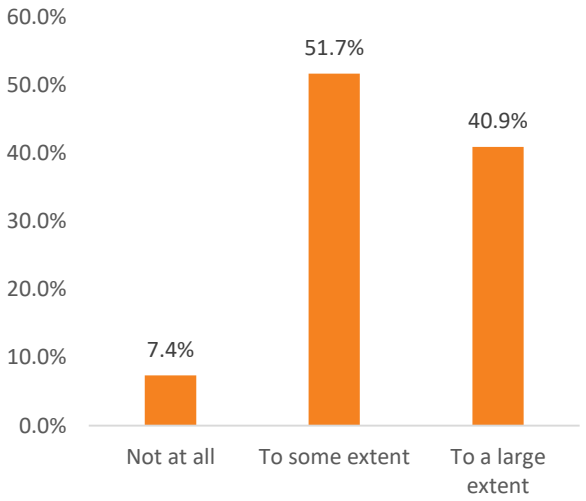


Figure 86: Improvement in Job Readiness

A majority of students (93.3%) reported increased confidence in lab work, with only 6.7% indicating no change, reflecting a strong positive effect on confidence levels.

Regarding quality, 81.9% of students rated the facilities as excellent and 18.1% as average.

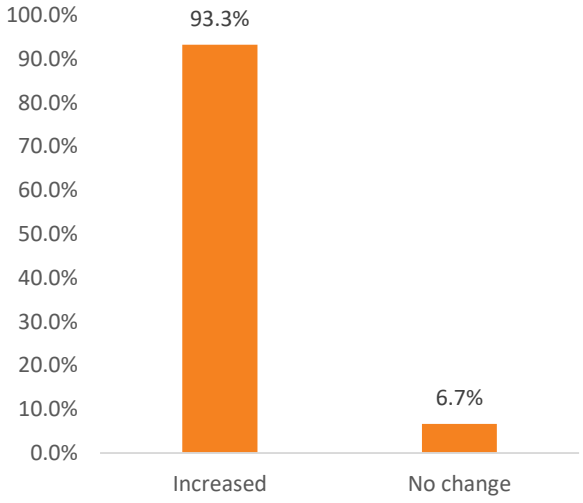


Figure 89: Improvement in Confidence

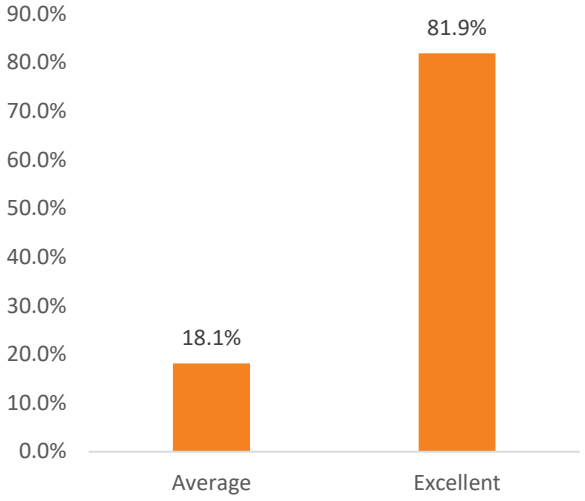


Figure 88: Rating of Overall Quality of Dairy Processing Unit

Similarly, 82.6% rated the training and guidance as excellent, while 17.4% rated it as average, indicating high satisfaction with both infrastructure and support. In the absence of these facilities, 38.3% of students reported that they would have relied only on theoretical classes, 29.5% were not sure of alternatives, 19.5% would have accessed external institutes, and 12.8% indicated they would not have gained such experience. This suggests that the facility played a critical role in enabling practical exposure that may otherwise be limited or inaccessible.

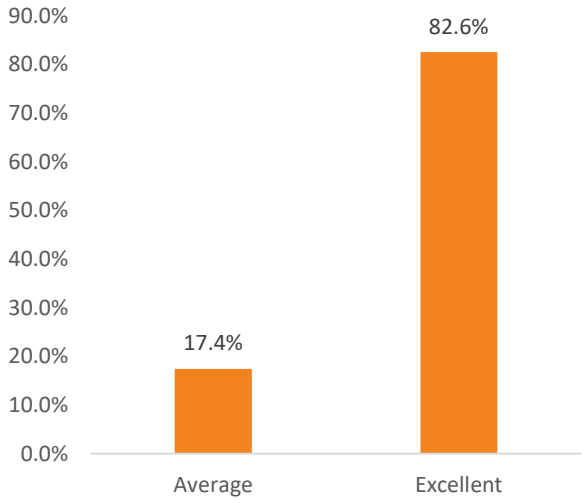


Figure 91: Rating of Training & Guidance provided at Dairy Processing Unit

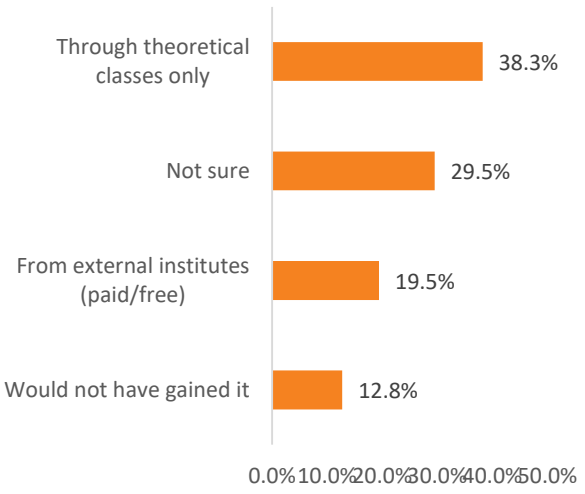


Figure 90: Assumed Impact of the Absence of Dairy Processing Unit

SOIL TESTING LABORATORY

PROJECT SOIL TESTING LABORATORY

Farmer outreach through the Soil Testing facility has remained consistently large in scale, recorded at 3,000 (2021-22) to 3,500 (2025-26), cumulatively reaching 16,440 farmers in five years. Student from various degree course showed greater variability — 148 (2021-22) to 299 (2025-26) — totalling 1,109 students across the five years.

Table 9: Stakeholders reached out through Soil Testing Laboratory

S. N.	CSR Support	User	2021-22	2022-23	2023-24	2024-25	2025-26
1	Soil Testing	Farmers	3000	2750	3890	3300	3500
2		Students	148	232	300	130	299

Table 10: Machineries provided at Soil Testing Lab

S.N.	Name of Instrument	Use of Instrument
1	Soil Sample Collection Tools (Auger, Core Sampler)	Collection of representative soil samples from field
2	Kjeldahl Digestion & Distillation Unit	Determination of nitrogen content in soil
3	Glassware (Beakers, Flasks, Pipettes)	Sample preparation and chemical analysis

Findings – Soil Testing Facility

SOIL TESTING – FARMERS

ADT's soil testing laboratory analyses soil samples and provides science-based recommendations to farmers on fertiliser use, crop selection, and soil management. A total of 54 farmers who utilised this service responded to the survey.

DEMOGRAPHIC PROFILE OF PARTICIPANTS

The age profile of users indicates a relatively older cohort, with 31.5% above 60 years, 25.9% in the 51–60 age group, and 22.2% in the 41–50 category, while younger farmers constitute a smaller proportion. Participants were predominantly men (92.6%), with women comprising 7.4%.

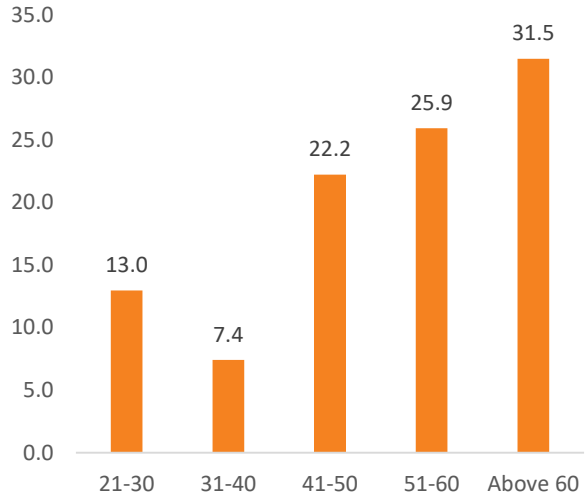


Figure 92: Age-group

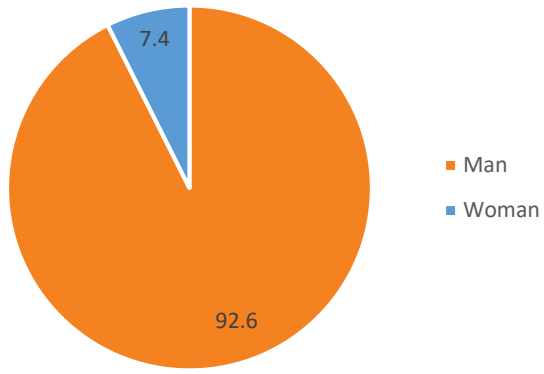


Figure 93: Gender

A majority (85.2%) belonged to Other Backward Classes (OBC), followed by 13% from the unreserved category and 1.9% from Scheduled Castes. In terms of education, 31.5% had graduate-level qualifications, while the rest were distributed across secondary (27.8%), primary (20.4%), and senior secondary (16.7%) levels, with a small proportion (3.7%) having no formal education.

Landholding patterns indicate that most farmers were small to medium holders, with 55.6% owning 2–5 acres and 25.9% owning 1–2 acres. In comparison, 14.8% owned more than 5 acres, while only 3.7% had less than 1 acre. Cropping patterns show that 77.8% of farmers cultivated cash crops and 66.7% grew cereals, while 29.6% were engaged in fruit cultivation and 14.8% in vegetable cultivation. Millet cultivation remained limited, with only 7.4% of participants reporting it.

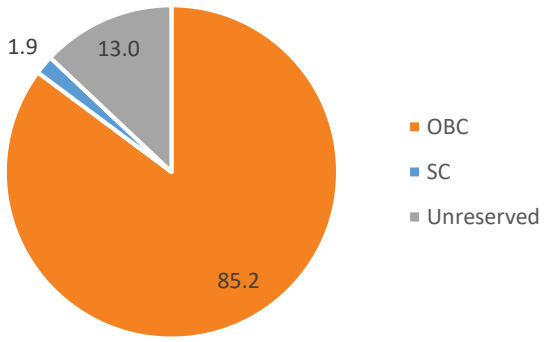


Figure 96: Social Category

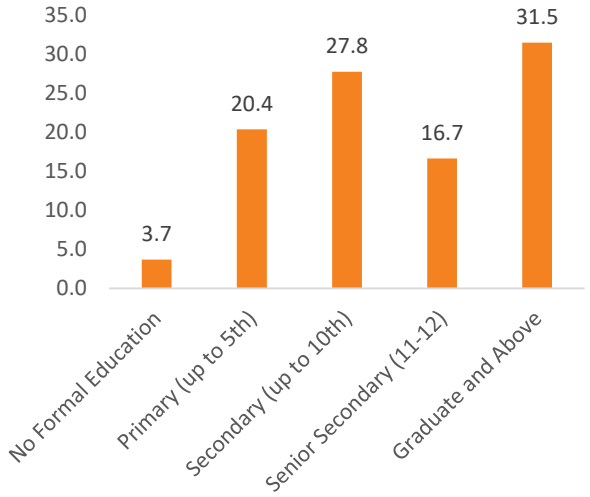


Figure 95: Educational Qualification

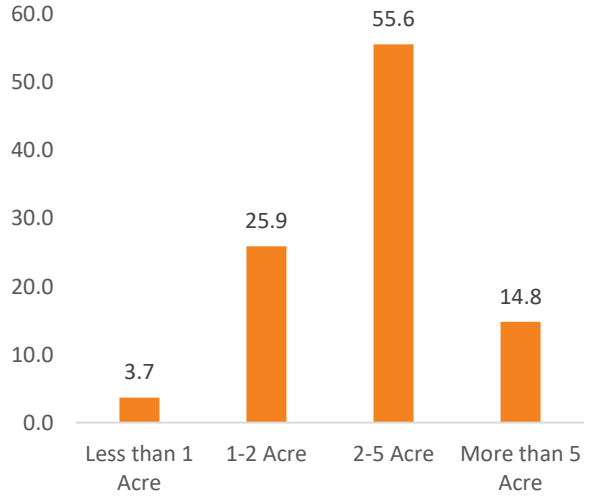


Figure 97: Landholding Size of Participants

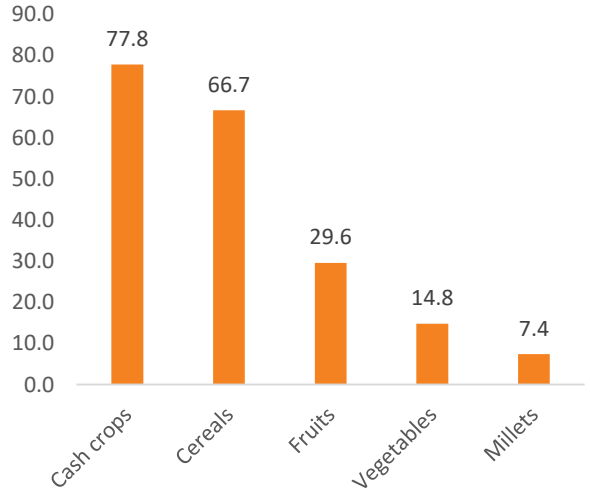


Figure 94: Main Crops

AWARENESS SOURCES AND REASONS FOR SOIL TESTING

Among the surveyed farmers who used the soil testing facility, awareness of the service was primarily driven by direct institutional outreach, with 90.7% reporting that they learned about it through ADT staff. A smaller proportion cited fellow farmers (7.4%) and training or awareness programmes (1.9%).

In terms of engagement, a majority (57.4%) had been using ADT soil testing services for more than two years, indicating sustained utilization. Meanwhile, a quarter (25.9%) began using the facility within the last six months, and 11.1% within the past year.

"We were noticing a decline in the soil's fertility. There was a clear difference in our maize crop yield compared to others, despite using the same amount of fertilisers and water. So, we started wondering if there was something wrong with our soil. Meanwhile, we came to know about free soil testing by KVK – otherwise, people did not even know something like this exists. We thought, let's try it and see what the issue is." – Farmers, Ghorpadwadi village, Indapur

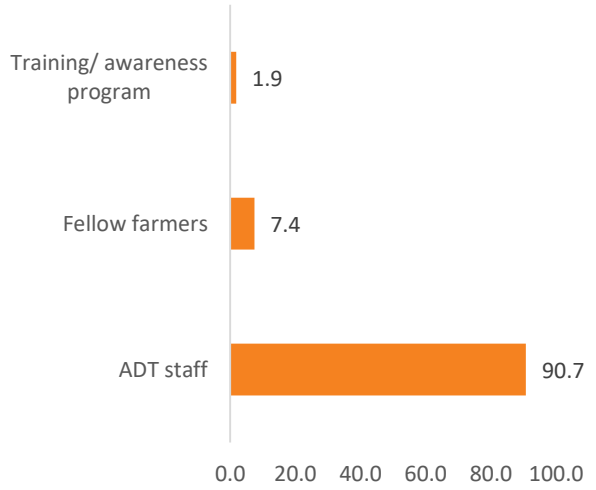


Figure 99: Source of Information about the ADT Soil Testing Facility

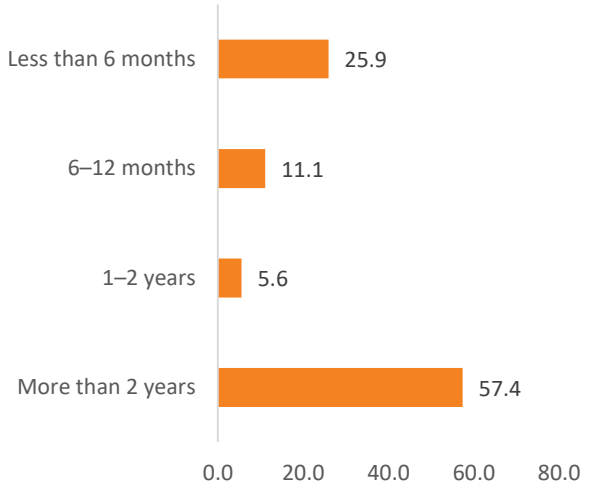


Figure 98: Duration of Accessing ADT Soil Testing Services

The primary motivations for soil testing were largely productivity- and information-driven. Most farmers (77.8%) sought to obtain information on soil nutrients, and 70.4% aimed to increase crop production. About half (51.9%) reported using the service to reduce fertilizer costs. Fewer farmers cited reasons such as selecting the right crop (22.2%) or acting on expert guidance (16.7%), while institutional assistance (5.6%), low previous yields (3.7%), or general curiosity (3.7%) acted as motivators in very small proportions.

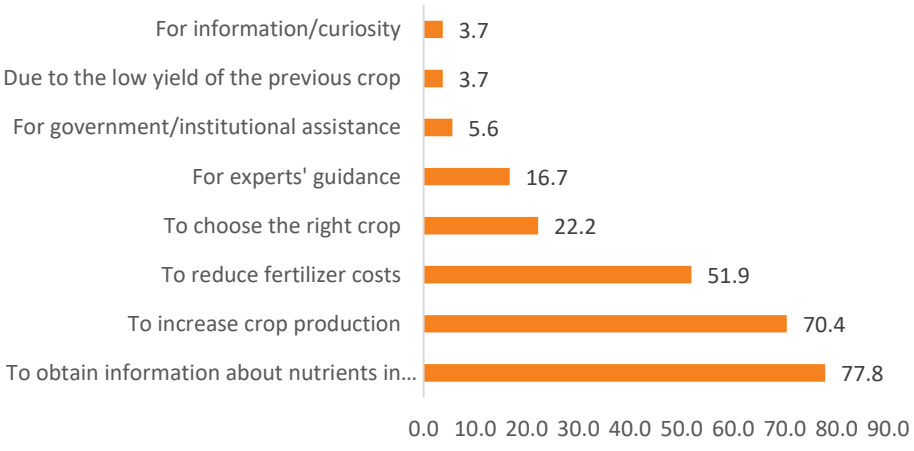


Figure 100: Reasons of Testing Soil Health

FREQUENCY OF USE AND SERVICE QUALITY

In terms of frequency of use, 70.4% reported using the facility less than five times, while 22.2% had used it 5–10 times and 7.4% more than 10 times. During discussions, farmers shared that while repeat usage exists, frequent engagement with the service is not required. One or two rounds of testing – before and after making changes in their farming practices – were sufficient to yield results. The findings indicate a high level of accessibility and trust in the soil testing services provided by ADT. A large majority of farmers (79.6%) reported that the soil test reports were very easy to understand, while 11.1% found them easy and only 9.3% had difficulty, suggesting that the reports are largely user-friendly.

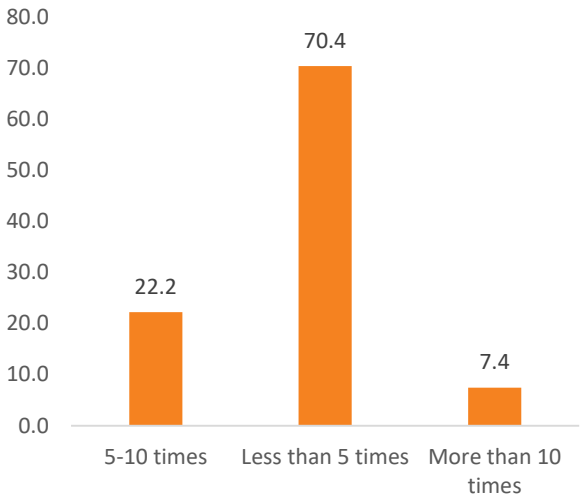


Figure 102: Frequency of Using Soil Testing Facility

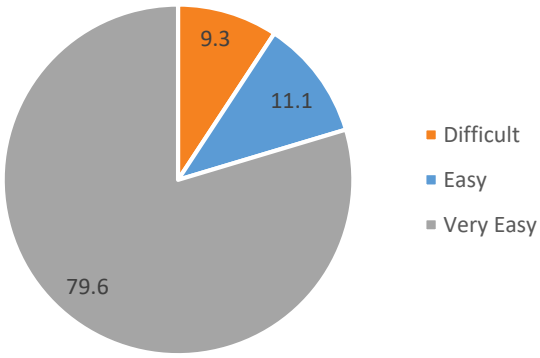


Figure 101: Ease of Understanding Soil Testing Report

This is further supported by the effectiveness of staff support, with 92.6% of participants stating that ADT staff explained the reports and recommendations clearly, and the remaining 7.4% indicating that explanations were provided to some extent. Trust in the results was very high, with 96.3% of farmers reporting full confidence in the soil test outcomes and only 3.7% expressing partial trust.

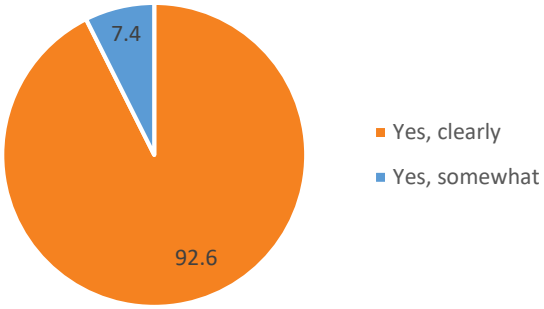


Figure 103: Report Explanation & Recommendations by ADT

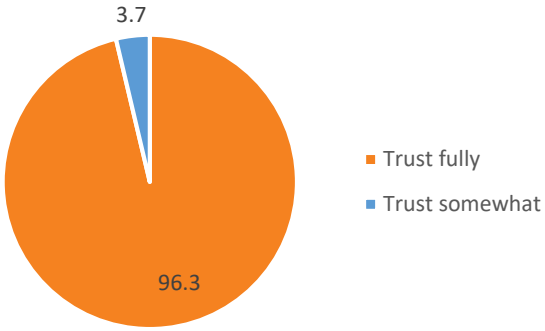


Figure 104: Trust in ADT's Soil Testing Report

"The report is easy to understand. It lists values for each parameter tested, such as pH level, along with the ideal range. Values that are out of range are highlighted in bold, making it easy to identify issues. Moreover, the report includes recommendations at the end to correct these values, which we can directly implement." – Farmer, Ghorpadwadi village, Indapur

Overall, this indicates strong credibility of the service, reinforced by clear communication and ease of understanding of the reports.

COMPARISON OF SOIL TESTING FACILITIES

Among the surveyed farmers, 61.1% (n=33) had not used any soil testing facility prior to ADT, indicating that the service has reached a substantial proportion of first-time users, while 38.9% (n=21) had prior experience with other facilities. Among those with prior experience, perceptions of ADT services were strongly positive. A majority (85.7%) rated ADT's soil testing service as much better than other facilities, while the remaining 14.3% found it similar.

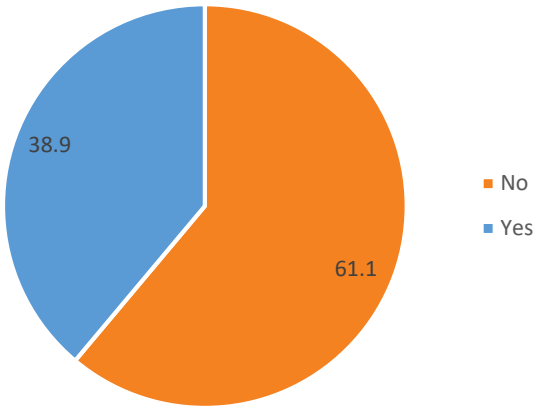


Figure 106: Accessed other Soil Testing Labs

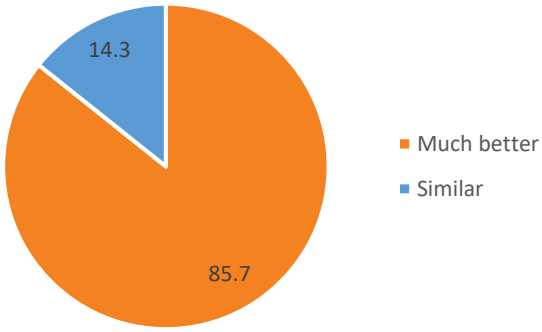


Figure 105: Perception of ADT Soil Lab compared to others (n=21)

Cost comparisons also reflect a clear advantage, with 85.7% reporting that ADT services are lower in cost and 14.3% considering them similar. In terms of turnaround time, most participants (71.4%) felt that the time taken for testing and receiving reports is similar to other facilities, while 23.8% reported it to be longer and a small proportion (4.8%) found it shorter.

"I have used both private consultants and the KVK lab. Consultants provide detailed advice but at a cost, so only some farmers can afford it. The KVK provided 100% trustworthy and useful results for free, which is a huge benefit for people in our village. Earlier, we were not even aware of the need for soil testing or its benefits." – Farmers, Ghorpadwadi village, Indapur

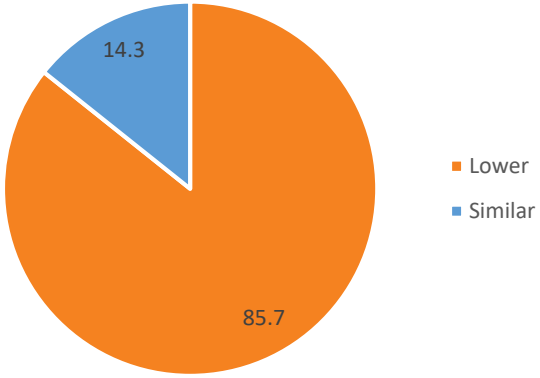


Figure 108: Cost at ADT Soil Lab Cost compared to others (n=21)

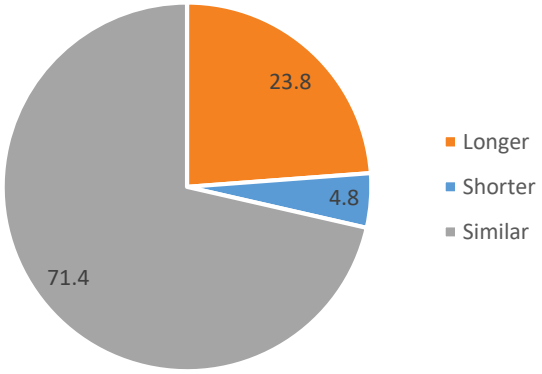


Figure 107: Time taken by ADT Soil Lab compared to others (n=21)

Overall, the findings suggest that ADT soil testing services are perceived as more cost-effective and higher in quality compared to alternatives, while maintaining comparable turnaround times.

CHANGES IN FARMING PRACTICES AFTER SOIL TESTING

A large majority of farmers (81.5%) reported making changes to their farming practices after receiving the soil test report, while 18.5% did not report any changes.

Among those who made changes (n=44), the most common adjustment was changing the type of fertilizers, reported by 84.1% of farmers. This was followed by changes in crop type (56.8%) and adjustments in the quantity of fertilizers (40.9%). A relatively smaller yet significant proportion of participants adopted organic inputs or bio-fertilizers (25%) and improved soil treatment practices (27.3%).

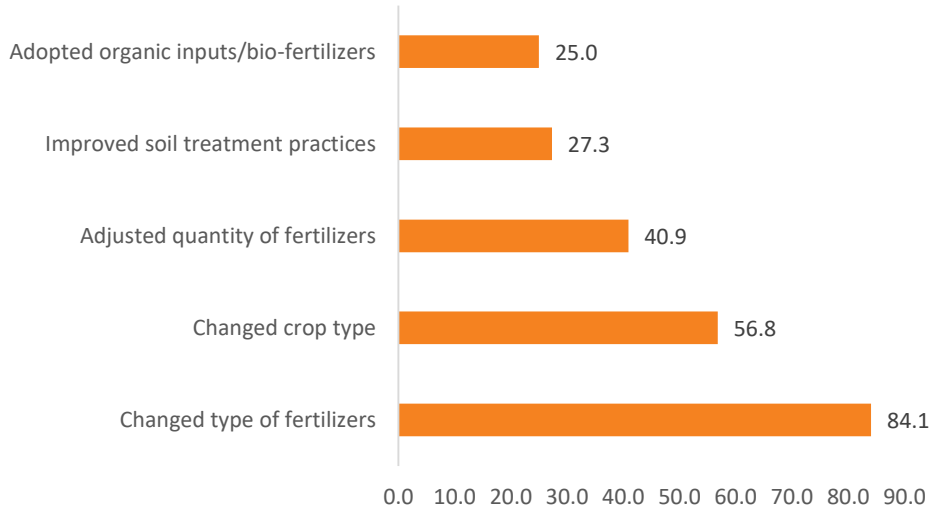


Figure 109: Type of Changes made in Farming Practices (n=44)

In terms of attribution, all the farmers linked these changes to the ADT soil testing report to varying degrees. A majority (86.4%) reported that these changes were entirely based on ADT recommendations, while the remaining (13.6%) indicated that they were moderately influenced by them.

"Based on the test results, I started applying zinc fertiliser to my maize crops. In the initial stage, the crop needs phosphorus, and towards the end, it requires potassium. We use an 18:40 ratio of 18% urea and 40% phosphorus so that the crop is supported during its early growth. We started practising this and saw results. This was because of soil testing—it has steadily increased our knowledge." – Farmer, Ghorpadwadi village, Indapur

The findings indicate a strong translation of soil testing insights into practice, particularly in fertilizer use and crop decisions, with a high level of alignment to the recommendations provided by ADT.

OUTCOMES AFTER APPLICATION OF RECOMMENDATIONS

Among farmers (n=44) who implemented the recommendations, a very high proportion (93.2%) reported an increase in crop yield, indicating strong immediate production-level benefits. In addition, 54.5% reported an increase in income, and 45.5% observed a reduction in input costs, suggesting both productivity and efficiency gains. Improvements in soil quality were reported by 40.9% of farmers, and 27.3% noted better crop quality. Notably, none of the participants reported a lack of noticeable change, indicating that all adopters experienced at least some positive outcome.

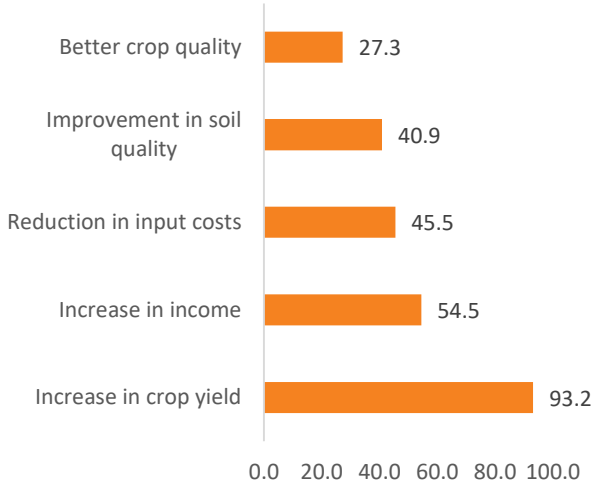


Figure 110: Changes Observed after Applying Recommendations (n=44)

In terms of the magnitude of change, yield improvements were substantial. A quarter of farmers reported increases of 25–50%, and another quarter reported increases of more than 50%. Meanwhile, 22.7% experienced gains of less than 10%, followed by 10–25% improvement reported by 18.2%.

Similarly, income gains were widely reported, with 31.8% of farmers indicating a 25–50% increase and a quarter reporting increases of more than 50%, while 22.7% experienced gains below 10% and 20.5% reported increases in the 10–25% range.

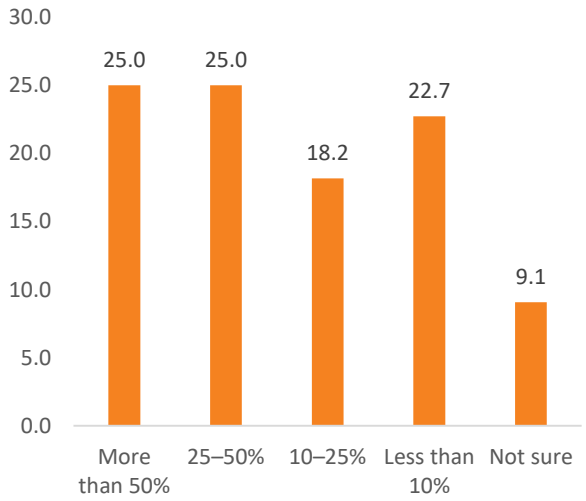


Figure 112: Changes in Crop Yield (n=44)

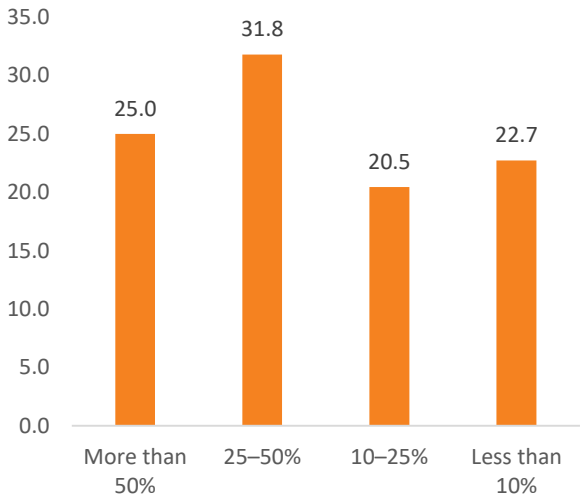


Figure 111: Changes in Income (n=44)

"We saw immediate benefits after changing practices based on the soil test results—such as improved soil health, reduced yellowing of leaves, and increased crop yield, nearly 1.5 times higher." – Farmers, Ghorpadwadi village, Indapur

Overall, the findings suggest that the adoption of soil test-based recommendations has translated into measurable improvements in yield and income, alongside moderate gains in cost efficiency, soil health, and product quality.

SATISFACTION WITH THE FACILITY

In the absence of ADT soil testing services, a majority of farmers (64.8%) reported that they would have continued farming without soil testing, and 14.8% were unsure. On the other hand, 20.4% indicated that they would have used another laboratory. This suggests that the availability of ADT services has played a critical role in enabling access to soil testing, particularly for farmers who may not otherwise have sought such services.

User satisfaction with the service is very high, with 87% of participants reporting that they are very satisfied and the remaining 13% indicating that they are satisfied.

This is further reinforced by universal endorsement, with 100% of farmers stating that they would recommend ADT soil testing services to others, reflecting strong user confidence and perceived value of the intervention.

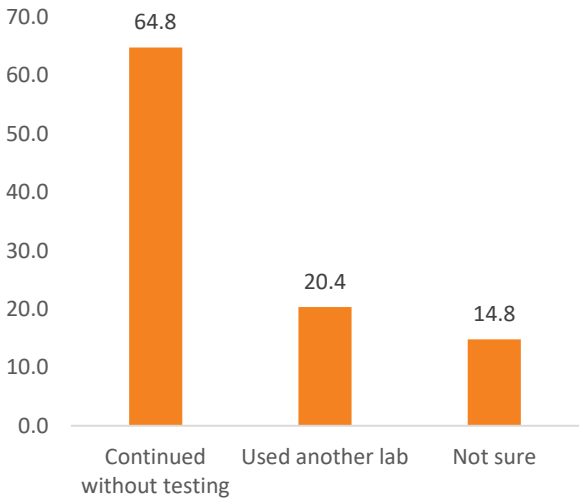


Figure 113: Assumed Action in the Absence of ADT Soil Testing Lab

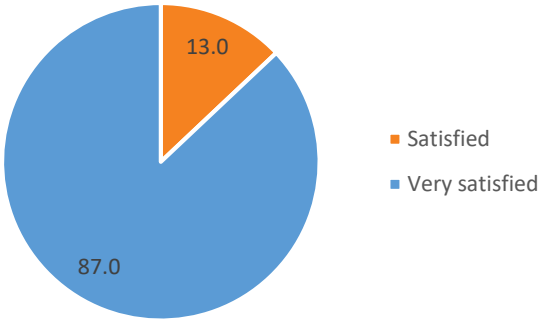


Figure 114: Satisfaction with ADT Soil Testing Services

SOIL TESTING LABORATORY — STUDENTS

The self-administered questionnaire was completed by 69 students who had used the soil testing laboratory facilities. Students accessed the Soil Lab for research and internship purposes, undertaking soil parameter testing and report generation for farmers, studying soil carbon content to improve carbon sequestration, and conducting control-treatment trials to assess the effects of organic/inorganic compost, as well as chemical and bio-fertilizers on soil.

DEMOGRAPHIC PROFILE OF STUDENTS

Usage of the soil testing lab was concentrated among younger participants, with 85.5% of students in the 20–24 age group, followed by 7.2% in the 25–30 age group, 5.8% below 20 years, and 1.4% above 30 years. In terms of gender, 68.1% of students were girls and 31.9% were boys, suggesting higher participation among female students. By social category, 44.9% of students belonged to the unreserved category, and 24.6% each were from OBC and SC categories, and 5.8% from ST.

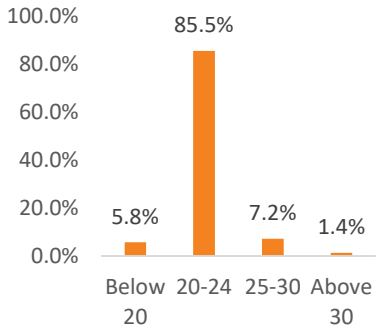


Figure 117: Age-group

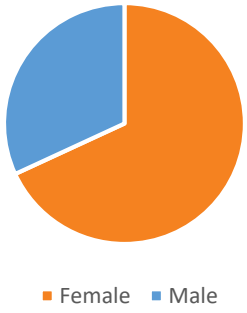


Figure 116: Gender

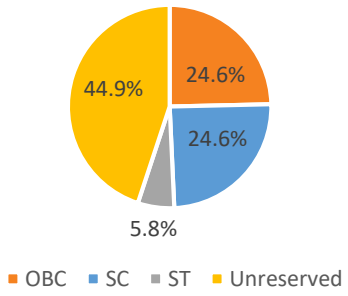


Figure 115: Social Category

In terms of education level, 62.3% of students were at the master's level, followed by 29% at the bachelor's level and 8.7% from diploma courses, indicating that the facility was more actively used by postgraduate students.

By discipline, 59.4% of students were from agriculture, followed by 29% from chemistry and smaller proportions from botany, microbiology, and diploma courses. This suggests that while agriculture remains the primary discipline, the soil lab also sees interdisciplinary usage.

Across years of study, 42% of students were in 1st year, 30.4% in 4th year, and smaller shares in 2nd (15.9%), 3rd (8.7%), and 5th year (2.9%), indicating engagement at multiple stages of academic progression.

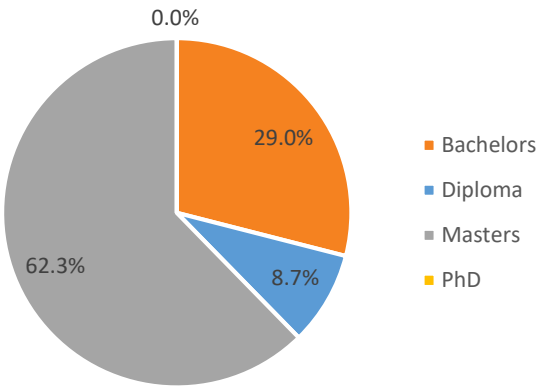


Figure 119: Degree Level

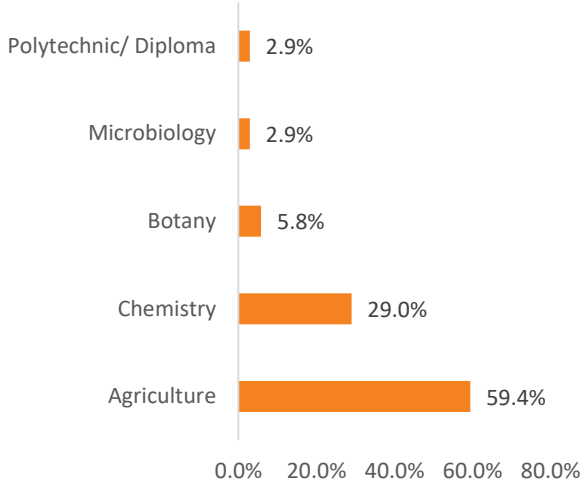


Figure 118: Discipline of Study

EXPERIENCE AT THE SOIL LAB

They reported gaining practical hands-on experience in operating equipment, such as soil pH meter, TOC analyser, nitrogen analyser, distillation unit, EC and colour meters, photometer, spectrophotometer for phosphorous testing, AAS (Atomic Absorption Spectrophotometer) for micronutrient analysis. Of these, a large majority (84.1%) received formal training, and all users (100%) engaged in both soil analysis and interpretation of results, indicating comprehensive exposure to practical components of soil testing and analysis.

Discussions with students revealed a positive training experience and strong lab support from staff. Lab technicians explained testing and safety protocols, procedures, and the functions of each machine, while also providing handholding support during practical testing.

"Minute readings can vary for each brand, so results may not always match expectations. The lab staff trained us on all aspects of using different instruments - how to operate them, interpret readings accurately, and calibrate results. The advanced equipment, along with the support of lab technicians, made it easier for us to conduct our tests, understand outcomes, and standardise our results." – ADT College Students

Baseline self-assessment suggests limited prior capability, with 26.1% of students reporting low ability and 24.6% no prior ability to conduct soil analysis, while 49.3% rated themselves at a medium level. Post-exposure, this distribution shifted substantially, with 56.5% reporting high ability and 42% medium ability, and only 1.4% remaining at a low level – indicating a clear improvement in technical competency.

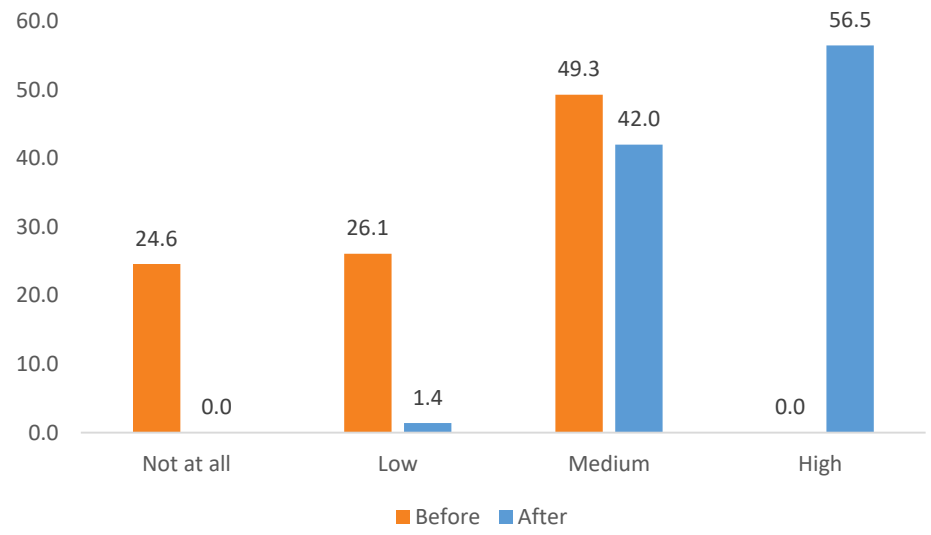


Figure 120: Ability to Conduct Soil Analysis Before vs After using Soil Testing Lab

In terms of application, 34.8% reported using soil testing skills daily and 42% on a need basis, suggesting both routine and situational use of acquired skills for academic purposes. Learning outcomes were also reflected in perception measures, with 46.4% reporting improvement "to a large extent" and 50.7% "to some extent," indicating near-universal gains in understanding of soil health.

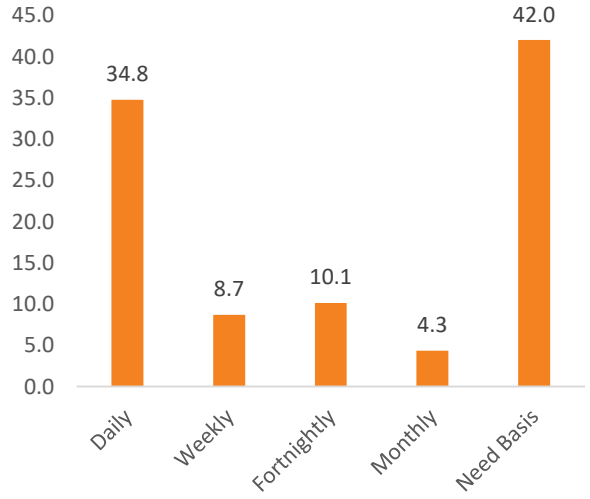


Figure 122: Frequency of using Soil Testing Skills

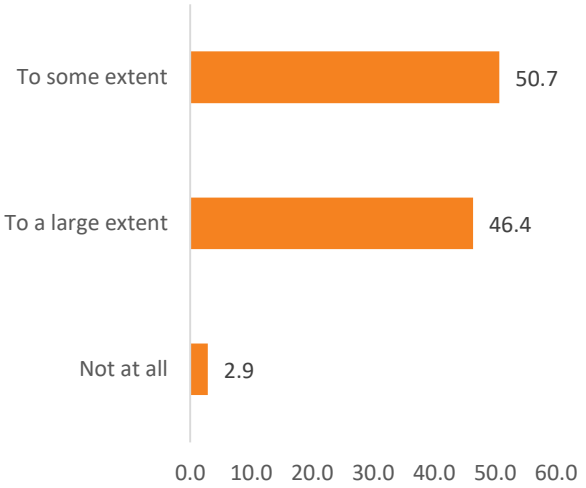


Figure 121: Soil Lab Impact on Improved Understanding of Soil Health

During discussions, students reported high levels of confidence in applying their skills, attributed to the hands-on experience at the lab.

"We were taught how to use the equipment during our internship. For a full month, we conducted hands-on practicals and carried out various soil tests independently. We can now handle the equipment on our own." – ADT College Students

Comparatively, 63.8% of students found the soil lab more useful than regular practicals, while 31.9% rated it similar, reinforcing the added value of hands-on, applied learning environments over conventional methods.

Students emphasised the comparative edge of the advanced equipment at the ADT Soil Lab with other labs and outdated equipment.

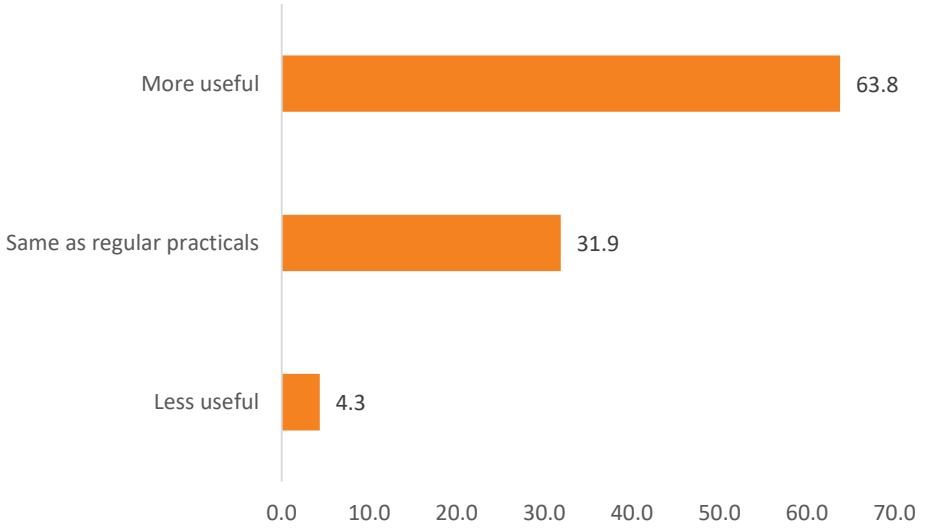


Figure 123: Usefulness of Soil Lab compared to Regular Practicals

"Here we have advanced equipment so it makes our work easier. Other labs I had used involved laborious work - manually load and unload a flask from one point and load at another. Here, we do not need to do that. We can place the flask with our sample and run multiple tests on the equipment in one go. For instance, we don't need to manually unload the flask and add each chemical in nitrogen analyser. It can be automatically operated to analyse multiple chemicals." – ADT College Students

OVERALL IMPACT OF SOIL LAB

Among students using the soil testing lab, 60.9% reported that their practical skills improved to a large extent, while 33.3% reported improvement to some extent and 5.8% reported no improvement, indicating a strong contribution of the facility to practical skill development. Students highlighted that the Soil Lab is easily accessible, with faculty and lab staff actively encouraging its use to enhance learning. Further, the availability of an on-campus facility has reduced the time and cost associated with outsourcing soil tests. In the survey, 76.8% rated the training and guidance as excellent and 23.2% as average, reflecting overall high satisfaction.

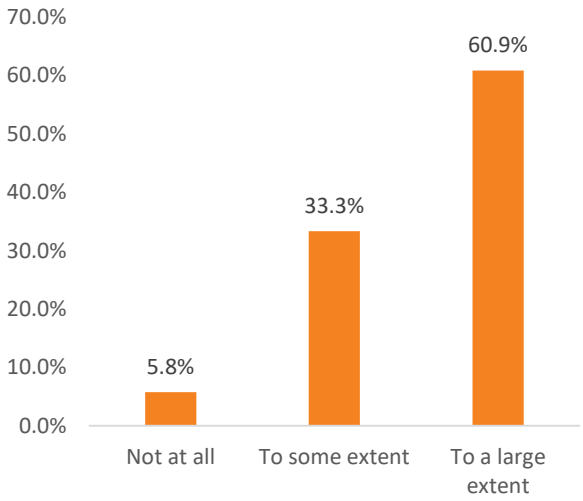


Figure 125: Improvement in Practical Skills

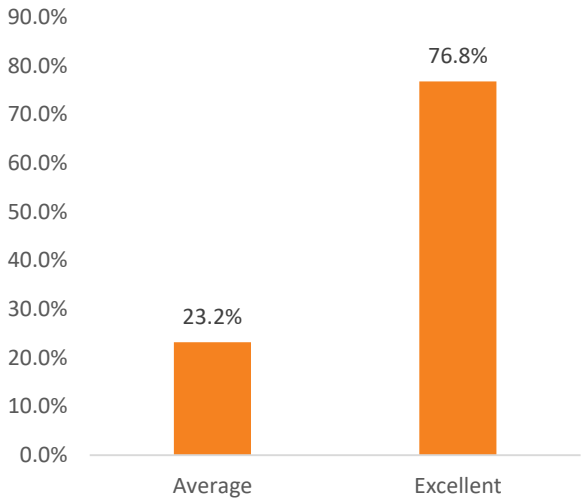


Figure 124: Rating of Training & Guidance provided at Soil Testing Lab

"Earlier, our senior batch students had to outsource soil tests. This involved more time and cost. They had to take appointments from external labs, send their samples, wait for the results, and bear the costs. But now, since we have the Soil Lab right here, we not only learn to conduct these tests practically, but we can also perform multiple tests rapidly and at zero cost. We can access it as many times as we want without any restrictions. In fact, we are encouraged to use it as much as possible." – ADT College students

In terms of job readiness, 47.8% of users reported improvement to a large extent and 44.9% to some extent, while 7.2% reported no improvement, suggesting notable gains in employability-related skills. A large majority (92.8%) also reported increased confidence in lab work, with only 7.2% indicating no change.

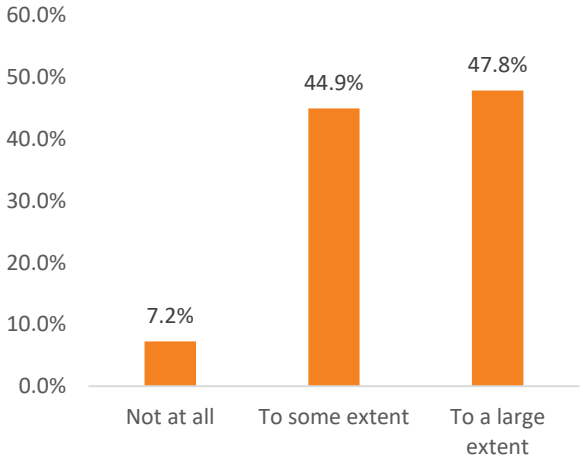


Figure 126: Improvement in Job Readiness

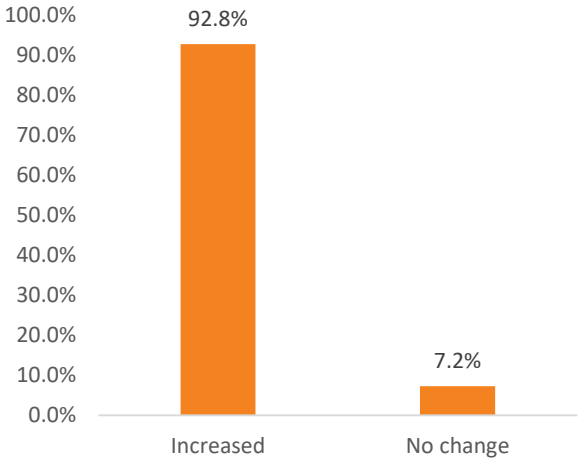


Figure 127: Improvement in Confidence

Beyond access, the Soil Lab strengthened learning outcomes by building practical skills, interdisciplinary understanding, and application-oriented knowledge. Students noted that hands-on experience enhanced their confidence in academic settings and their ability to engage in technical discussions.

"When we presented our project at the Aavishkar competition last year, we saw that most students from other colleges had outsourced soil tests, whereas we had conducted these experiments ourselves. Because of this hands-on experience, we were able to answer the judges' questions confidently and clearly explain each procedure. So, this lab is highly beneficial for us." – ADT College students

Further, 78.3% of users rated the overall quality of the facilities as excellent and 21.7% as average. In the absence of these facilities, 34.8% of users were not sure how they would have gained similar experience, 31.9% would have relied only on theoretical learning, 15.9% would have accessed external institutes, and 17.4% indicated they would not have gained such experience. This highlights the crucial role of the soil testing lab in enabling practical exposure that may otherwise be limited.

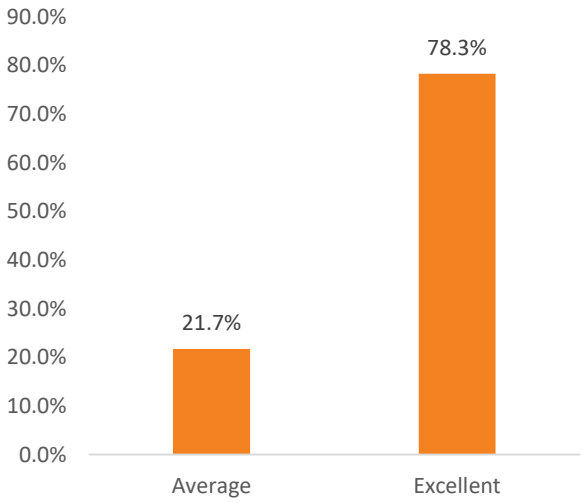


Figure 129: Rating of Overall Quality of Soil Testing Lab

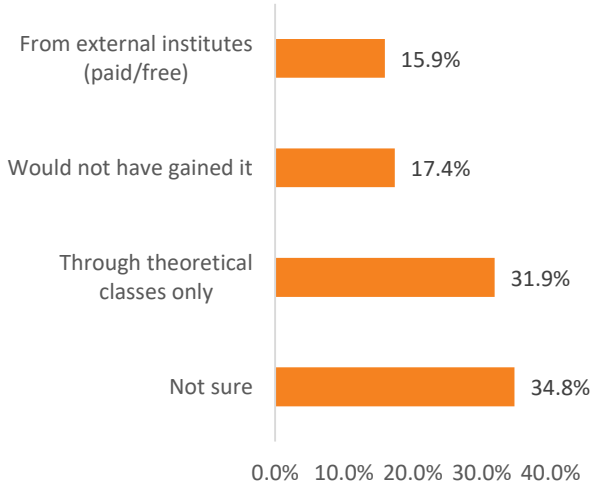


Figure 128: Assumed Impact of the Absence of Soil Testing Lab

Overall, the findings indicate that the Soil Lab has contributed to substantial skill enhancement, practical application, and deeper conceptual understanding, while also strengthening students' academic and career readiness.

FABLAB FACILITY

PROJECT – FABLAB

Under this CSR project, the FabLab has been equipped with a comprehensive set of tools and technologies spanning fabrication, electronics, computing, and general making — enabling students, incubatees, and startups to move from concept to prototype entirely within the facility.

Since 2021-22, the FabLab has shown steady growth across both user-groups. Incubatees and startups grew consistently from 4 (2021-22) to 7 in 2025-26. College students similarly trended upward — from 150 (2021-22) to 180 (2025-26) — with a minor dip in 2023-24 before resuming growth, cumulatively reaching 824 students and 29 incubatees over the five-year period.

The equipment provided is organised across six functional categories as detailed below.

Table 11: Equipment provided at FabLab, ADT

Category	Equipment
Fabrication & Prototyping	CR10S Pro (Large FDM Printer), Creality Ender 3 Pro (Budget FDM Printer), Prusa SL1 (SLA Resin Printer), I Tech 4.0S (Resin Printer), Vaquform (Vacuum Forming Machine), I Drawing 3D Pen
Cutting, Engraving & Marking	Laser Engraver and Cutting Machine, GCC Jaguar V-61 LX (Plotter Machine), C12LCH (Digital Laser Marking Machine)
Mechanical & CNC Tools	CNC3018 Pro Router, Assembly Mechanical Workstation, EDS Electronics Design and Soldering Workstation
General Tools	Power Tools (drills, grinders), Hand Tools (screwdrivers, pliers, wrenches)
Computing	Dell AIO Inspiron All-in-One PC
Electronics Testing & Measurement	Oscilloscope (HTC-PD050100S), Digital Function Generator, Multi Meters (Fluke 15B, Meco Digital), PM01 Power Monitor, HTC-DC-3010 Power Supply, Infrared Thermometer

Findings – FabLab Facility

FABLAB – START-UP INCUBATEES

The AIC–ADT Incubation Centre supports early-stage agri-tech and agri-based startups. A total of 20 incubatees who used the FabLab for prototype development and product design responded to the survey.

DEMOGRAPHIC PROFILE OF PARTICIPANTS

The participants were predominantly young, with 65% in the 21–30 age group. This was followed by 20% participants in the 31–40 range and 15% above 40 years of age. The sample was male-dominated, with 70% men and 30% women. In terms of social category, participants were evenly distributed between OBC (50%) and Unreserved (50%).

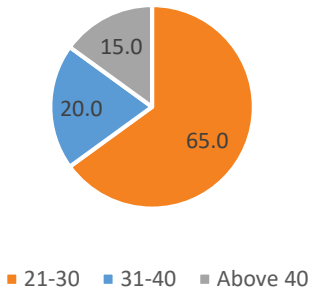


Figure 130: Age-group

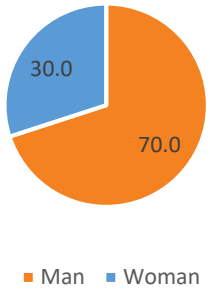


Figure 132: Gender Distribution

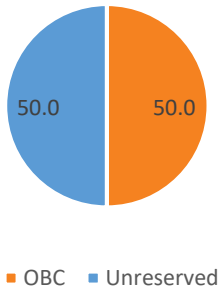


Figure 131: Social Category

Educational qualifications indicate a relatively high level of attainment: 55% held a Bachelor's degree, 35% a Master's degree, and 10% a Doctorate. The disciplinary background was led by Agriculture (40%) and Engineering/Technology (35%), with smaller representation from Science (15%) and Management (10%).

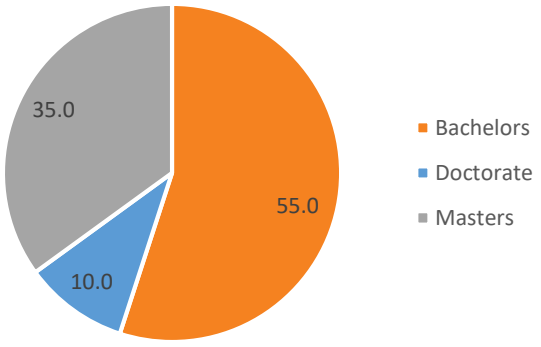


Figure 133: Highest Educational Qualification

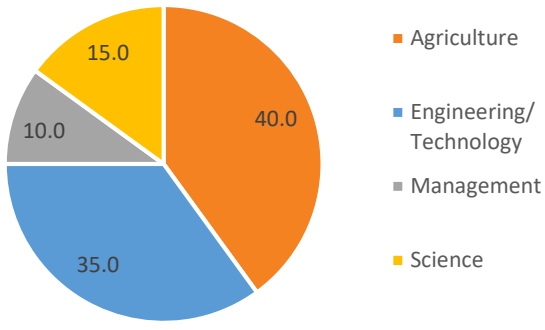


Figure 134: Discipline of Education

STARTUP PROFILE

The startups represented in the sample show a mixed maturity profile. A majority (45%) were more than 2 years old, while 25% were less than 6 months old. Startups in the 1–2 years and 6–12 months categories accounted for 15% each, indicating the presence of both early-stage and relatively established ventures.

The survey revealed 30% of startups were at the early revenue stage and another 30% at the prototype stage, while 25% were at the idea stage and 15% at the growth stage. This suggests a concentration in early to mid-stage ventures, with a smaller proportion having progressed to growth stage.

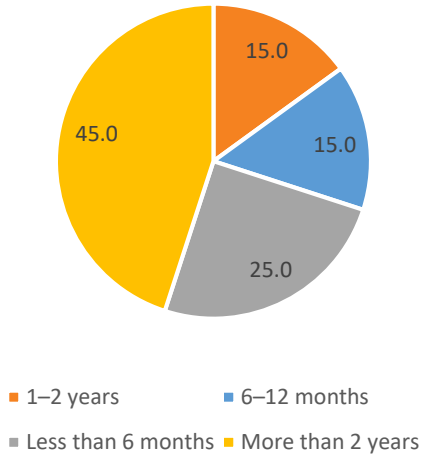


Figure 136: Age of Startup

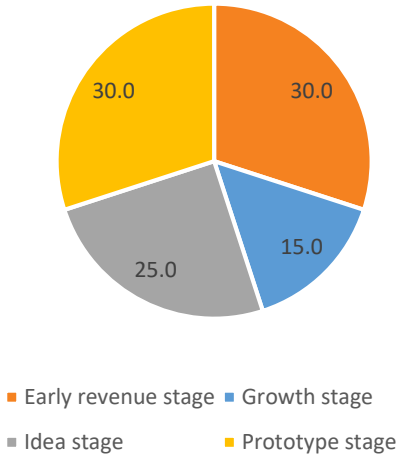


Figure 135: Stage of Startup

Regarding association with AIC–ADT, 40% of participants were associated for 1–2 years, 25% for less than 6 months, 20% for more than 2 years, and 15% for 6–12 months, indicating varied levels of engagement duration with the incubation centre. The duration pattern is in sync with the early-to-mid-stage of the startups.

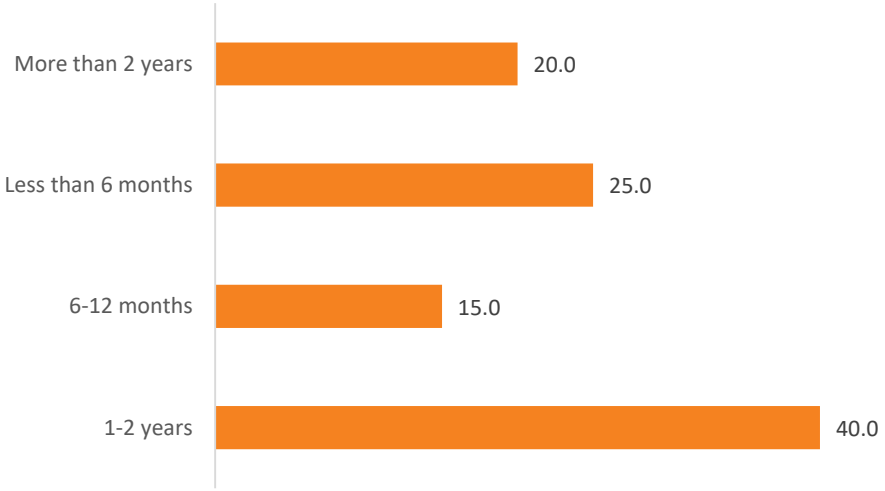


Figure 137: Duration of Association with AIC-ADT

The startups contributed to varied sectors. Agriculture was the most prominent sector (75%), followed by Dairy (30%) and Electronics/IoT (30%). Food Processing accounted for 25%, Engineering/Manufacturing for 20%, and Healthcare had minimal representation (5%). This reflects a strong concentration in agriculture and allied technology-driven domains.

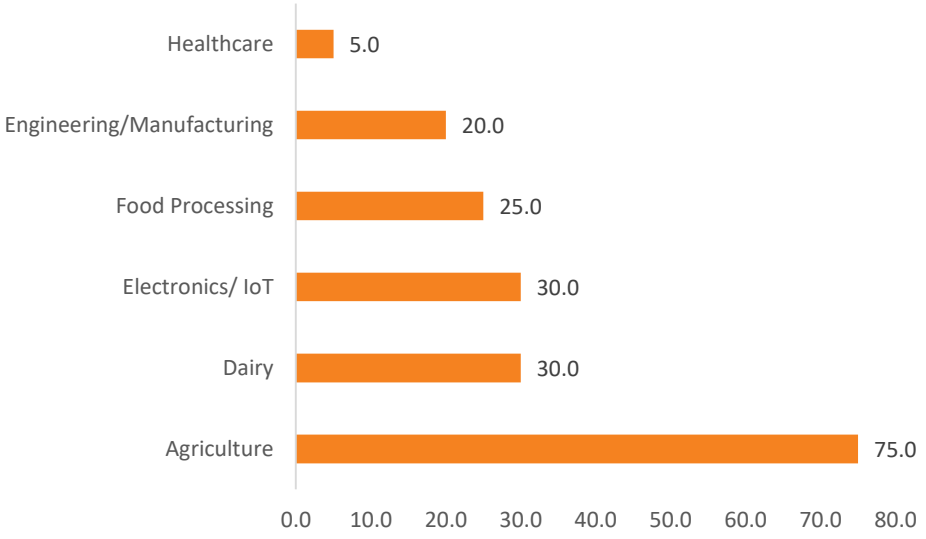


Figure 138: Sectors of Startup

FABLAB UTILIZATION AND ACCESS

Among the key facilities and advanced equipment offered by the FabLab, 3D Printing (90%) was the most accessed resource by incubatees. Other facilities showed moderate usage levels, including PCB milling (40%), CO_2 laser cutting (30%), and CNC Router (25%), indicating selective but diverse engagement with fabrication technologies.

In terms of frequency of use, 45% of participants reported using the facilities 3–5 times, while 25% each used them more than 10 times and 1–2 times. A small proportion (5%) reported 6–10 uses, reflecting a mix of moderate and repeated engagement, with a small yet significant segment of high-frequency users.

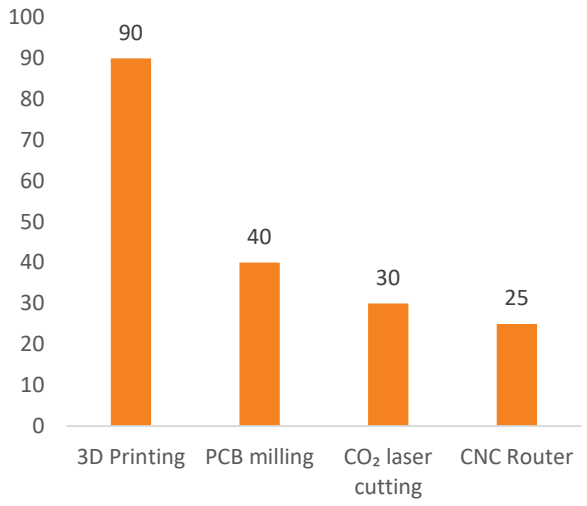


Figure 140: Facilities used at FabLab

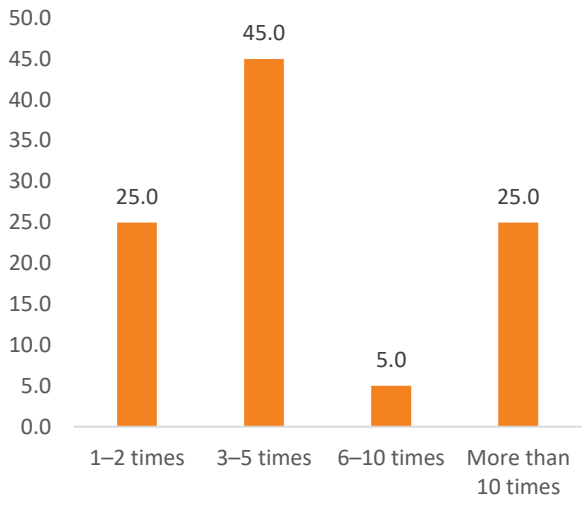


Figure 139: Frequency of using FabLab

A majority of participants (85%) reported receiving technical support or training to use the FabLab machines, while 15% reported not receiving such support.

The FabLab provides access to a range of equipment and technical support to help incubatees translate their ideas into functional prototypes. Prototype development (80%) emerged as the most common use of FabLab facilities, followed by product design improvement (55%), testing and iteration (45%), and component fabrication (30%). This indicates that the facilities are primarily used for early- to mid-stage product development, with a strong focus on prototyping, testing, and iterative refinement.

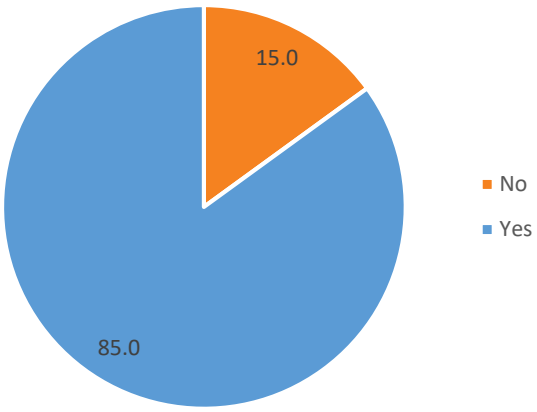


Figure 141: Technical Support or Training to use Machines

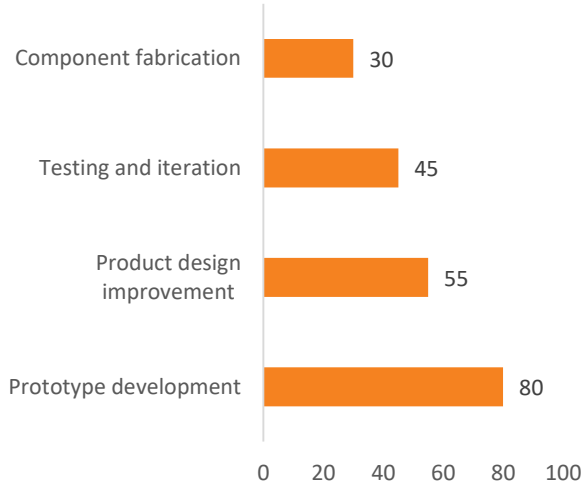


Figure 142: Type of Tasks accomplished using FabLab

IMPACT ON PRODUCT DEVELOPMENT AND TECHNICAL CAPABILITIES

FabLab facilities were reported to have positively contributed to accelerating product development. A majority of participants indicated that the facilities helped to a large extent (45%) or a very large extent (20%), while 35% reported improvement to some extent, indicating a noticeable acceleration in development processes for most users.

In terms of product quality and functionality, 55% of participants reported improvement to a large extent and 20% to a very large extent. A further 20% experienced improvements to some extent, while only 5% reported improvement to a small extent.

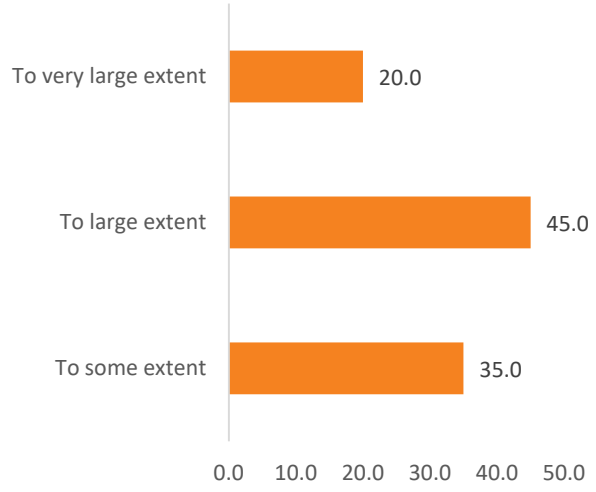


Figure 144: Perceived Role of FabLab Facilities in Accelerating Product Development Process

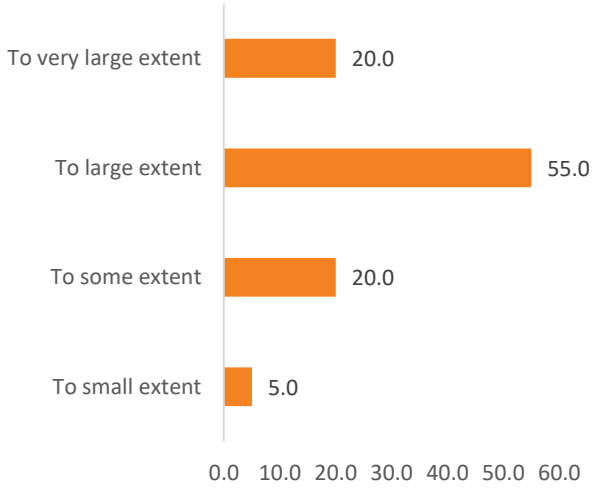


Figure 143: Perceived Improvement in Product Quality and Functionality using FabLab Facilities

Participants reported improvements in technical capabilities, with 45% indicating gains to some extent, 30% to a large extent, and 20% to a very large extent, while 5% indicated improvement to a small extent. This reflects moderate to high perceived gains in technical skills among most users.

Availability and accessibility of FabLab machines were rated positively, with 40% rating them to a large extent and 30% each to a very large extent and to some extent.

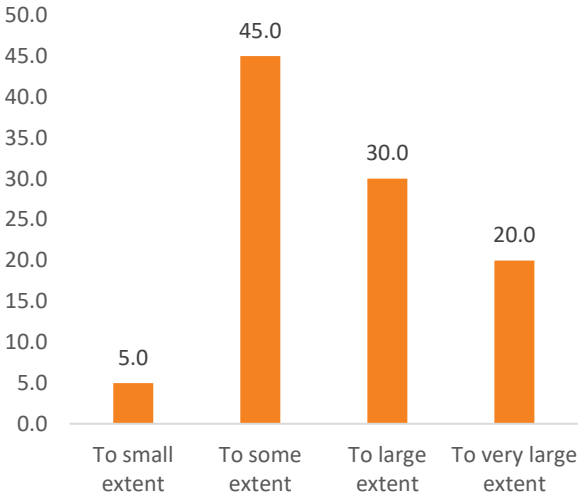


Figure 145: Extent Technical Capability Enhancement using FabLab

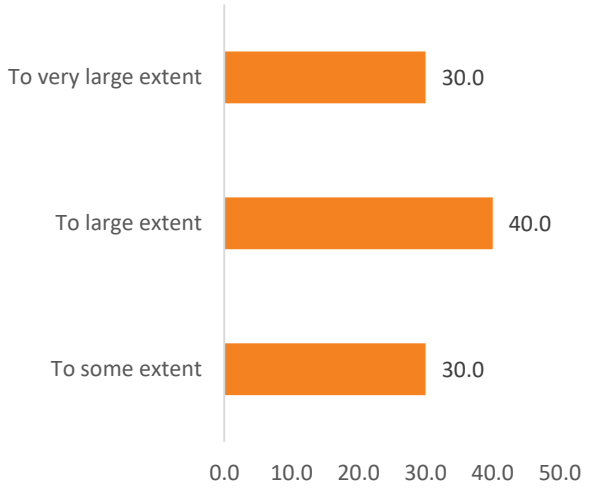


Figure 146: Rating of Availability and Accessibility of FabLab Machines

Technical support and guidance were also rated strongly, with 45% reporting support to a large extent and 40% to a very large extent, while 15% reported support to some extent.

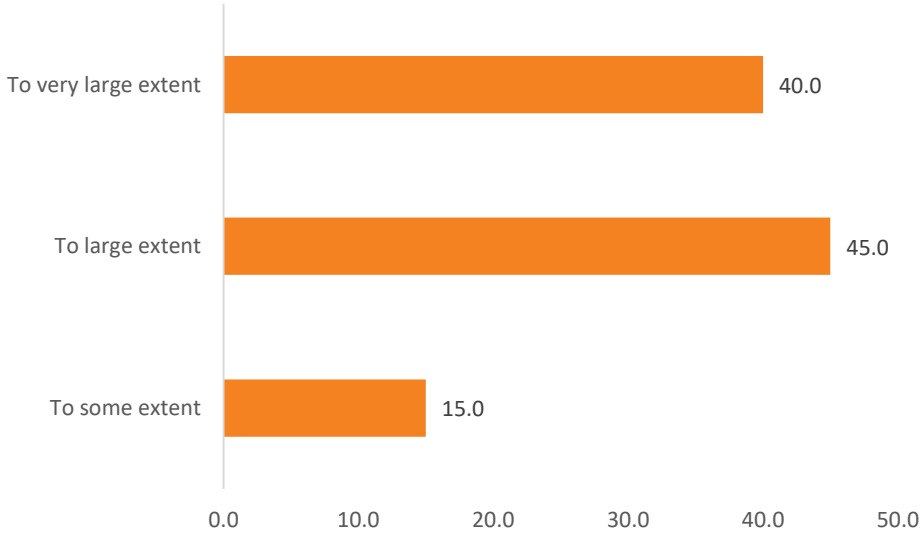


Figure 147: Rating of Technical Support and Guidance

Overall, the data indicates that FabLab facilities not only supported faster product development and improved product quality but also contributed to strengthening technical capabilities of the incubatees, with generally high ratings for accessibility and technical support.

ABILITY TO DEVELOP PROTOTYPE – BEFORE AND AFTER FABLAB

Before using FabLab facilities, participants reported varied levels of ability in developing prototypes or product components. Most participants rated themselves at a medium level (45%), followed by equal proportions at high (20%) and low (20%) levels, while 15% reported no ability at all. After using FabLab facilities, there is a visible shift toward higher capability levels. The proportion of participants rating their ability as high increased to 50%, while those at medium level remained stable at 45%. The share of participants at low level reduced

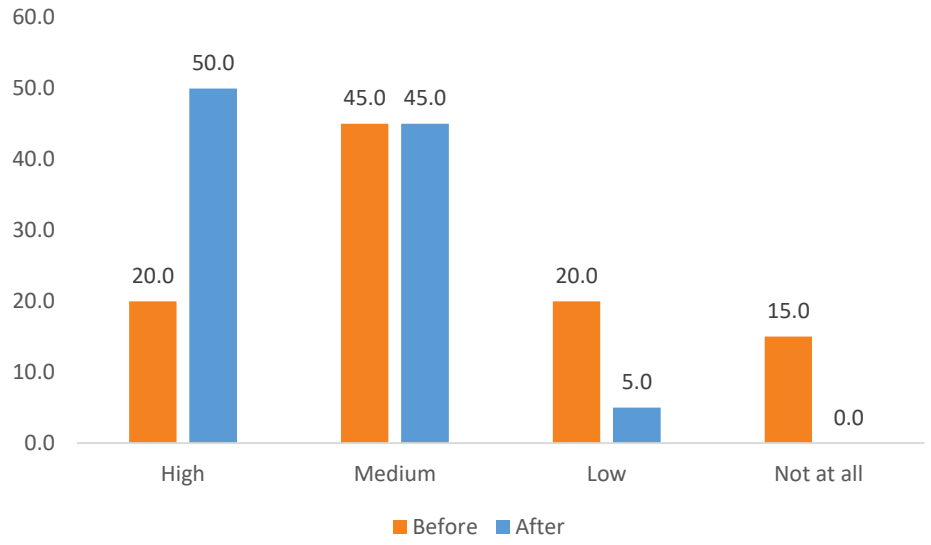


Figure 148: Ability to Develop Prototypes using FabLab - Before vs After

to 5%, and no participants reported lack of such skills. The improvement is statistically significant (Wilcoxon Signed-Rank Test: W = 0, p = 0.003).

COST AND TIME COMPARISON WITH EXTERNAL FACILITIES

Participants associated the FabLab facilities with overall cost advantages compared to outsourcing or external fabrication. A majority of participants (60%) reported that costs were significantly reduced, and 35% indicated slight cost reductions, while only 5% reported no cost-difference.

More specifically, 35% of participants reported prototype development took 1–2 weeks, followed by 25% stated more than 2 weeks. Faster timelines were also observed, with 20% completing work in less than 2 days, 10% within 2–5 days, and 10% on the same day.

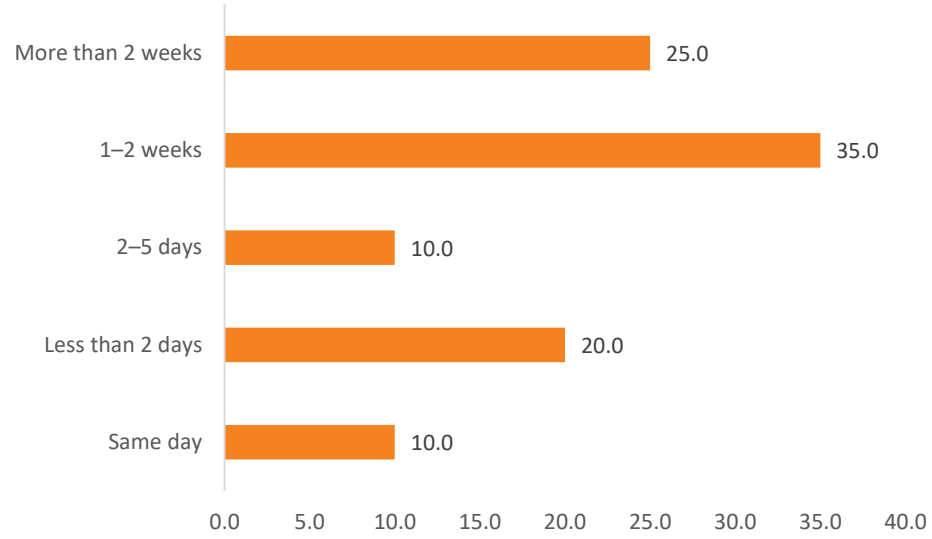


Figure 149: Time taken for Prototype development at FabLab

Most participants reported reduced product development time using FabLab facilities compared to external alternatives: 55% reported significant time reduction and 25% reported slight reductions. A much smaller proportion experienced no change (15%) or increased time (5%).

Figure 150: Time Impact in Product Development at ADT FabLab compared to External Alternatives

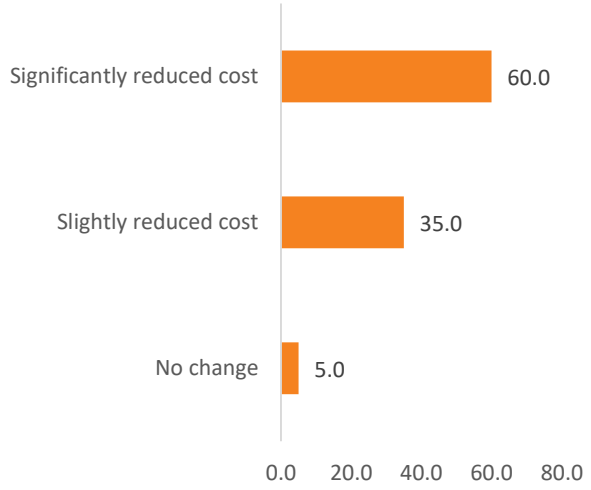


Figure 151: Cost Impact of ADT FabLab compared to Outsourcing or External Fabrication

Overall, the data indicates most users experienced reduced costs and FabLab facilities contributed to faster development cycles compared to external options.

BUSINESS OUTCOMES AND MILESTONES

FabLab facilities contributed to multiple startup outcomes, with improved product readiness reported by 80% of participants. Other outcomes include increased customer validation (50%), investment or funding opportunities (45%), faster market entry (40%), revenue generation (30%), and a small proportion (5%) reporting no direct outcomes yet. This indicates a broad range of contributions, with stronger alignment toward product development and validation stages. A majority of participants (80%) reported that they were able to test or launch their product in the market after using FabLab facilities.

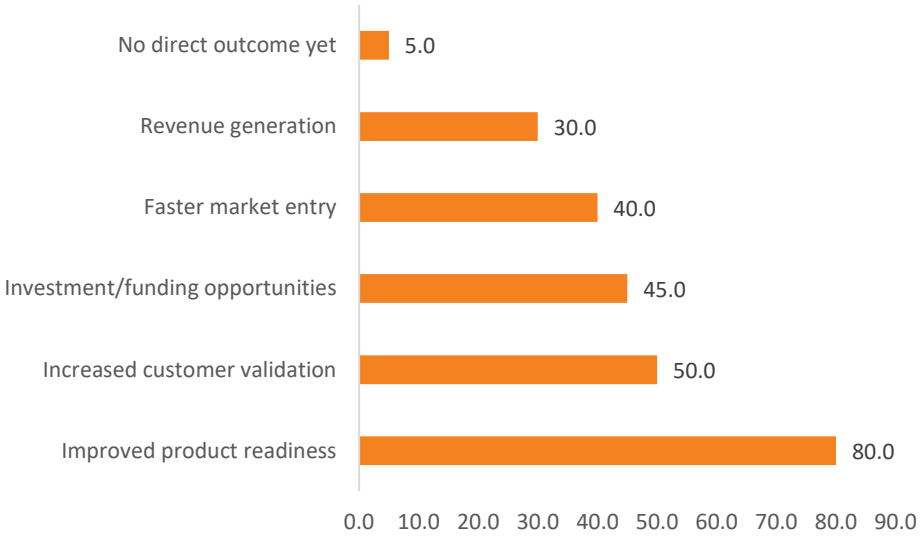


Figure 152: Contribution of FabLab to the Startup

In terms of overall usefulness for startup growth, responses were distributed across higher levels of impact: 35% reported usefulness to a very large extent, 25% to a large extent, and 35% to some extent, while only 5% indicated usefulness to a small extent.

Post-prototyping outcomes further reflect continued support and progression. A majority (65%) reported receiving incubation support, followed by grants (45%) and product commercialization (35%). Other outcomes include awards (30%), patent filing (10%), patent grants (10%), and investment (10%), while 20% reported not yet receiving these.

Overall, the data indicates that FabLab facilities contribute to product readiness, market testing, and subsequent support opportunities, with most participants reporting moderate to high levels of usefulness for startup growth.

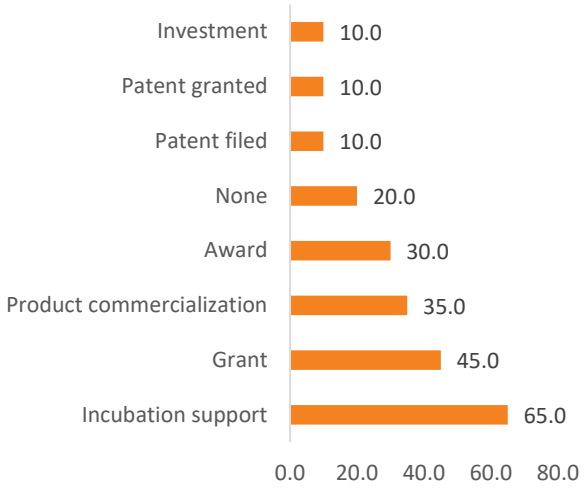


Figure 154: Outcomes after Prototype Development at FabLab

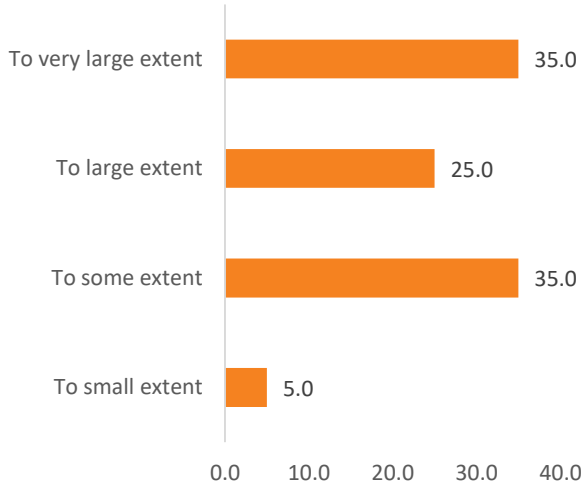


Figure 153: Overall Usefulness of FabLab for Startup Growth

ACCESS TO AND ALTERNATIVES OF FABLAB

Prior to using FabLab facilities at AIC–ADT, a large majority of participants (85%) had not accessed similar facilities elsewhere, while only 15% had prior exposure. Among those with prior access (n=3), facilities were accessed through private service providers and other FabLabs (each reported by 66.7%).

For these users, external facility usage was associated with relatively higher costs and longer timelines. Two-thirds (66.7%) reported costs exceeding ₹10,000 per prototype/component, while the remaining reported costs in the ₹1,000–₹5,000 range. In terms of time, 66.7% reported development timelines of more than 2 weeks, and 33.3% reported 1–2 weeks.

In the absence of FabLab facilities at AIC–ADT, most participants indicated limited access to alternatives. Among those who responded (n=17), 76.5% were not sure if they could access similar facilities, and 11.8% reported no access alternatives. Only 11.8% reported that they would have been able to access alternatives.

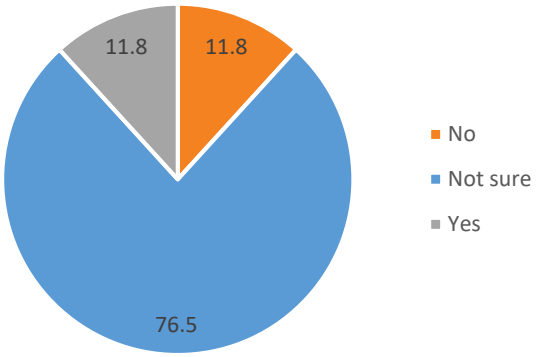


Figure 156: Access to Similar Fabrication Facilities in the Absence of ADT FabLab Support

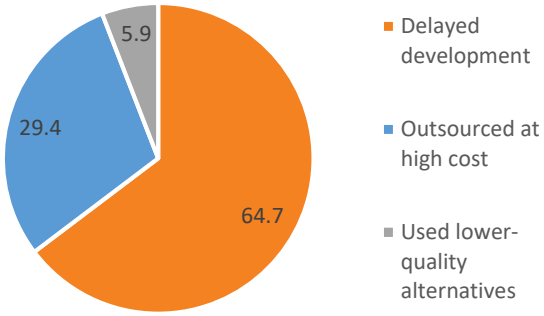


Figure 155: Alternatives assuming Absence of ADT FabLab

In the absence of a FabLab, 64.7% believed that development would have been delayed, while 29.4% felt they would have outsourced at higher cost. A small proportion (5.9%) indicated they would have used lower-quality alternatives.

Overall, the data suggests that prior access to similar facilities was limited, and in the absence of AIC–ADT FabLab, most startups would have faced uncertainty, delays, or higher costs in continuing their product development.

STUDENTS

FABLAB — STUDENTS

A self-administered questionnaire was administered to students who had used the FabLab facilities for academic tasks. A total of 39 students participated in the survey.

DEMOGRAPHIC PROFILE OF STUDENTS

Across age groups, usage of the FabLab was concentrated among younger participants, with 74.4% of users in the 20–24 age group, followed by 23.1% in the 25–30 age group and 2.6% above 30 years. In terms of gender, 61.5% of students were girls and 38.5% were boys. By social category, 53.8% of students belonged to OBC, followed by 41% from the unreserved category and 5.1% from SC.

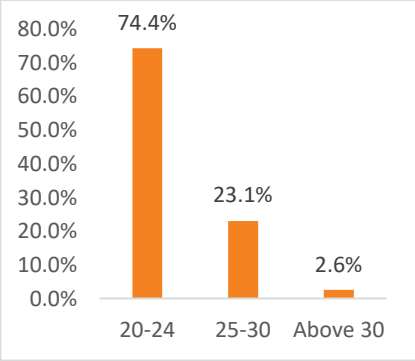


Figure 159: Age-Group

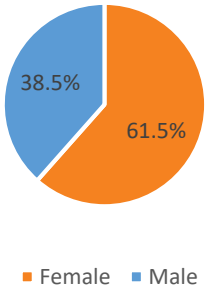


Figure 158: Gender

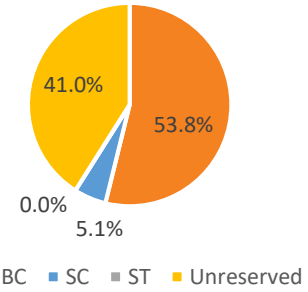


Figure 157: Social Category

In terms of education level, 82.1% of students were at the bachelor's level, followed by 12.8% at the master's level and 5.1% at the PhD level, indicating that the facility was primarily utilized by undergraduate students, with limited engagement from higher levels. By discipline, usage was predominantly concentrated among engineering students, who constituted 66.7% of users, followed by smaller proportions from agriculture (15.4%) and pharmacy (12.8%), with minimal participation from other disciplines.

Across years of study, usage was higher among students in advanced years, with 51.3% of users in the 4th year, followed by 28.2% in the 3rd year, and smaller shares in 2nd (10.3%) and 5th year (10.3%). There were no users from the 1st year, indicating that engagement with FabLab tends to occur at later stages of academic progression.

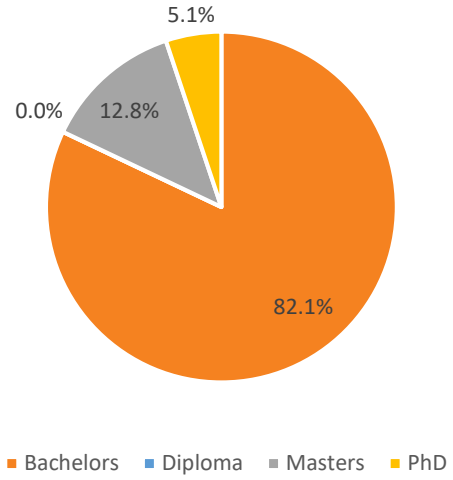


Figure 161: Degree Level

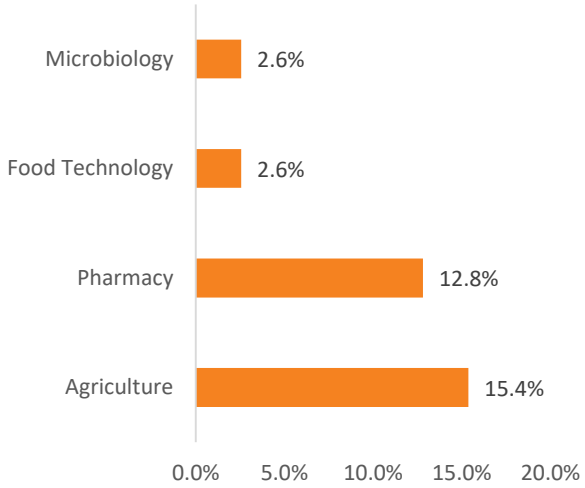


Figure 160: Discipline of Study

EXPERIENCE AT THE FABLAB

All students participated in the survey reported receiving hands-on training, indicating full practical exposure within this group. A large majority (92.3%) developed prototypes or models, and 71.8% used machines such as 3D printers or cutters, reflecting strong engagement with core fabrication tools.

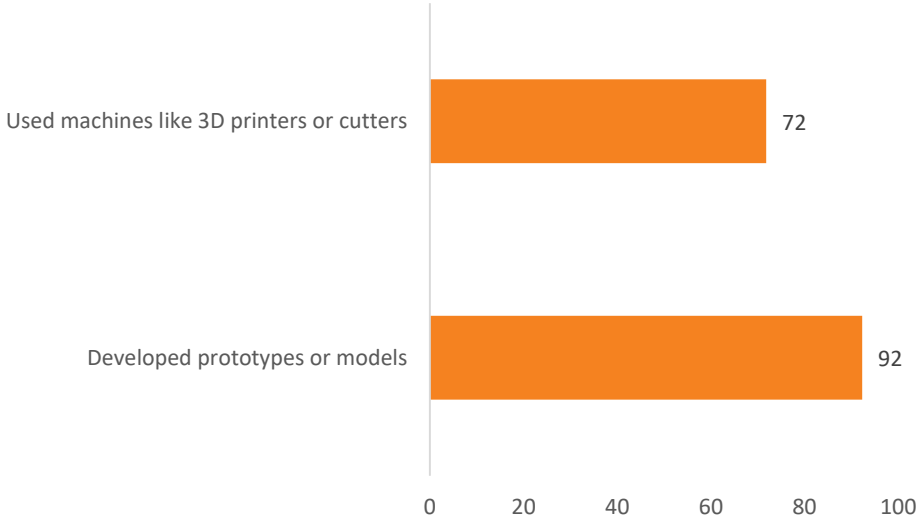


Figure 162: Machineries used in FabLab

Baseline skill levels were relatively low, with 43.6% reporting low ability and 25.6% reporting no prior ability to design prototypes before using the FabLab. Post-training, this shifted significantly, with 43.6% reporting high ability and 51.3% medium ability, indicating a clear improvement in design and prototyping skills.

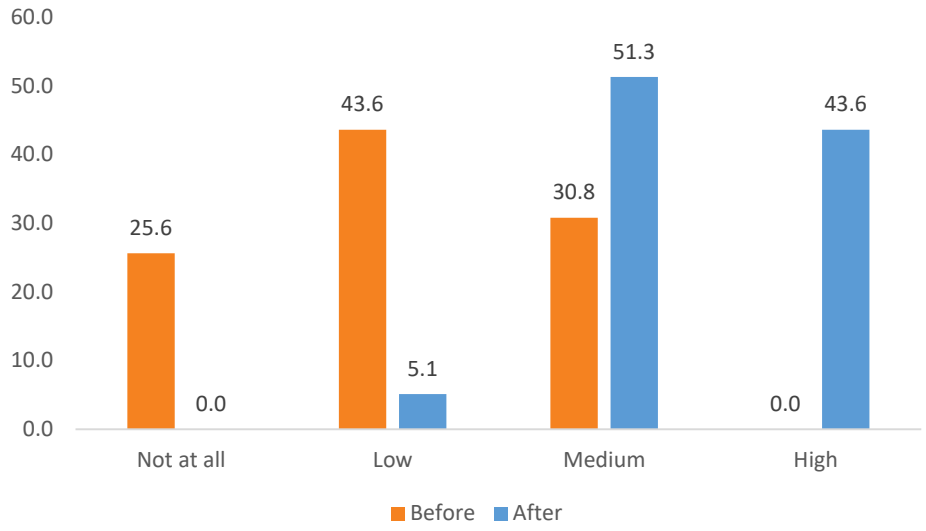


Figure 163: Ability to Design Prototypes Before vs After using FabLab

In terms of application, 46.2% of students applied FabLab skills in academic practicals, 30.8% during internships or jobs, and 7.7% in income-generating activities, while 15.4% had not yet applied these skills. Usage frequency was largely need-based (56.4%), with smaller proportions using the skills weekly (12.8%) or monthly (10.3%).

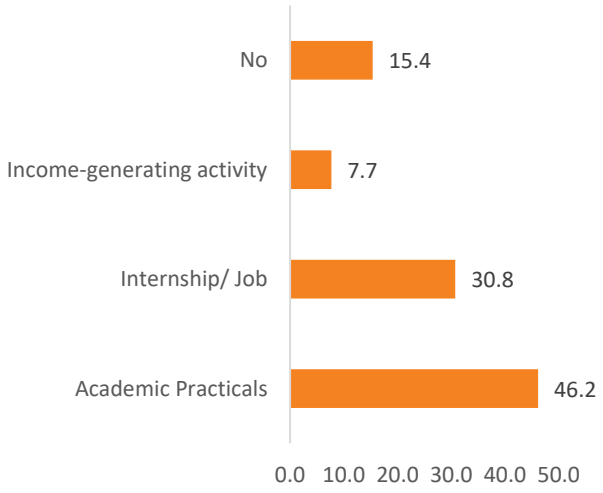


Figure 165: Application of FabLab Skills

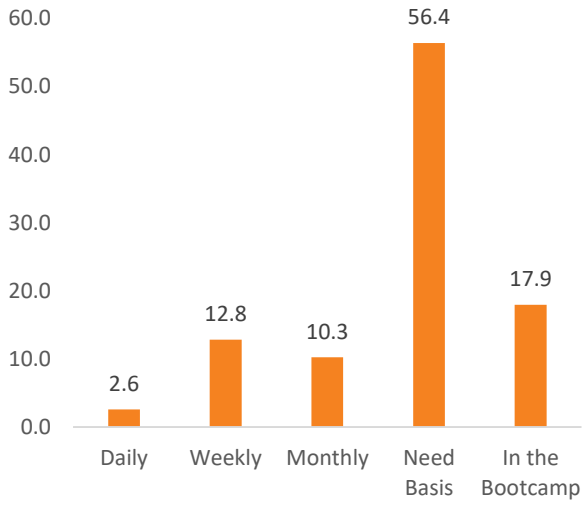


Figure 164: Frequency of using FabLab

Perceived impact is positive, with 97.5% of students reporting that FabLab improved their skills to some or a large extent. Additionally, 74.4% found FabLab more useful than regular practicals, while 23.1% considered it equally useful.

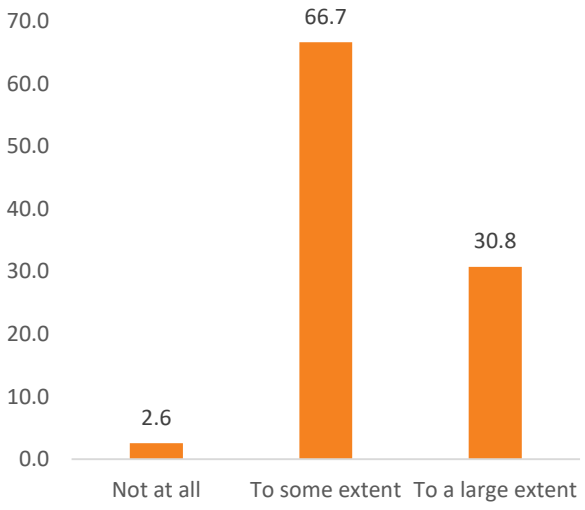


Figure 167: Extent of FabLab's Contribution in Skill Development

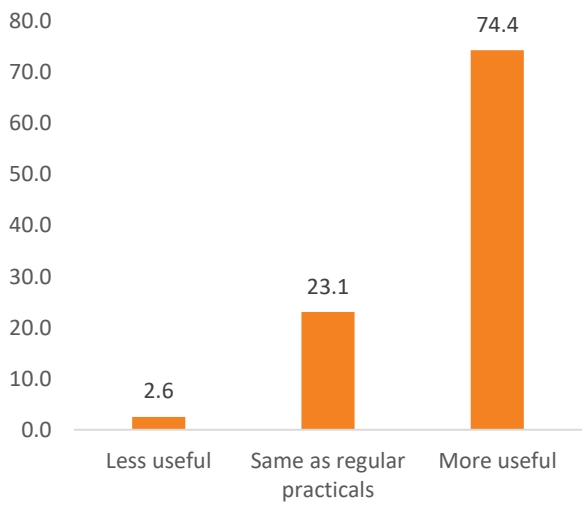


Figure 166: Usefulness of FabLab compared to Regular Practicals

Overall, the findings suggest that FabLab delivers strong hands-on learning outcomes, significantly improving prototyping skills and enabling application in academic and early professional contexts.

OVERALL IMPACT OF FABLAB

Among students who used the FabLab, one-third (33.3%) reported that their practical skills improved to a large extent, while two-third (66.7%) reported improvement to some extent, with no respondents indicating no improvement. This suggests that the facility contributed positively to skill development, though the extent of improvement is more moderate compared to other facilities. In terms of job readiness, a quarter (25.6%) of student respondents reported improvement to a large extent and 74.4% to some extent, with no respondents indicating no improvement.

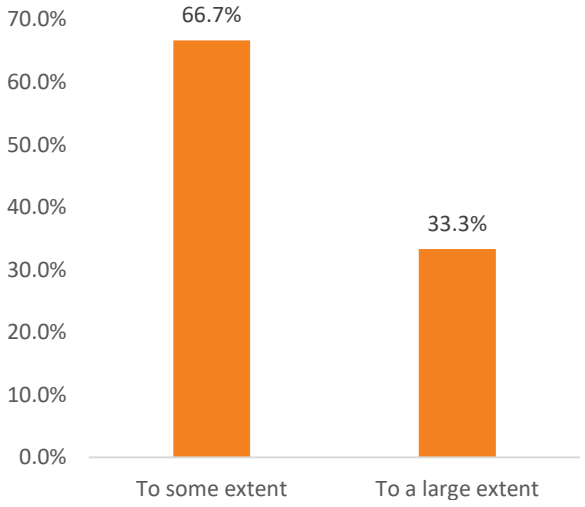


Figure 168: Improvement in Practical Skills

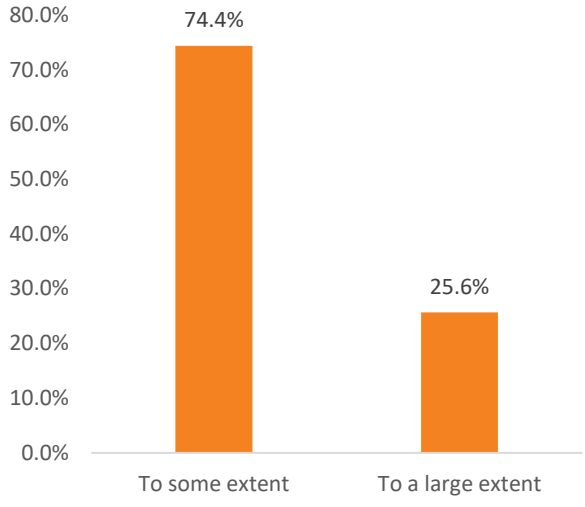


Figure 169: Improvement in Job Readiness

A majority of students (87.2%) reported increased confidence in lab work, while 12.8% indicated no change, reflecting a generally positive impact on confidence levels. The overall quality of facilities was rated as excellent by 84.6% of students and average by 15.4%.

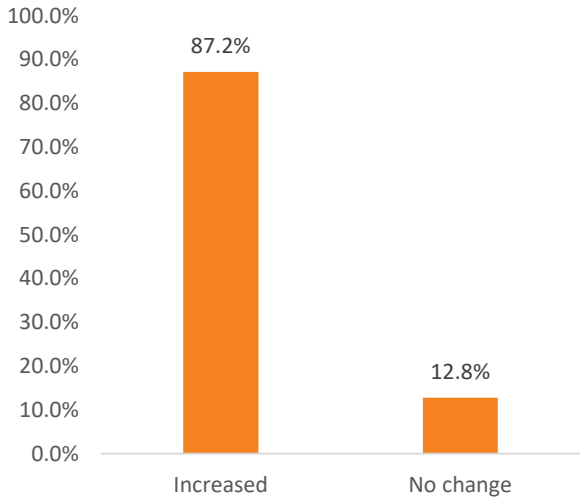


Figure 170: Improvement in Confidence

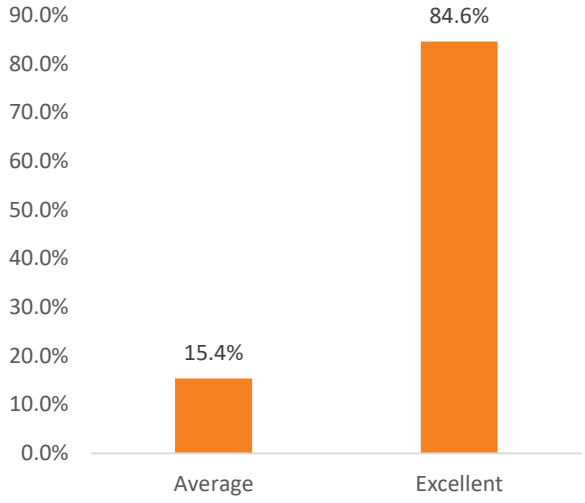


Figure 171: Rating of Overall Quality of FabLab

A significant majority (87.2%) rated the training and guidance as excellent and 12.8% as average, indicating high levels of satisfaction with both infrastructure and support. In the absence of these facilities, 30.8% of students were not sure how they would have gained similar experience, 23.1% would have accessed external institutes, 20.5% would have relied only on theoretical classes, and 25.6% indicated they would not have gained such experience. This highlights the role of the FabLab in enabling practical exposure that may otherwise be limited or inaccessible.

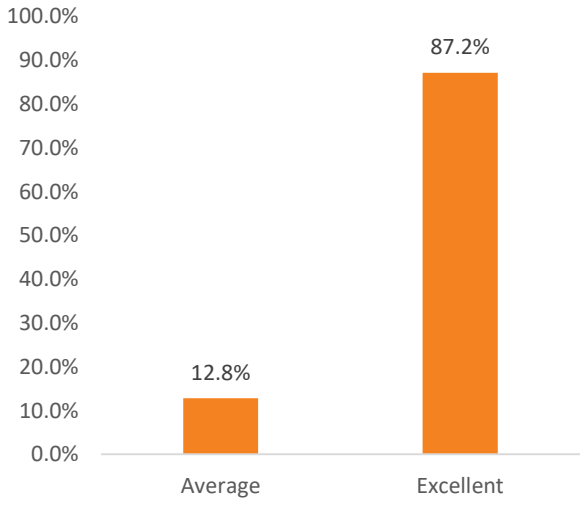


Figure 172: Rating of Training & Guidance provided at FabLab

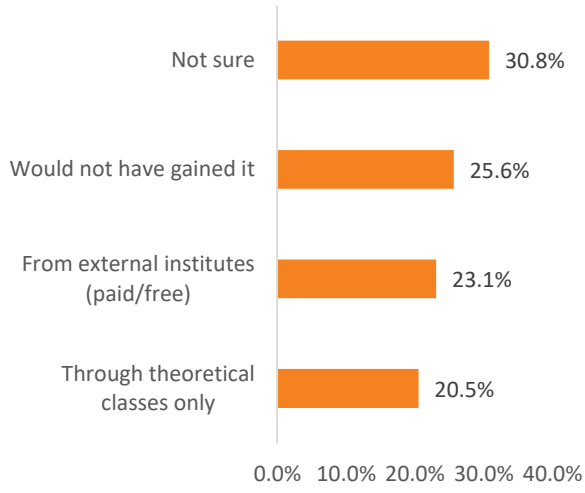


Figure 173: Assumed Impact of the Absence of FabLab

AUDITORIUM – 300 SEATER

PROJECT AUDITORIUM

The auditorium, established through CSR support, has emerged as a key institutional asset at ADT, Baramati, providing a dedicated, well-equipped space for large-scale academic, training, and community events. Since becoming operational in 2021–22, the 300-seat capacity auditorium has enabled the organisation of wide range of activities, including lectures, workshops, conferences, training programmes, and orientation sessions. By offering a centralised and accessible venue, the auditorium has strengthened academic engagement, facilitated knowledge exchange, and supported capacity-building initiatives for students, faculty, and external stakeholders. The auditorium has been instrumental in supporting and taking ADT's vision forward in following ways:

1. **Scale and Growth in Utilization**

The auditorium established has demonstrated rapid and sustained utilisation since becoming operational. In its first year (FY 2022–23), the facility recorded a total footfall of 3,420 participants, which increased significantly to 7,910 in FY 2023–24 and further to 9,260 in FY 2024–25. In FY 2025–26, participation remained high at 8,590, indicating continued demand and consistent use over time. Over the four-year period, the auditorium has facilitated learning and engagement for a total of 29,180 individuals.

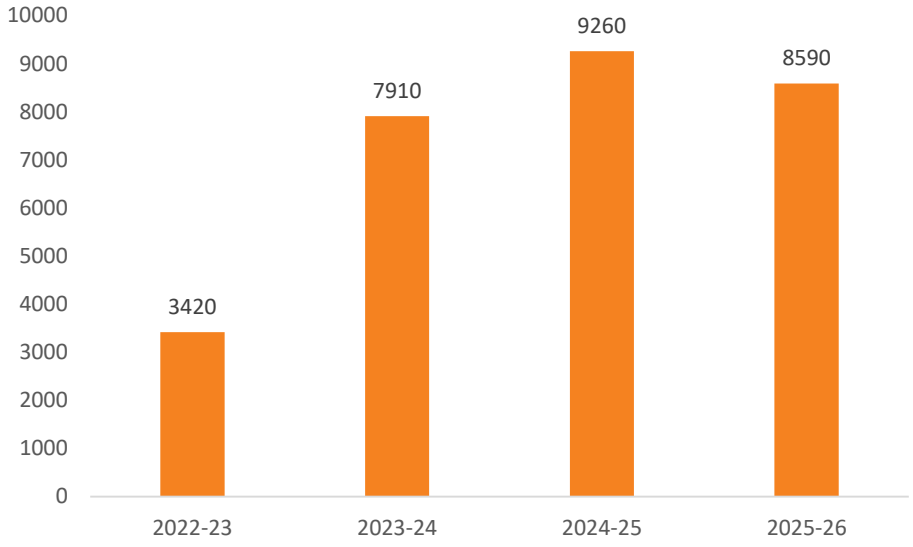


Figure 174: Individuals attended various events in the Auditorium

2. **Diversity of Events and Users**

The auditorium has hosted a wide range of events including guest lectures, workshops, national and state-level conferences, training programmes, orientation sessions, and seminars. It has been utilized by multiple institutions within ADT, such as colleges of agriculture, pharmacy, nursing, and arts and science, as well as external organizations including training institutes, private companies, and government-linked bodies like KVK Baramati. The presence of repeat users indicates its growing institutional relevance.

3. Capacity for Large-Scale Engagement

With event sizes typically ranging between 200 and 300 participants, the auditorium has enabled the organisation of large-scale programmes that were previously constrained by the lack of appropriate infrastructure. High-footfall events, such as national conferences, entrepreneurship development programmes, and sector-specific trainings have been conducted efficiently within this space.

4. Contribution to Learning and Capacity Building

The facility has strengthened the learning ecosystem by enabling regular exposure to expert lectures, academic discussions, and skill-based training programmes. It has created opportunities for interdisciplinary engagement across agriculture, health, education, and entrepreneurship, thereby enhancing the overall academic and practical exposure of students and other participants.

5. Role in Institutional and Community Outreach

Beyond academic use, the auditorium has facilitated community-oriented programmes, such as farmer trainings, professional workshops, and awareness sessions. This has expanded ADT's outreach and positioned the institution as a hub for knowledge dissemination and capacity building for both internal and external stakeholders.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The five facilities established at ADT, Baramati – the Millet Processing Facility, Dairy Processing Unit, Soil Testing Laboratory, FabLab, and the 300-seat auditorium – have collectively created a practical, demand-driven ecosystem for skill development, enterprise growth, and applied research. Trainees – including students, farmers, SHG, FPO members, micro-entrepreneurs, and incubatees – reported substantial gains in technical skills, confidence, market readiness, and income generation.

A majority of enterprises and groups improved product quality, packaging, and sales. Farmers who adopted soil test recommendations reported more efficient input use and perceived yield improvements. The FabLab accelerated prototyping and reduced costs for incubatees and students, while the auditorium strengthened knowledge dissemination. Overall, utilisation is high, user satisfaction is strong, and the facilities are effectively addressing gaps that local stakeholders were previously unable to meet.

Recommendations

The following recommendations aim to strengthen and scale existing gains. They prioritise continuity of services, improved conversion of skills into livelihoods, and gradual progress toward financial sustainability, with minimal administrative changes and feasible resource requirements.

Key Areas	Recommendations
Amplify visibility and reach	Amplify visibility and reach of facilities leveraging availability of sophisticated equipment, incubation support, alumni testimonials, and impact data. Publicise the nominal fee model for non-student/ commercial external users, while keeping student and vulnerable-group access subsidised or free.
Offer entrepreneurship training modules	Provide refresher sessions and need-based, short modules for alumni on product development (e.g., kurdai, pasta, cheese, ghee, paneer), recipe standardisation, and packaging compliance. Provide financial and digital literacy to support income generation and cyber security.
Strengthen follow-up and impact tracking	Introduce a light follow-up system (e.g., online forms or periodic calls) after soil testing, and track a small cohort (10-15 enterprises per facility) to capture medium-term outcomes on income and employment.
Enhance market linkages and credit access	Expand buyer–seller networks by linking SHGs/FPOs and trainees to cooperatives, institutions, wholesale and retail markets. Facilitate access to credit through

	government scheme linkages to support business expansion.
Extend reach to the last mile	Target the most marginalised groups through focused community mobilisation, accessible training methods, and post-training support to ensure inclusion and uptake.
Build community-level capacity	Train selected community leaders from SHGs/FPOs to support mobilisation, awareness, and local implementation, fostering community ownership.
Recognise high-impact achievers	Introduce awards or recognition mechanisms for high-performing entrepreneurs, farmers, and student innovators to acknowledge achievements, motivate continued engagement, and create role models for wider community adoption.
Strengthen existing infrastructure	Strengthen the processing units by adding key machinery to enhance production capacity, efficiency, and product diversification for high-demand products. Proposed equipment includes: • Hot extrusion line • Juice filling unit • Wad sealing machine • Deep fryer • Strapping machine • Dehydration slicer • Automatic cream roll making machine • Kurdai making machine

About Pluriversal Research and Action (PRA)

Pluriversal Research and Action (PRA) is a registered partnership firm, founded by two development practitioners with a shared commitment to reaffirming the role of people's voices and participation in the development process.

PRA's approach is unapologetically people-centric—where technical and managerial inputs serve to empower communities rather than dictate solutions. Rooted in a democratic ethos, PRA acts as a facilitator, ensuring that governance lies with those most affected by developmental challenges and interventions.

We engage with diverse groups to understand context-specific problems and co-create enduring solutions. Our methodologies intentionally integrate the lived realities of aspirational and backward districts, rural and urban communities, and those navigating layered marginalization.

PRA undertakes projects across India, backed by the founder-partners' pan-India experience in research studies and grassroots development across thematic areas including gender, health, education, tribal inclusion, child protection, and sustainable livelihoods.

Core Areas of Work:

- Research Studies
- Reports and Documentation
- Capacity Building of Development Professionals
- Strategic Direction for Development Organizations
- Monitoring, Evaluation & Learning (MEL)
- Institutional Strengthening and Systems Design

PRA challenges monolithic narratives of development by embracing the plurality of worldviews and fostering co-created knowledge systems. Every project is a step toward systemic change driven by those at the margins—because transformative development is not about doing for, but doing with.

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