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Editorial Contact:

India SME Forum R&D Group
108, Durga Chambers, Veera Industrial
Estate, Off Veera Desai Road, Andheri
West, Mumbai 400053.
Tel: +91 22 4113 99 99

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From The Editor

The New MSME Playbook: Innovate, Adapt, Collaborate



India's MSMEs have never been short of ingenuity. What is changing is the scale, speed and sophistication with which they must respond to a rapidly evolving business environment.

This edition of Businesswise explores that transformation through five powerful themes—innovation, sustainability, technology, collaboration and resource efficiency.

Our Cover Story, "India's R&D Engine: Innovative MSMEs" highlights how MSMEs are increasingly innovating through new products, processes and market-driven solutions. Often quietly, this home-grown R&D is strengthening competitiveness and opening new possibilities.

Our focus on the circular economy examines how reducing waste and using resources more efficiently can become a source of both sustainability and operational advantage.

Technology is rewriting the MSME business playbook, making digital tools increasingly integral to how enterprises reach customers, manage operations and make decisions.

Our feature on MSME clusters reminds us that growth need not be a solitary journey. Shared infrastructure, knowledge and networks can create scale and capability that individual enterprises cannot build alone.

And with water becoming an increasingly critical resource, water efficiency is emerging not merely as an environmental responsibility, but as a business imperative.

Together, these stories point to a new MSME mindset: innovate smarter, use resources better, embrace technology and collaborate more deeply

The next chapter of India's MSME growth will belong to enterprises that turn constraints into competitive advantage.

Sushma Morthania



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India-Mali Hold First Forum to Boost Trade Ties

India and Mali held their inaugural Forum for the Promotion of Exports in Bamako, led by Mali's Prime Minister H.E. Major General Abdoulaye Maïga and India's Joint Secretary Shri Amit Kumar. Bilateral trade crossed US\$326.61 million in FY 2025-26, up 55 per cent. Mali exports cotton, cashew and sesame to India, while India sends pharmaceuticals, textiles and vehicles. Untapped export potential is estimated at US\$3.96 billion. Talks covered textiles, mining, pharmaceuticals and energy. Mali announced a follow-up investment forum on 3-4 December 2026, under its Vision Mali 2063 roadmap.

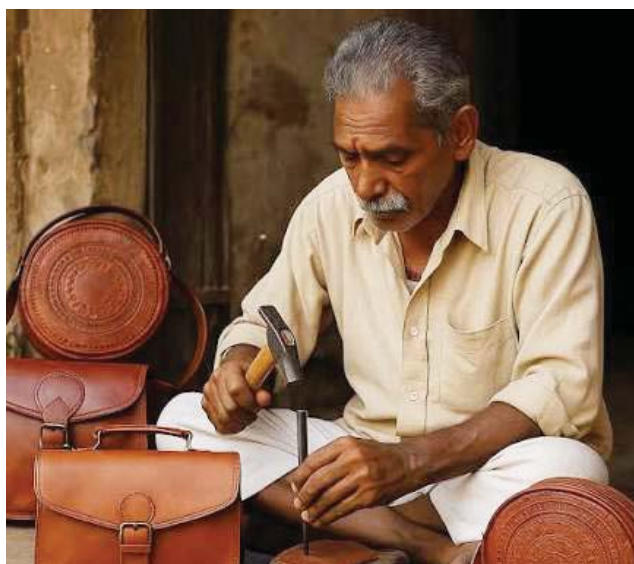


J&K Cherries and Plums Make First Trip to UAE

APEDA facilitated the first export shipment of premium Areko Cherries and Scentrose Plums from Jammu & Kashmir to Abu Dhabi and Dubai in the UAE. The one-metric-tonne consignment was sourced from farmers in Shopian and Pulwama districts, marking a new step in connecting the region's high-value horticultural produce with international markets. Areko Cherries are high-density European sweet cherries, while Scentrose is a premium plum variety. The shipment also delivered significant gains for growers, who earned nearly 60 per cent higher returns for cherries and 120 per cent higher returns for plums compared to prevailing domestic market prices. The successful export highlights the growing global demand for premium Indian fruits and is expected to create new market opportunities for J&K's stone fruit growers. It could also encourage more export-oriented production and improve farmer incomes through better price realisation.

Leather Sector Eyes USD 15 Billion Exports

Union Commerce and Industry Minister Piyush Goyal urged the leather and footwear industry to triple exports to USD 15 billion in five to six years, from the current USD 4-4.5 billion. Speaking at events in New Delhi, he highlighted FTAs with 38 developed countries as a major opportunity for the sector and called for greater diversification, noting that 77 per cent of exports go to just 15 countries. He also highlighted the India-UK FTA, which came into force on 15 July, providing duty-free access for Indian leather, leather products and footwear in the UK market. The agreement is expected to improve price competitiveness and create new export opportunities. Goyal said the sector, which employs over 40 lakh people, could create up to one crore jobs with greater focus on quality, design, branding, sustainability and scale.



Chintan Shivir Charts Path for Electronics Exports

The Department of Commerce, with the Mobile and Electronic Devices Export Promotion Council (MEDEPC), the Electronics and Computer Software Export Promotion Council (ESC) and the Telecom Equipment and Services Export Promotion Council (TEPC), held a Chintan Shivir at Bharat Mandapam, New Delhi, on strengthening India's electronics manufacturing and exports. Secretary Shri Rajesh Agrawal presided, with presentations on India's roadmap to USD 150 billion in electronics exports by 2030. Discussions focused on integrating Micro, Small and Medium Enterprises (MSMEs) into global value chains, which account for nearly 90 per cent of global electronics trade, and harmonising HS Codes with Customs. Companies including Apple, Samsung, Tata Electronics, Foxconn and boAt participated, committing to turn recommendations into actionable policy.



Rural Women Entrepreneurs Shine at BRICS Meeting

The Ministry of Rural Development showcased women-led rural enterprises under DAY-NRLM at the BRICS Women Ministerial Meeting in Kochi on 8-9 July 2026. The exhibition was inaugurated by Ms. Annapurna Devi and Smt. Savitri Thakur, with delegates from Brazil, Russia, China, South Africa and other BRICS nations visiting the pavilion. Featuring 21 State and UT stalls and the National Saras Aajeevika Gallery, the event displayed handlooms, handicrafts and natural products from Self-Help Groups. The showcase highlighted the contribution of over 10 crore women associated with SHGs, presenting them as globally competitive rural enterprises.

MSME Minister Reviews Scheme Progress in Puducherry

Union MSME Minister Shri Jitan Ram Manjhi undertook a two-day review visit to Puducherry to assess the implementation of key schemes, including PMEGP, PM Vishwakarma, CGTMSE, ZED and RAMP. He chaired a review meeting with SLBC members, MSME associations and institutions such as SIDBI and NSIC, urging banks to expand institutional credit access for MSMEs. During the visit, he interacted with trainees at the MSME Technology Centre and reviewed skill development programmes. He also visited the MSME Testing Station and stressed greater awareness and use of its quality certification facilities. The visit highlighted the Ministry's focus on strengthening access to finance, technology, skills and quality support for MSMEs in Puducherry.



QCI and NSIC Sign MoU to Boost MSME Quality

The Quality Council of India and National Small Industries Corporation signed an MoU to strengthen quality, competitiveness and market access for MSMEs. The partnership integrates schemes like ZED Certification, MSME Global Mart, the TEAM Initiative and Single Point Registration Scheme. ZED-certified MSMEs will get onboarding on ONDC, AI-enabled cataloguing and export support. A Joint Coordination Committee will meet quarterly during the MoU's five-year tenure. The agreement was signed at the QCI Office, New Delhi, in the presence of NSIC CMD Dr. Subhramsu Sekhar Acharya and QCI's Dr. A. Raj, supporting the vision of Viksit Bharat 2047.



DPIIT Eases Footwear Quality Norms for Industry

DPIIT amended two Footwear Quality Control Orders to ease compliance and support domestic manufacturing. The legacy stock clearance deadline has been extended from 31 July 2026 to 31 July 2027, giving manufacturers, distributors and retailers more time to clear existing inventory. Manufacturers can now import up to 4,500 pairs of footwear annually for research and development, marked "NOT FOR SALE" and disposed of as scrap after use. Year-wise import records must be maintained. The changes align with the "Zero Defect, Zero Effect" vision and aim to strengthen India's position as a global manufacturing hub.

Integrated Textile and Apparel Development Centres to Anchor India's Textile Sector Growth

Union Textiles Minister Shri Giriraj Singh reviewed the Integrated Textile and Apparel Development Centres (ITADCs), along with the revamped Powerloom Service Centres, describing them as one-stop hubs for textile entrepreneurs and MSMEs. The centres aim to provide industry support through training, technology and other services. During the review, Singh also unveiled the revamped Textile Commissioner website and launched a new KPI Portal for real-time monitoring of ITADC performance across the country. The digital platforms are aimed at improving transparency, access to information and monitoring of textile sector initiatives. The move reflects the Ministry's focus on strengthening institutional support and improving access to technology and services for textile entrepreneurs and MSMEs.





Government Rolls Out New Scheme for Mobile Manufacturing

The Union Cabinet approved the Mobile Phone Manufacturing Scheme (MPMS) with an outlay of ₹62,500 crore, running from FY 2026-27 to FY 2030-31. The scheme offers incentives of 2.25 per cent to 5 per cent on eligible sales, plus up to 1.5 per cent for domestic sourcing and 3 per cent for design and R&D. Cumulative mobile phone production is expected to reach ₹39,00,000 crore, generating around 60,000 direct jobs. India is currently the world's second-largest mobile phone manufacturer, with 99.2 per cent of phones used domestically now made in India, and smartphones are its top export category.

India-Poland Discuss Deeper MSME Ties

India's Ministry of MSME held a bilateral meeting with a Polish delegation led by Deputy Minister Mr. Michał Baranowski at Kartavya Bhawan, New Delhi. Secretary Shri Bharat Khara noted India has over 86 million registered MSMEs, contributing nearly 30 per cent to GDP and nearly half of exports, supporting 330 million livelihoods. He highlighted initiatives like Udyam Registration, Credit Guarantee Scheme, Technology Centres and ZED practices. Discussions focused on enterprise development, digital transformation, technology adoption, market linkages, trade and investment, and stronger business-to-business engagement between the two countries. Poland reaffirmed its commitment to deepening institutional partnerships, building on the 2024 NSIC-PARP collaboration, with the India-EU FTA expected to further boost ties.



MSME Amendment Bill Introduced in Parliament

The Micro, Small and Medium Enterprises Development (Amendment) Bill, 2026, was introduced in Parliament, proposing mandatory digital invoicing, stronger payment protection and faster dispute resolution for MSMEs. It updated the MSMED Act, 2006 by simplifying registration and compliance, strengthening payment safeguards and decriminalising certain offences. Under the Bill, all invoices raised by MSMEs on Central Public Sector Undertakings (CPSUs) would have to be routed through the Trade Receivables Discounting System (TReDS), an electronic platform that helps small businesses convert unpaid invoices into immediate cash. States would also need to set up additional Micro and Small Enterprise Facilitation Councils, each with 3-5 members, including a mandatory legal expert, to speed up dispute resolution. The Bill proposed a free national digital registration platform to simplify MSME registration and improve access to government schemes and institutional support. Buyers appealing an award in favour of an MSME would need to release at least 50% of the awarded amount if the case stayed pending beyond six months, with courts empowered to direct such payments.



Government to Spend Rs 277 Crore to Help 5 Lakh MSMEs Join ONDC

The government plans to spend Rs 277 crore by 2027 to bring 5 lakh MSMEs onto the ONDC platform. Officials said this move will help small businesses go digital and reach more buyers, with 50% of the new onboarded MSMEs being women-led businesses. Shri Manoj Mohan Sinha, General Manager, NSIC, said MSMEs will become more digital and contribute more to India's economic growth. In Odisha's Mayurbhanj district, around 15,000 to 16,000 MSMEs are already registered, and local leaders said the ONDC move can improve incomes and give MSMEs access to markets beyond Odisha and even internationally. The government shared this update during an MSME awareness programme in Odisha.



Government Raises MSME Loan Guarantee Limit to Rs 10 Crore

The government has increased the credit guarantee limit for micro and small enterprises from Rs 5 crore to Rs 10 crore, which will help MSMEs get loans more easily without collateral or third-party guarantees. The Annual Guarantee Fee has also been cut by 50%, bringing the standard rate down to 0.37% per year. Women-led businesses, first-generation entrepreneurs, and units in backward districts will get extra support. Banks are also not allowed to ask for collateral on loans up to Rs 20 lakh for MSEs. For districts with low credit flow, the scheme offers a 10% fee discount and 5% extra guarantee coverage. The government is also running outreach programmes to create more awareness about the scheme and help MSMEs benefit from it.



Haryana Rolls Out New MSME Policy with 60 Initiatives

Haryana has announced a new MSME and Export Promotion Policy with 60 initiatives to support small businesses and exporters. The policy aims to bring in over Rs 55,000 crore investment, create more than five lakh jobs, and double the state's exports in the next five years. It offers capital subsidies, a Rs 200-crore venture fund, and insurance support for MSMEs. Export-oriented units will get interest help, freight assistance, and support for first-time exporters. The policy also encourages new industrial clusters, single-window approvals, and easier business setup. For technology adoption, it provides aid for robotics, IoT, smart manufacturing, AI labs, and research centres. It also supports quality certifications and e-commerce fees for exporters. To promote green growth, the state will set up a Rs 100-crore green fund and give subsidies for solar, pollution control, and zero-liquid-discharge systems. The policy also gives incentives to industries hiring local youth. Overall, the government says this plan will make Haryana a stronger hub for manufacturing, innovation, and exports.





Government Mandates TReDS for All CPSE Payments

The Ministry of MSME notified that all operating Central Public Sector Enterprises (CPSEs) must settle MSME invoices through the Trade Receivables Discounting System (TReDS), regulated by the Reserve Bank of India (RBI), giving effect to a Union Budget 2026-27 announcement. For MSMEs, this means faster access to working capital, as approved invoices can be converted into cash before the due date through collateral-free financing, with banks and NBFCs bidding competitively for lower rates. CPSEs must also disclose invoice settlement data and obtain statutory auditor certification annually. TReDS discounting rose from ₹40,000 crore in FY22 to ₹3.47 lakh crore in FY26.

FIRST India Moves CCI Against Flipkart

The Forum for Internet Retailers, Sellers and Traders (FIRST India), an affiliate of India SME Forum, filed a complaint against Flipkart Group with the Competition Commission of India (CCI), seeking a fresh probe into anti-competitive practices. The 157-page complaint claimed Flipkart ran a mechanism enabling deep discounting, favouring select sellers and excluding smaller retailers. FIRST alleged the group generated about Rs. 3,000 crore annually through avoided GST liabilities, funding this pricing conduct. The filing sought a DG investigation under Section 26(1), covering Flipkart Internet, Flipkart India, Walmart and affiliates. For MSME sellers, the case could make marketplace rules fairer.



Government Eases FDI Rules for E-commerce Exports

The government amended FDI rules to lift restrictions on the inventory-based model of e-commerce for exports of domestically manufactured goods. DPIIT notified the change, while FDI in B2C e-commerce and inventory-based domestic sales remained restricted. This allowed platforms like Amazon and Flipkart to hold inventory for exports, enabling sellers to access global markets, supporting the target of \$200 billion in e-commerce exports by 2030. For MSMEs, this opened a direct, lower-cost export route. Earlier CBIC reforms removed the Rs 10-lakh cap per courier consignment and introduced a Return to Origin (RTO) mechanism, easing logistics for MSME exporters.

DGFT Proposes ₹10,000 RCMC Exemption

The DGFT proposed exempting export consignments worth up to ₹10,000 from requiring a registration-cum-membership certificate (RCMC), under a proposed change to the Foreign Trade Policy (FTP) 2023. The proposal was opened for stakeholder feedback via trade notice, inviting comments from exporters and industry associations, as part of efforts to simplify compliance for small exporters. For MSMEs, artisans and first-time exporters, this means one less document before shipping low-value consignments abroad, cutting time and cost. E-commerce sellers dispatching small-value orders overseas stand to benefit most, bypassing RCMC entirely and lowering the entry barrier to exporting.



DPIIT Notifies ₹10,000 Crore Startup Fund of Funds 2.0

DPIIT notified the ₹10,000 crore Startup India Fund of Funds 2.0 and issued operational guidelines, with the corpus committed across the 16th and 17th Finance Commission cycles. The scheme will invest through SEBI-registered Alternative Investment Funds (AIFs, which will deploy money into DPIIT-recognised startups via equity and debt. SIDBI will serve as the initial implementation agency. AIFs are classified into four segments: deep-tech, early-growth, manufacturing-focused and sector-agnostic, each with different contribution caps. For startups and MSMEs in manufacturing and deep-tech, this widens funding access, with a focus on non-metro regions extending venture capital reach beyond major hubs.

India SME Forum Pitches for Open Marketplace for MSMEs

India SME Forum's MSME Digital Procurement Report 2026, surveying 27,045 MSMEs, estimated India's MSME Procurement Economy at ₹124.9 lakh crore, with digital channels handling only 17.6% of this spend. The report recommended extending the GeM model, which connects 1.36 lakh government buyers with 25 lakh sellers, into a parallel open marketplace for private MSME buyers. For MSMEs, this could mean access to the same GST-linked, transparent supplier base government departments use. The report also called for a national supplier trust framework, embedded procurement finance and stronger logistics. Price volatility (55.7%) and credit constraints (35.6%) remained top challenges.





ODOP Initiative Covers 1,244 Products in 773 Districts

DPIIT identified 1,244 products across 773 districts under the One District One Product (ODOP) initiative, with State and UT governments selecting products for their regions. Under SASCI, States and UTs with legislatures received up to ₹200 crore each as a 50-year interest-free loan to set up PM Ekta Malls selling ODOP, GI and handicraft products. The PMFME Scheme offered a 35% credit-linked capital subsidy up to ₹10 lakh, plus 50% grant for branding support. For MSMEs and artisans, a dedicated ODOP Storefront on GeM listed over 1,300 products, extending reach to retail stores in Singapore and Kuwait.

Toy Sector Gets a Boost: New Task Force & Playbook Launched

Commerce & Industry Minister Piyush Goyal announced a task force to help India's toy sector reach 5% of the global market by 2032, alongside the launch of a Toy Sector Playbook - a practical roadmap covering manufacturing, compliance, skilling, IP and exports for MSMEs and startups. With over 21,000 MSMEs, 770+ DPIIT-recognised startups, ~50 clusters and 1,800+ BIS licensees already in the ecosystem, the sector is primed for scale. SCALE Chairman Dr. Pawan Goenka called for stronger design, quality and export competitiveness to build India as a global toy manufacturing hub.



95% Assistance under TRACE

Under the guidance of Shri Lav Agarwal, Additional Secretary and DGFT, has revised the TRACE programme under the Export Promotion Mission – Niryat Disha, significantly strengthening support for exporters seeking international certifications. The revised framework replaces the earlier uniform ₹25 lakh reimbursement ceiling with MSME-tiered assistance of up to 95%, while expanding coverage to a dynamic list of 462 international certifications. The move is particularly relevant for smaller exporters, for whom the cost of testing, conformity assessment and certifications such as CE, FDA-related requirements, sustainability standards and international product standards can be a major barrier to entering developed markets. By reducing these upfront compliance costs, the revised TRACE framework could help more MSMEs become export-ready, access new markets and strengthen their ability to compete in global supply chains.

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INDIA'S R&D ENGINE: INNOVATIVE MSMEs

R&D is no longer the preserve of large corporations or high-tech laboratories. For India's MSMEs, innovation is increasingly happening on the shop floor, through smarter processes, better products and small improvements that can deliver big gains in productivity, resilience and competitiveness.

Ask a small-business owner about R&D and the first reaction may still be: “That is for large companies.”

The image is familiar for scientists in laboratories, expensive equipment, months of experimentation and budgets running into crores. For a business focused on meeting orders, managing working capital and keeping production moving, R&D can easily seem like something that belongs to another world.

But innovation in a small business rarely looks like that.

Sometimes it is simply a better way to use raw materials. Sometimes it is a machine modification that saves time, packaging that prevents

In the MSME world, R&D does not always arrive in the form of a breakthrough invention, a new patent or a sophisticated laboratory. More often, it begins with a much simpler business question: Why is this process costing so much? Can this product be made with less material? Can wastage be reduced? Is there a better way to package, transport or manufacture what we already sell? Can an imported component be replaced with a domestic alternative? Can technology remove a repetitive task and allow employees to focus on more productive work?

These questions may sound like ordinary operational concerns, but they are at the heart of innovation. And as India’s economy becomes more competitive, technology-driven and globally integrated, the ability of MSMEs to continuously ask and answer



“Having built Ayushakti over the years, I have seen that innovation does not always require a large laboratory or a huge R&D budget. Many of our ideas have come from simply listening to clients, observing what works, studying outcomes, and continuously improving what we do. For an MSME, R&D can be as simple as asking, ‘Can we do this better?’ and then finding a practical way to do it. At Ayushakti, we have combined the wisdom of Ayurveda with modern research, technology and data to develop solutions that can be relevant not just in India, but globally. I believe R&D gives MSMEs the confidence to innovate, improve quality, and compete on a larger stage. It is not just about creating something new, it is about constantly making what we do more meaningful, effective and impactful. **”**

- Dr. Smita Naram,
Co-founder,
Ayushakti Ayurved Pvt. Ltd.

damage, software that removes hours of repetitive work, or a product changed after listening to customers. These decisions may never be recorded under an R&D budget, but they involve the same fundamental process: identifying a problem, trying something different and finding out whether it works.

That understanding, however, is becoming increasingly outdated.

such questions could become one of their most important sources of growth.

India’s Innovation Story Is Gathering Momentum

The broader transformation is already visible in India’s national R&D landscape. According to the Department of Science and Technology, India’s expenditure on research and development has



increased substantially, rising from approximately ₹79,356 crore in 2013-14 to ₹2,44,768 crore in 2023-24, and is projected to reach ₹3,13,007 crore in 2025-26. R&D expenditure as a proportion of GDP has also increased from 0.64% in 2020-21 to 0.84% in 2023-24, with the figure projected to reach 0.90% in 2025-26.

More significant than the growth in expenditure, however, is the changing composition of India's R&D ecosystem. Private industry accounted for more than half of India's total R&D spending in 2023-24, compared with roughly one-third only a few years earlier. This represents an important structural change because it indicates that research and innovation are increasingly being viewed not merely as public-sector or academic responsibilities, but as essential components of commercial competitiveness.

Other indicators reinforce the same story. India's researcher base has grown to approximately 5.07 lakh full-time-equivalent professionals, while scientific publications have increased from around 78,000 annually in 2012 to more than 2 lakh in 2022. Patent filings crossed 1.1 lakh in 2024-25, reflecting the country's expanding capacity to generate and formulate new ideas.

Behind these numbers lies a broader shift in India's relationship with innovation. The country is gradually moving beyond a model in which technology is primarily imported or adopted and towards one in which businesses increasingly participate in developing, adapting and commercialising new solutions. For MSMEs, this transition is particularly important because they represent the vast majority of India's enterprises and operate across almost every segment of the economy.

For MSMEs, R&D Often Happens Without Being Called R&D

For many MSMEs, innovation is not a separate activity. It is woven into



“Effective water management is a powerful catalyst for MSME competitiveness. When businesses optimize processes and reuse water, they slash operating costs, build vital resource resilience, and unlock sustainable growth.”

- Dr Harrieya V,
Founder and Chairman,
Centre for Global Development Studies

are damaged during transportation or become short-dated before reaching the consumer. The entrepreneur begins experimenting with different packaging materials, sealing techniques or storage conditions and eventually discovers a solution that reduces wastage and extends shelf life. The business may never create a formal R&D department, but the process of identifying a problem, testing alternatives and measuring the result is fundamentally research and development.

A textile manufacturer facing high water and energy consumption may experiment with a different dyeing process and discover that the same quality can be achieved with substantially fewer resources. An engineering workshop may redesign a component so that it requires less steel without compromising strength or performance. An electronics manufacturer may invest time in



the daily business of making, fixing, improving and adapting.

A change in a production process, a new formulation, a redesigned component or a different way of using technology may never find its way into an R&D report. Yet these small experiments are often what help a business lower costs, improve quality and respond to changing customer demands.

Consider a food-processing unit that regularly loses money because products

finding a domestic substitute for an imported component, reducing its exposure to global supply disruptions and currency fluctuations. A software MSME may introduce automation into repetitive administrative work, freeing employees to spend more time on client-facing and higher-value activities.

The Indian market already offers examples of businesses building growth around this approach. Companies such as Atomberg have

used technology and engineering to rethink an everyday product such as the ceiling fan, while WaterScience has built solutions around the quality and treatment of water. Their journeys illustrate an important point: innovation does not always require creating an entirely new category. It can also come from looking at an existing problem differently and developing a better solution around it.

None of these examples necessarily involves a revolutionary invention. Yet their economic impact can be significant because even a small improvement, when repeated across thousands of units or hundreds of production cycles, can translate into a meaningful reduction in costs or an increase in productivity.

Innovation is often the first step towards creating intellectual property and, eventually, commercial value. A new product, improved process, design or technology can give an MSME an opportunity not only to operate more efficiently, but also to create something that can be protected, differentiated and taken to the market. In this sense,

R&D is not simply about solving an internal business problem; it can also become the foundation for building a commercially valuable asset.

This is where the nature of MSME innovation differs from the popular image of R&D. For a small business, innovation is often incremental. It may be a better formulation, a more efficient machine setting, a redesigned component, a stronger package, a faster workflow or a more reliable source of raw material. Individually, these improvements may appear modest. Collectively, they can determine whether a business remains competitive as input costs rise and customer expectations change.

For many MSMEs, innovation is not a separate activity. It is woven into the daily business of making, fixing, improving and adapting.



“Investing in Research and Development (R&D) is vital for Micro, Small, and Medium Enterprises (MSMEs) because it fuels product innovation and process efficiency, allowing small businesses to survive and scale in competitive markets. The quantification of resources (finance and manpower) devoted in R&D activities in MSME sector is crucial for evidence-based policy interventions and linked competitiveness building through academia- industry collaboration. Furthermore, a strong commitment to R&D builds long-term business resilience against shifting consumer trends and drastically increases a company’s valuation, making it far more attractive to external venture capitalists and institutional lenders.”

- Dr. Arvind Kumar,

Head,

National Science and Technology
Management Information System
(NSTMIS), DST



There is also an advantage that comes naturally with being small: agility. Large companies have greater resources and formal R&D structures, but they also operate through established processes and multiple layers of decision-making. An MSME can often identify a problem, test a solution and make a change much faster. Its proximity to customers and the shop floor can make experimentation more immediate and practical. This ability to test, learn and adapt quickly can become a significant innovation advantage.

The numbers emerging from private industry underline the growing importance of this approach. Private-sector R&D spending grew at nearly 20% annually between 2021-22 and 2023-24, with transportation, pharmaceuticals, biotechnology, IT and electronics among the sectors contributing significantly to this growth. The lesson for MSMEs is not that every small enterprise must replicate the R&D infrastructure of a large corporation. Rather, it is that sustained investment in improvement can produce significant results when innovation becomes part of the way a business operates.

The MSME Voice in India's R&D Story

The MSME perspective is becoming increasingly important to India's understanding of research and innovation. India SME Forum's engagement with the Department of Science and Technology's National Science & Technology Survey has helped bring the perspective of small and medium enterprises into this wider national assessment. In its latest Science & Technology Indicators Tables 2025-26, DST's National Science & Technology Management Information System (NSTMIS) acknowledges India SME Forum among the industry associations contributing to the National S&T Survey 2024-25. The survey covered more than 8,000 R&D-performing institutions across India, providing a broad evidence base on the country's research and innovation ecosystem.



It turns it from an abstract scientific activity into a disciplined business practice based on experimentation and measurable outcomes.



“For MSMEs, the real strength of R&D lies in creating an enabling ecosystem that fosters continuous innovation, improves processes, enhances quality and efficiency, and enables digital adoption to strengthen productivity and global competitiveness.”

- Dr. Nisha Taneja,
Senior Visiting Professor,
ICRIER

The importance of this participation goes beyond representation. If India wants to build an innovation-led economy, its R&D framework must reflect not only where research is being conducted, but also how innovation is being adopted, adapted and commercialised across the wider business ecosystem. MSMEs are an important part of that picture because their relationship with technology is often closely tied to practical business outcomes such as productivity, competitiveness and market access.

Bringing the MSME perspective into national R&D discussions can therefore help address an important gap between research and enterprise. It can improve understanding of the kinds of technologies businesses need, the barriers they face in accessing research capabilities and the support required to move useful ideas from development to commercial application.

For policymakers, this creates an opportunity to design a more connected innovation ecosystem, one in which MSMEs are not simply beneficiaries of technologies developed elsewhere, but active participants in shaping, adopting

and commercialising them. For MSMEs, stronger links with the formal R&D ecosystem could mean better access to technical institutions, testing and validation facilities, intellectual-property support, research partnerships and emerging funding opportunities.

The larger message is straightforward: India's R&D ambitions will be stronger when the innovation ecosystem is connected to the enterprises that ultimately turn ideas into products, processes and commercial value. The growing inclusion of the MSME perspective is an important step towards building that connection.

Why R&D May Matter Even More to a Small Business

There is a natural tendency to assume that R&D is more relevant to large companies because they have greater financial resources and can afford to take risks. In practice, the opposite argument can also be made. MSMEs typically operate with thinner margins and have less room to absorb inefficiencies, sudden increases in input costs or prolonged disruptions. A large company may be able to absorb a small increase in production costs across a diversified portfolio; for a smaller enterprise, the same increase can directly affect profitability and working capital.

This makes productivity improvements particularly valuable.

If a small manufacturer can reduce material consumption by even a modest amount, the saving applies to every unit produced thereafter. If a food business can reduce spoilage, the improvement directly affects margins. If an engineering company can shorten production time without compromising quality, it can potentially increase output without making a proportionate increase in its workforce or machinery. If a business can replace an imported input with a reliable domestic alternative, it gains not only a potential cost advantage but also greater resilience.



“R&D is not a cost that MSMEs must fear, it is the engine that can take them from survival to scale. By moving beyond jugaad to structured innovation and collaborating with industry, academia and government institutions, Indian MSMEs can build better products, stronger margins and globally competitive businesses.”

- Ms. Jyoti Sudhir,
Co-founder & CEO,
InventIndia Innovations Pvt. Ltd.



R&D, therefore, should not be viewed only through the lens of invention. For MSMEs, it can be a mechanism for cost reduction, productivity improvement, quality enhancement, product differentiation and supply-chain resilience.

For MSMEs, this makes R&D and innovation less of a discretionary investment and more of a long-term necessity. When businesses operate with limited capital, tight margins and intense competition, continuous improvement may be one of the few sustainable ways to reduce costs, differentiate products and remain relevant. Innovation, in this context, is not simply about gaining an edge; it is about creating the ability to keep competing as the market changes.

This becomes particularly important as Indian MSMEs increasingly seek to participate in global value chains. Competing internationally requires more than offering a lower price. Buyers increasingly expect consistency, quality, traceability, shorter delivery cycles, customisation and the ability to respond quickly to changing requirements. Businesses that continuously improve their products and processes are better positioned to meet those expectations.

The Real Challenge Is Making Innovation a Habit

The biggest obstacle for many MSMEs may not necessarily be a lack of ideas. Entrepreneurs working close to their customers and production processes often know exactly where their problems lie. The challenge is turning that practical knowledge into a systematic process of experimentation and improvement.

For an MSME, this does not necessarily require establishing a separate research department or allocating a large corporate-style R&D budget. It could begin with setting aside a small and consistent share of revenue for testing improvements and treating that expenditure as a planned investment rather than an emergency response to a problem.

The difference is important. When a business waits until a problem becomes urgent, innovation tends to become reactive. When it deliberately sets aside time and resources to experiment, innovation becomes part of business planning.

An entrepreneur could begin by identifying the three areas in the business where the greatest amount of money, material or time is being lost. The next step could be to test one alternative at a time and measure whether it actually produces an improvement. Did the new packaging reduce damage? Did the new

production method lower energy consumption? Did the redesigned component reduce material use? Did automation reduce processing time? Did the alternative raw material maintain the required quality?

This approach makes R&D much less intimidating. It turns it from an abstract scientific activity into a disciplined business practice based on experimentation and measurable outcomes.

Over time, the cycle becomes self-reinforcing: a problem is identified, an alternative is tested, the result is

measured, the successful solution is adopted and the process begins again with the next challenge. What starts as a small improvement can eventually become a significant competitive advantage.

MSMEs Do Not Have to Innovate Alone

Another important development is the expansion of the ecosystem around innovation. An MSME does not necessarily have to possess every piece of technical infrastructure required to undertake R&D. Universities, technology centres, incubators, testing laboratories and other institutions can provide access to expertise, equipment and technical capabilities that may be too expensive for an individual small business to develop internally.

The government's ₹1-lakh-crore Research, Development and Innovation Fund, aimed at encouraging greater private-sector participation in R&D, is another significant development in this direction.

For MSMEs, the opportunity lies in thinking beyond the traditional question of whether they can afford their own R&D infrastructure. A more useful question may be whether they can access the infrastructure that already exists.

A food-processing enterprise may not need to establish its own sophisticated testing facility if it can work with an appropriate laboratory or technical institution. A manufacturing unit may not need to employ a large team of researchers if it can collaborate with a technology centre or university. An emerging technology company may be able to use an incubator's technical resources while it develops and validates a product. Such collaborations can lower the cost of experimentation while giving MSMEs access to knowledge that would otherwise remain out of reach.

From Survival to Sustained Competitiveness

There is also a larger strategic reason why R&D deserves greater attention

R&D should not be viewed only through the lens of invention. For MSMEs, it can be a mechanism for cost reduction, productivity improvement, quality enhancement, product differentiation and supply-chain resilience.



from India's MSMEs. Markets are changing faster than they once did. Technologies that were expensive a decade ago are becoming accessible. Customers are demanding greater quality and customisation. Supply chains are being redesigned. Environmental and resource-efficiency considerations are becoming more important. Global competition is reaching businesses that previously operated almost entirely within domestic markets.

In such an environment, yesterday's successful business model cannot automatically guarantee tomorrow's growth.

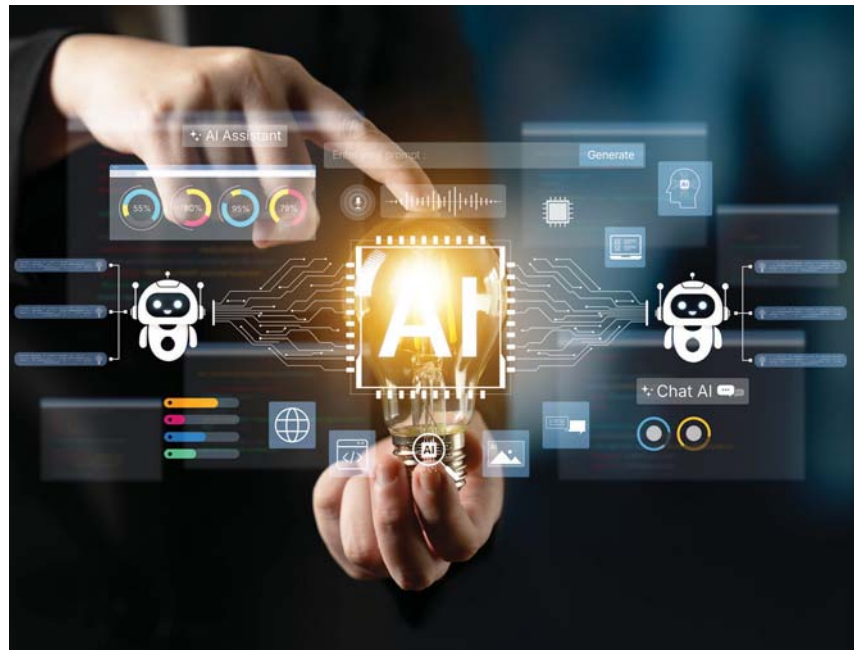
The MSME that continues to learn, test and improve has a better chance of adapting to those changes.

This is why R&D should ultimately be understood not merely as expenditure on innovation but as an investment in adaptability. It gives businesses a structured way to respond when circumstances change rather than simply absorbing the impact of those changes.

The strongest competitive advantage for a small business may therefore not always be the size of its factory, the amount of capital it has raised or even the number of employees it employs. It may be its ability to identify a problem faster than its competitors, experiment with solutions and turn what it learns into a better product or process.

The Next R&D Revolution Could Come From MSMEs

India's R&D story is often told through the achievements of scientists, research institutions, technology companies and large industrial enterprises. But if the country is to build a genuinely innovation-led economy, that story will eventually have to extend much further, to the millions of MSMEs that manufacture, process, design, repair, build and deliver products and services every day.



The real opportunity, therefore, is to change the way MSMEs think about R&D. It does not have to begin with a laboratory. It does not have to require a large research team. And it certainly does not have to end with a patent.

Their contribution may not always appear in patent statistics or research papers. Much of it will be invisible: a machine adjusted to use less power, a component redesigned to use less material, a packaging format improved to prevent damage, a production process shortened by a few minutes, a domestic alternative developed for an imported input or a repetitive task automated through software.

Yet these small changes can have a cumulative impact that is far greater than their individual scale suggests.

The real opportunity, therefore, is to change the way MSMEs think about R&D. It does not have to begin with a laboratory. It does not have to require a large research team. And it certainly does not have to end with a patent. It can begin with an entrepreneur looking closely at the business and asking where money, time, material or opportunity is being lost and then being willing to test whether there is a better way.

That is perhaps the most important shift India can make in its next phase of innovation: making R&D a part of everyday enterprise, rather than something reserved for enterprises large enough to have a department named after it.

For India's MSMEs, the next breakthrough may not be a spectacular invention. It may be a series of small improvements, repeated consistently, that make a business more efficient, more resilient and more competitive.

And that is where the real hero of small business may have been all along, not in the laboratory, but quietly working on the shop floor. **bwise**



DIGITAL TOOLS FOR BUSINESS SUCCESS: What are MSMEs using for their Business Playbook

A nationwide survey of nearly 3,250 small businesses shows what happens when the corner shop meets AI, digital ads, and online discovery, and the answer, so far, is growth.

Walk into a pharmacy in a Tier III town today and you'll likely find the owner checking his phone between customers, not to scroll, but to see how many people searched for his shop on Google Maps that morning. A few streets away, a textile trader is fielding a WhatsApp enquiry from a buyer in another state he's never met. Neither of them would call themselves part of a "digital transformation." They'd just say business has changed.

That change is playing out across India's neighbourhood pharmacies, textile workshops, jewellery studios, food processing units, engineering factories, and family run retail stores, the millions of small enterprises that rarely make headlines but collectively hold up the Indian economy. For decades, these businesses ran on hard work, local networks, and word of mouth. Growth meant a new shop, a new hire, or slowly expanding the radius customers would travel from, because reaching anyone further usually meant a distribution deal or an advertising budget most of them couldn't afford.

Today, that equation is beginning to change, and the reason it is changing is not a matter of opinion. It shows up in the numbers. To understand exactly how India's smallest businesses are using digital tools, and what that usage is doing to their revenue, reach, and resilience, we surveyed nearly 3,250 MSMEs across the country, covering metropolitan cities as well as Tier II and Tier III markets. That survey is the spine of everything that follows in this piece. Every claim in this article, about growth, visibility, cost efficiency, AI adoption, and global reach, traces back to what these business owners told us about their own operations. The point we want to make is a simple one: digital adoption is no longer a nice to have for India's MSMEs, it is becoming the single biggest determinant of whether a



“Overcoming traditional information disparities and reducing operational friction are essential to enhancing long-term business competitiveness. The findings in this study offer an important framework for understanding how structured digital advertising, AI driven capabilities and technology alignment optimize day-to-day performance and enable long term sustainability. This alignment remains critical to helping smaller businesses smoothly integrate with broader market channels, optimize asset utilization, and scale their operations efficiently.”

- Shri Bharat Kherra,

Secretary,
Ministry of Micro, Small and Medium
Enterprises, Government of India

small business grows, stalls, or gets left behind. The survey is how we know that, and the rest of this article is an attempt to walk through what it found and what it means.

Across the country, millions of Micro, Small, and Medium Enterprises are discovering that the tools needed to compete with much larger businesses no longer require massive investments or large technology teams. Artificial intelligence, digital commerce, online discovery, and data driven marketing are steadily becoming accessible to businesses of every size, fundamentally changing how India's entrepreneurs work, sell, and grow. A local manufacturer can now showcase products to buyers hundreds of kilometres away with a simple online listing. A neighbourhood retailer can attract customers through digital maps and search platforms. A small food processor can promote products across social media using AI generated content, while a family owned workshop can analyse customer demand and optimise inventory using digital tools that were once available only to large corporations. Technology is no longer simply supporting business operations, it is reshaping the way businesses compete, and our survey respondents are living proof of that shift in real time.

What makes this transformation particularly significant is that it is not limited to metropolitan India or technology intensive sectors. Digital adoption is gaining momentum across Tier II and Tier III cities, manufacturing clusters, service enterprises, and traditional family businesses. Entrepreneurs who once viewed technology as expensive, complex, or irrelevant are increasingly recognising it as an essential business capability rather than an optional investment. This shift is unfolding at a time when India's digital ecosystem has reached unprecedented scale. Affordable internet access, widespread smartphone adoption, digital payments, e-commerce platforms, and AI powered business tools have dramatically lowered the barriers to technology adoption. As a result, capabilities that once required dedicated IT departments and substantial capital investments are now available through affordable, user-friendly digital platforms that even the smallest enterprises can adopt.

Our survey reveals a story that is equal parts opportunity, transformation, and challenge. More importantly, it demonstrates that India's digital economy is no longer being built only by large enterprises. Increasingly, it is being shaped by millions of small businesses embracing technology one step at a time. With that as the frame, here is what the data actually shows.

Growth Is No Longer Limited by Size

The strongest message emerging from the survey is simple: digital adoption is translating into business growth. Nearly 60 percent of surveyed MSMEs reported double digit revenue growth during the past year. This is not incremental improvement, the kind that shows up as a modest uptick in a quarterly statement and gets forgotten. It is the kind of growth that changes what a business can actually do. It funds a second production line. It lets an owner hire two more people instead of asking the existing three to stretch further. It builds enough



“India's digital maturity has unlocked new opportunities for small businesses. Today, success is no longer just about getting online, it is about being found quickly by the right customers.

We see this transformation firsthand as our Search, YouTube, GPay and Maps surfaces help convert real-time consumer interest into growth for small businesses. As we look ahead, the next big inflection point is agentic AI – in addition to saving time, it will actively work on a business' behalf - connecting them with ready buyers, predicting hyper-local demand shifts before they happen, and helping them win new customers at the exact moment of intent.”

- Ms. Vidhya Srinivasan,
VP / GM,
Ads & Commerce, Google

of a cash cushion that a bad month doesn't threaten the business. For an MSME, revenue growth at this scale is rarely just a number, it is the difference between a business that survives and one that expands.

What makes these numbers particularly significant is that two thirds of these businesses attribute much of this growth specifically to digital channels, not to a general improvement in market conditions or a seasonal bump. That distinction matters. It means owners themselves are able to point to online listings,

digital advertising, or marketplace sales and say, this is what moved the needle. Digital transformation, in other words, is no longer something a business does on the side while its real growth comes from elsewhere. For a growing share of India's MSMEs, it has become the primary engine.

This shift becomes even clearer when you look at geography. For decades, India's MSMEs were constrained almost entirely by physical distance. A business largely served whoever happened to live or work within a few kilometres of it, and reaching customers further away meant either building an expensive distribution network or relying on middlemen who took a cut of every sale. Those constraints are now loosening in a way that would have been hard to imagine a decade ago. Nearly 66 percent of surveyed MSMEs reported expanded market access after adopting digital platforms. A textile trader in Surat, who might once have relied entirely on local wholesalers, can now receive direct enquiries from buyers across the country. A furniture manufacturer in Coimbatore can quote a customer in Delhi without ever opening a branch there. A handicraft producer in Jaipur can sell directly to an overseas buyer without the cost of maintaining an international sales office. What used to require capital, staff, and years of relationship building can now start with a well made online listing and a working internet connection. The traditional link between the size of a business and the size of the market it can serve is breaking down, and it is breaking down because of exactly the kind of digital adoption our respondents described.

Visibility Has Become the New Competitive Advantage

One of the oldest and most common frustrations among small business owners has always been painfully simple: we make good products, but customers don't know we exist. It is a problem that has nothing to do with quality and everything to do with discoverability, and for most of India's business history, there was no real fix for it short of expensive advertising or a



lucky location on a busy street. Digital platforms are addressing precisely this challenge, and the survey shows just how directly. Around 41 percent of surveyed MSMEs reported significantly improved local visibility after establishing a digital presence. Whether that presence takes the form of an online business listing, a search platform profile, a pin on a map, or a marketplace storefront, the underlying shift is the same: these businesses are becoming discoverable at exactly the moment a customer is actively looking for what they sell, rather than hoping to be noticed in passing.

This seemingly small shift carries larger implications than it first appears to. A neighbourhood pharmacy now appears when someone nearby searches for a specific medicine, even if that customer has never walked past the shop before. A local restaurant becomes visible to a visitor who doesn't know the city at all and is relying entirely on their phone to decide where to eat. A machinery supplier in one state can be found by a manufacturer several hundred kilometres away who is searching for exactly that part. In each case, visibility has stopped being something that depends primarily on an expensive ad campaign or a prime physical location, and has become something that depends on whether

More than half of surveyed businesses reported earning two to three times their advertising investment back, and the top performing businesses in the survey achieved returns exceeding five times their digital marketing spend.

a business has bothered to show up where digital search happens.

The survey also captures how far this visibility is starting to travel. Twenty eight percent of MSMEs have expanded beyond their immediate locality into inter state markets. Twenty seven percent now operate across multiple cities within their own state. Twenty one percent serve customers across multiple states altogether. Taken together, these

“ The true depth of our economic progress is found in the aspirations of millions of small-scale enterprises, artisans, and entrepreneurs spanning every corner of India. Technology is reshaping grassroots commerce, allowing a business in any district to command visibility and engage consumers directly. This democratization ensures that market exposure is accessible to all, irrespective of geographic location or capital size. Under the leadership of Hon'ble Prime Minister Shri Narendra Modi, the Ministry of MSME remains committed to improving access to finance and markets, promoting formalisation, strengthening skilling, and encouraging technology adoption through the Udyam ecosystem and a range of schemes and initiatives. As we work toward a future-ready economy under the vision of Viksit Bharat 2047, robust digital tools, particularly AI adoption, can help micro and small enterprises expand their commercial horizons, accelerate formalization, and drive sustainable growth. I congratulate Google India and the India SME Forum on 'The Google Dividend' report which is a valuable, data-rich look at how digital adoption is powering India's MSME sector. ”

- Sushri Shobha Karandlaje,
Minister of State,
MSME and Labour and Employment

numbers describe something that would have sounded unrealistic to most small business owners a generation ago: for a meaningful share of them, “local” is no longer a permanent ceiling on how far their business can reach. It is a starting point.

Digital Is Delivering Measurable Business Returns

Technology adoption almost always raises one blunt question from the people actually running a business: does any of this improve profitability, or is it just noise. It’s a fair question, and one that deserves a fair answer rather than a marketing one. The survey’s answer is fairly direct. Fifty eight percent of MSMEs reported improved customer acquisition after adopting digital tools, while 39 percent experienced stronger revenue growth and better returns on investment through digital channels specifically. Perhaps more

telling still, 43 percent reported a measurable reduction in what it costs them to acquire a new customer, meaning they are reaching more people while spending less to do it.

Part of the reason this is happening is structural. Advertising through digital platforms and AI driven systems works differently from traditional advertising. Instead of broadcasting a message to as many people as possible and hoping some fraction of them are interested, these systems can identify people who are already searching for a specific product or service and put the business in front of them. That precision translates into efficiency, and the efficiency shows up in the numbers. More than half of surveyed businesses reported earning two to three times their advertising investment back, and the top performing businesses in the survey achieved returns exceeding five times their digital marketing spend. For MSMEs operating with

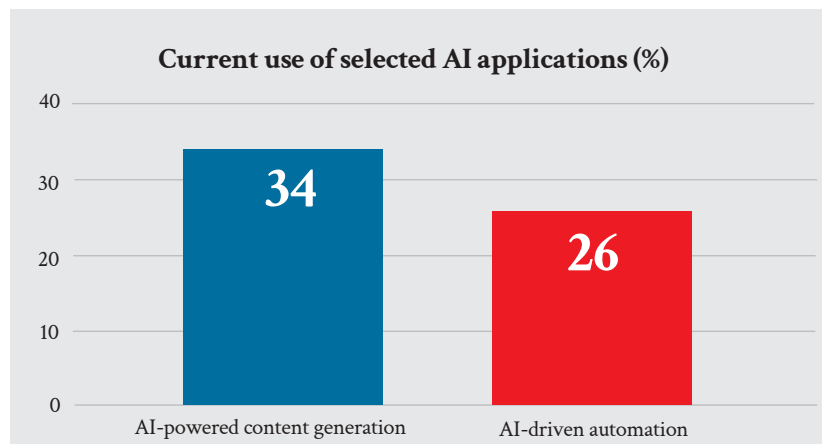
limited budgets and no room for wasted spend, this kind of efficiency isn’t a marginal benefit, it is often the difference between advertising being viable at all and not.

Today, nearly 60 percent of surveyed businesses derive more than 10 percent of their total sales directly from digitally acquired customers. That is no longer a rounding error or a side experiment. It represents a real and growing share of overall business performance, and it is arguably the clearest single piece of evidence in the entire survey that digital adoption is not a cosmetic upgrade for MSMEs. It is showing up, concretely, in the money these businesses actually make.

Artificial Intelligence Is Becoming the Great Equaliser

While digital commerce has already reshaped how MSMEs acquire customers, artificial intelligence is beginning to reshape something arguably more fundamental: how these businesses operate day to day. This is where the survey’s findings start to feel less like a description of what has already happened and more like an early signal of where things are headed next. The survey reveals that 34 percent of MSMEs are already using AI powered tools for content generation, tools that let a business owner produce product descriptions, promotional material, marketing campaigns, and even multilingual communications in a fraction of the time it used to take, often without needing to hire a copywriter or a design agency at all. Meanwhile, 26 percent are using AI driven automation to simplify the repetitive parts of running a business, from inventory management and pricing updates to customer responses and basic workflow automation, the kind of tasks that used to eat into an owner’s day without ever showing up as “real” work.

These tools are already producing measurable productivity gains. Businesses adopting AI report productivity improvements ranging between 15 and 30 percent, which in practice means existing teams, often just the owner and a handful

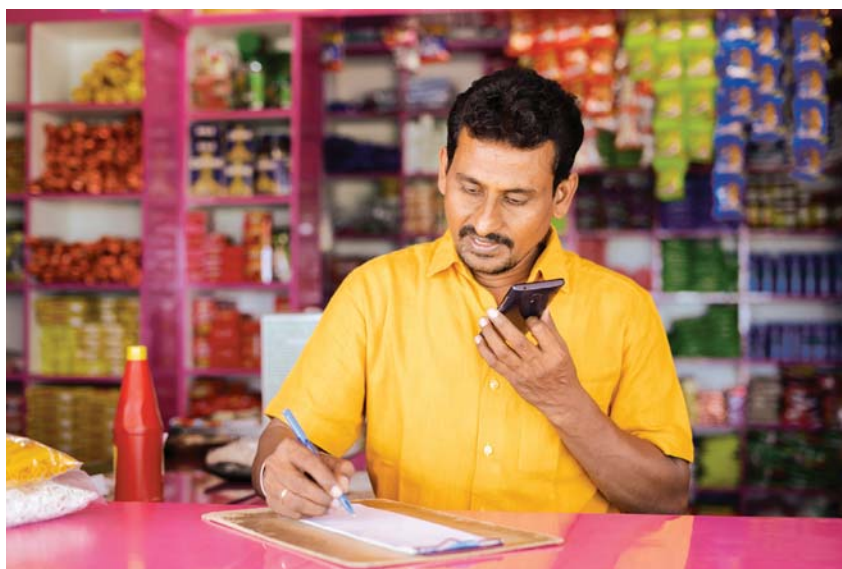


of employees, can accomplish considerably more without needing to hire proportionately more people. Just as importantly, AI appears to be freeing up management attention. Instead of spending hours on routine administrative work, owners are able to redirect that time toward customer relationships, product innovation, expansion planning, and other higher value decisions that actually move the business forward.

Yet the most striking finding in this part of the survey goes further than day to day productivity. When AI is integrated across multiple business functions at once, customer acquisition, inventory planning, supply chain management, and financial decision making working together rather than in isolation, it has the potential to improve overall profitability by 30 to 35 percent. For businesses operating on the thin margins that are typical of the MSME sector, even a fraction of that improvement can be the difference between a business that is merely surviving and one that has real room to grow. Of everything the survey uncovered, this may be the single number most worth paying attention to, because it points less to what has already changed and more to what is about to.

Data Is No Longer Reserved for Large Corporations

One of the less visible, but no less important, shifts our respondents described is the quiet democratisation of business intelligence. Until fairly recently, the kind of sophisticated customer analytics and market insight that shapes major business decisions was largely the preserve of large corporations with dedicated research teams and analytics budgets that most MSMEs could never justify. That is changing. Today, even a small enterprise with no formal analytics function can understand which of its products attract the highest demand, where its customers are actually coming from, which advertisements are converting into real sales and which are not, why customers



When AI is integrated across multiple business functions at once, it has the potential to improve overall profitability by 30 to 35 percent.

abandon a purchase partway through, what inventory needs replenishing before it runs out, and which markets might offer the greatest opportunity for growth.

None of this requires a data science team. It requires a digital presence and the willingness to look at what the platforms are already telling you. These insights are allowing MSMEs to make decisions based on evidence rather than instinct alone, which for a sector that has historically run largely on an owner's gut feel and years of accumulated experience, represents a genuine change in how business gets done. Data, in other words, is becoming an ordinary, everyday business asset rather than a luxury reserved for enterprises large enough to afford it, and it is one of the quieter but more durable shifts this survey picked up on.

India's MSMEs Are Quietly Becoming Global Businesses

Perhaps the single most significant insight to emerge from the survey concerns international expansion. Nearly one in three surveyed MSMEs reported receiving enquiries from international buyers, and 10 percent are already actively accessing overseas markets through digital platforms. For a sector that has historically stayed almost entirely domestic, focused on serving customers within a manageable radius or, at most, within the country's own borders, this represents a genuinely significant structural shift, and it reinforces the broader argument running through this piece: that digital tools are dismantling the size and geography barriers that once defined what an MSME could realistically hope to achieve.

Digital platforms are lowering many of the traditional barriers that used to keep small businesses out of international trade altogether. A food processor in Maharashtra can now receive an enquiry from a buyer in the Middle East without ever having attended a trade fair there. A jewellery designer in Jaipur can sell directly to customers across Europe without the cost of a distributor. A precision engineering manufacturer in Gujarat can secure business from Southeast Asia without maintaining an overseas

office or sales team. None of this means international business has become simple. Compliance requirements, logistics, cross border payments, and unfamiliarity with foreign markets continue to present real challenges, and they shouldn't be understated. But digital ecosystems are making international business meaningfully more accessible for enterprises that were, until recently, effectively excluded from global trade by cost alone. As digital adoption continues to expand, these platforms are opening genuinely new pathways for Indian MSMEs to participate in markets well beyond their own borders.

The Digital Economy Is Creating Wider Economic Value

The impact of this shift extends well beyond the individual businesses experiencing it, and this is where the survey's findings connect to a much larger economic story. During 2025 alone, digital advertising expenditure by MSMEs is estimated to have generated roughly ₹49,731 crore in economy wide output and ₹32,307 crore in Gross Value Added. Those are not small figures, and they don't stop at the businesses that spent the money. As MSMEs expand digitally, demand rises across an entire supporting ecosystem, logistics providers, warehousing operators, packaging



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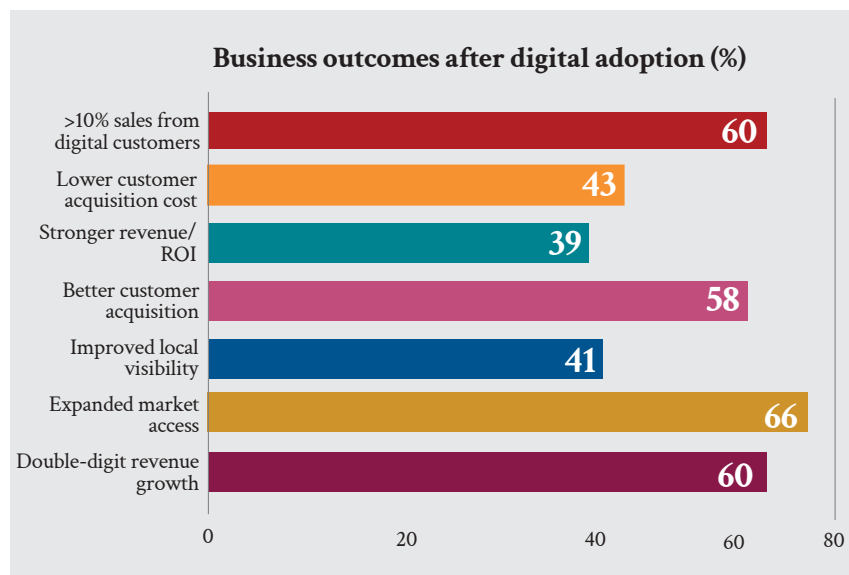
suppliers, payment service companies, software developers, content creators, and professional service providers of all kinds. Each of these sectors sees increased activity as a direct or indirect result of MSME digital growth, creating a multiplier effect that ripples well beyond any single business's balance sheet.

Government revenues are benefiting from this activity as well. GST collections linked to MSME digital activity increased by more than 30 percent over the past year, reaching ₹6,534 crore. When MSMEs grow, in other words, the wider economy grows alongside them, not just in an abstract sense but in measurable tax revenue and downstream economic activity. That is ultimately what is at stake behind every individual statistic this survey collected at the level of a single business.

The Challenges Are Real and They Cannot Be Ignored

Despite the encouraging momentum described throughout this piece, the survey also surfaces significant barriers standing in the way of deeper digital adoption, and it would be dishonest to tell this story without giving them equal weight. The most frequently cited challenge, by a wide margin, is capability. Seventy five percent of surveyed MSMEs identified digital skill gaps as their single biggest obstacle. Technology itself has become easier to access than ever before, but knowing how to actually use AI tools well, how to read and act on digital performance data, how to optimise online visibility, and how to fold all of this into daily operations without disrupting them, remains a genuine learning curve that many business owners are navigating largely on their own.

Financial constraints continue to limit adoption as well. Sixty percent of respondents cited budget limitations as a barrier, particularly among businesses already operating with tight cash flows and no real margin for an investment that might not pay off. For many MSMEs, the decision to invest in digital tools remains constrained less





by belief in their value and more by simple affordability and uncertainty about the return.

Organisational readiness represents another significant hurdle, one that is easy to overlook because it isn't about technology at all. Nearly 48 percent of respondents reported difficulty adapting their internal processes and teams to support digital transformation. This is a useful reminder that technology alone cannot transform a business. Employees, workflows, and the overall culture of how a business operates all have to evolve alongside the tools themselves, or the tools end up sitting largely unused.

Finally, half of all surveyed MSMEs admitted they struggle to measure the effectiveness of their digital investments at all. Many can point to improvements in visibility or a rise in customer enquiries, but establishing

a clear, direct line between digital activity and actual business outcomes remains genuinely difficult for them. Without that measurable connection, investment decisions naturally become more cautious, and this is exactly the gap that needs to be closed if the gains described throughout this piece are going to reach the many MSMEs who haven't made the leap yet.

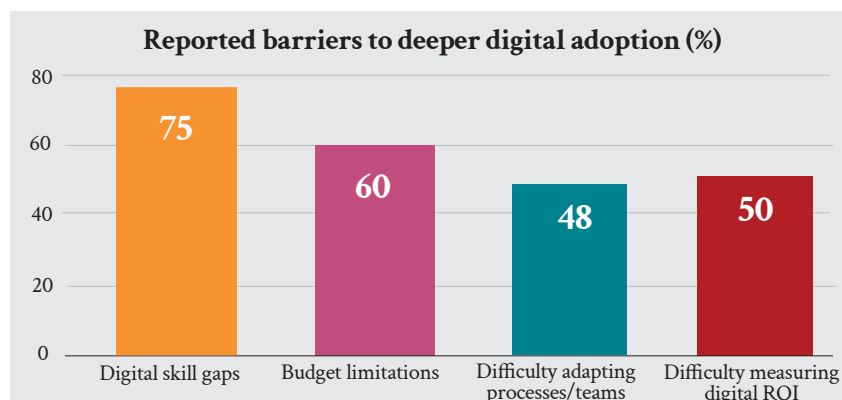
What the Survey Really Tells Us

Perhaps the most important conclusion to draw from all of this is not any single statistic, but a shift in the question itself. India's MSMEs are no longer asking whether they should become digital. That debate, insofar as it ever really existed, appears to be over. What they are asking now is how quickly they can adapt, and how much further they can push what digital tools allow them to do. It is a subtle difference, but it changes the entire framing of this story. This is not a survey of businesses being persuaded to try something new and unfamiliar.

During 2025 alone, digital advertising expenditure by MSMEs is estimated to have generated roughly ₹49,731 crore in economy wide output and ₹32,307 crore in Gross Value Added.

It is a survey of businesses that have already made the decision, and are now working out how to do it better.

What stands out most, looking across the responses, is how modest the starting point usually was for the businesses reporting the strongest results. None of them began with a fully worked out digital strategy or a sophisticated AI system bolted onto their operations. Almost without exception, they started small, in ways that required little money and even less technical expertise. An owner would create a basic online business profile, simply so the shop could be found. A modest digital advertising campaign would be tested with a small budget, not because the owner understood the mechanics of targeted advertising, but because someone had told them it was worth trying. A first attempt at selling through a marketplace would go up almost tentatively, alongside the existing offline business rather than replacing it. Some experimented early with AI powered content creation mostly out of curiosity, using it to draft a product description or a festival promotion because it was free and fast, not because they had a clear plan for what AI could eventually do for their business.



What happened next is the more interesting part. As these small, low risk steps began to show results, even modest ones, confidence grew, and that confidence is what drove the next step. A business that saw a handful of enquiries from an online listing became more willing to invest a little more in visibility. One that saw its first ad campaign generate actual sales became more comfortable putting a real, if still small, budget behind digital marketing. An owner who used AI to write one product description and found it saved real time began using it for inventory notes, customer replies, and eventually broader parts of the business. None of this happened as a single, deliberate leap. It happened as a sequence of small, cumulative decisions, each one justified by the results of the one before it.

This pattern matters more than it might first appear to, because it tells us something important about what actually drives digital transformation among MSMEs, and by extension, what is likely to keep driving it going forward. For most of these businesses, transformation has been incremental rather than revolutionary. It has not depended on large capital investments, outside consultants, or a wholesale rethinking of how the business operates. It has depended on owners being willing to try something small, see whether it worked, and then try the next small thing. That is a very different model of change from the one usually assumed when people talk about “digital transformation,” which tends to conjure images of large budgets, dedicated technology teams, and sweeping organisational overhauls. Almost none of that describes what is actually happening across India’s MSME sector.

It also suggests something encouraging about where this is headed. If sustained progress among MSMEs is being driven by continuous, low friction adoption rather than by large, one time technological investments, then the barrier to further progress is lower than it



might seem. A business does not need significant capital or specialised expertise to take the next step. It largely needs the same thing that got it this far: a willingness to try something new, evaluate honestly whether it worked, and build on it if it did. That is a far more achievable bar for millions of resource constrained small businesses than the alternative model of transformation would suggest, and it is, more than any single statistic in this survey, the real throughline running through everything this article has tried to show.

The Next Chapter Belongs to AI

India’s e-commerce market is projected to grow threefold to US\$250 billion by 2030. The next phase of this journey will not simply involve digitisation but the emergence of intelligent businesses powered by artificial intelligence. AI will increasingly support demand forecasting, inventory optimisation, customer engagement, supply chain management, multilingual communication, pricing strategies, and strategic planning. Success will depend less on business size and more on the ability to leverage data intelligently. For MSMEs, this represents a rare moment in economic history, where technology has the potential to level the playing field and accelerate participation in both domestic and global markets.

Taken together, the survey findings point to a structural transformation in the way

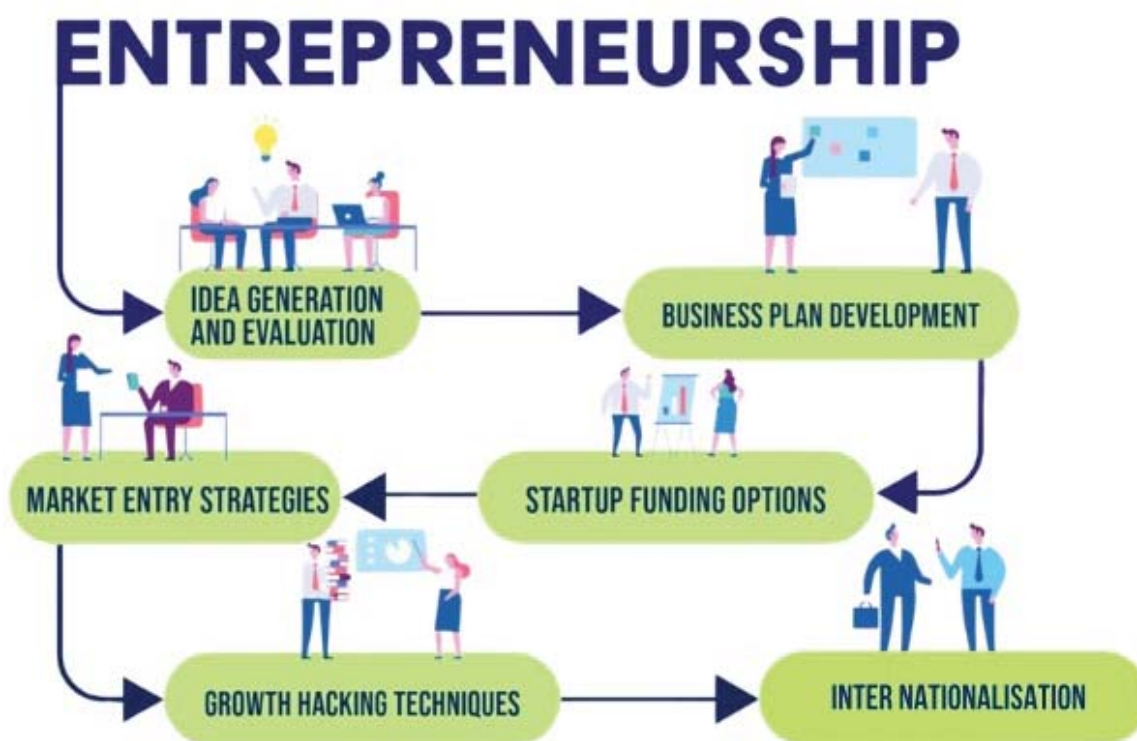
India’s MSMEs compete and grow. Technologies that were once available only to large corporations are now becoming accessible to businesses of every size, enabling them to reach wider markets, make smarter decisions, improve operational efficiency, and compete on a far more level playing field. As artificial intelligence becomes more affordable and digital marketplaces continue to mature, the defining advantage for MSMEs will no longer be scale alone but the ability to learn, adapt, and integrate technology into everyday business decisions. In many ways, the future of India’s digital economy will be shaped not by its largest enterprises, but by millions of small businesses embracing innovation one step at a time.

The opportunity has never been more accessible. The digital revolution for India’s MSMEs is no longer a future possibility, it is today’s business reality. The businesses shaping tomorrow’s economy are not necessarily the largest. They are the ones willing to learn, experiment, adapt, and embrace technologies that allow them to compete far beyond the boundaries of their physical location.

In 2026, business size no longer determines opportunity. Strategy does, and as this survey shows, strategy increasingly means knowing how to put digital tools to work. **bwise**

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MSMEs and The Circular Economy

This article examines how circular economy practices can enable Indian MSMEs to reduce costs, optimise resources, and meet evolving market expectations, while outlining the practical steps and support needed for successful adoption.



India's manufacturing ecosystem confronts a unique pressure point. The urgency of circular economy adoption stems from converging factors. First, India's raw material costs have risen significantly. Manufacturing enterprises typically allocate 40-60% of production budgets to raw materials, a proportion that leaves limited room for margin expansion through traditional efficiency measures alone.[1] Second, waste disposal represents a genuine financial burden. Landfill fees,

transportation, and regulatory compliance costs compound operational expenses, particularly for resource-intensive sectors like textiles, food processing, and metals manufacturing. Third, environmental regulations are tightening. The Plastic Waste Management Rules (2016, amended 2021), the Hazardous Waste Management Rules (2016), and emerging state-level pollution norms create both compliance costs and business opportunities for enterprises demonstrating circular practices.[2]

Most significantly, global supply chain partners increasingly mandate Environmental, Social, and Governance (ESG) compliance from their suppliers. Multinational corporations sourcing from Indian MSMEs now require documented waste reduction, material recovery, and sustainability metrics as conditions for contracts.[3] This shift from voluntary to contractual circular practices from a "nice-to-have" competitive advantage into a practical necessity for enterprises seeking market access.

References: [1] Government of India, Ministry of Micro, Small & Medium Enterprises. Annual Report, 2022-23. (<https://msme.gov.in>)

[2] Ministry of Environment, Forest and Climate Change. "Plastic Waste Management Rules, 2016 (Amended 2021)" and "Hazardous Waste Management Rules, 2016." (<https://pib.gov.in>; <https://moef.gov.in>)

The circular economy reframes the relationship between production, consumption, and waste. Rather than the traditional linear model, extract resources, manufacture products, dispose of waste, circular practices embed resource recovery throughout the product lifecycle. For MSMEs, this translates to three primary mechanisms: maintaining products at their highest utility through repair and reuse; remanufacturing components to original specifications; and recovering material value through systematic recycling. The distinction matters operationally. Reuse and repair preserve the greatest material and embodied energy value. Remanufacturing recovers significant value but requires disassembly and reconstruction. Recycling while important involves material degradation and energy input, making it the “final loop” rather than the preferred strategy.[4]

The Economics and Challenges of Circular Adoption

Cost Reduction and Financial Opportunity

MSMEs pursuing circular practices typically experience cost reductions across three dimensions:

Raw Material Consumption. A plastic packaging manufacturer implementing waste recovery and reprocessing can reduce virgin material purchases by 25-35%, directly affecting the largest expense category in production budgets.[5] However, this requires initial infrastructure investment sorting equipment, cleaning systems, material testing protocols typically ranging from Rs. 10-50 lakhs depending on production scale. Payback periods generally extend to 18-24 months for well-implemented programs.

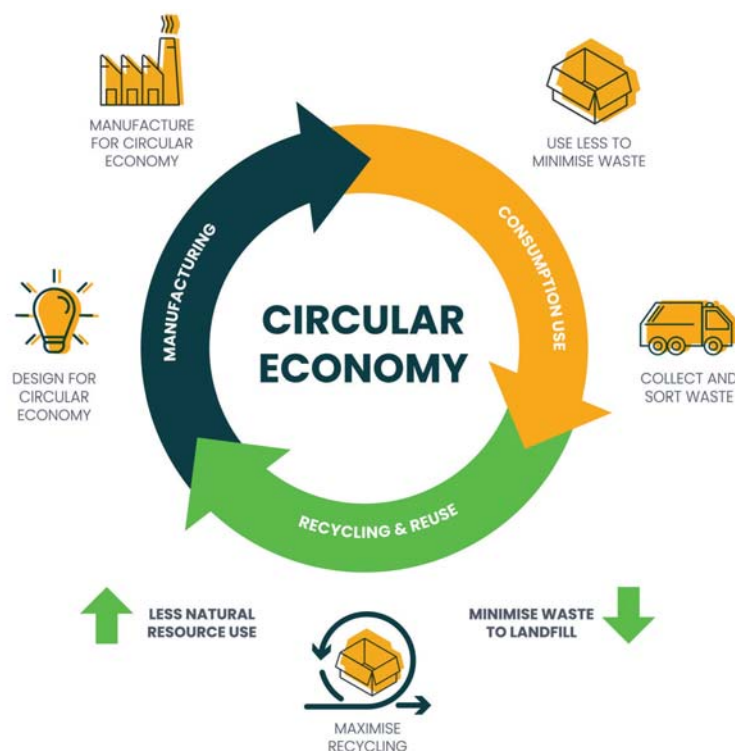
Energy Efficiency. Recycled materials require substantially less energy than virgin extraction and processing. Aluminum recycling, for instance, consumes approximately 5% of the energy required for primary aluminum production from bauxite ore.[6] For energy-intensive sectors, this translates to measurable utility cost reductions. However, the magnitude depends on production scale, energy source, and material type. Small-scale enterprises may realize 10-15% energy reductions; larger MSMEs can achieve 20-30%.

Waste Disposal Costs. Many MSMEs underestimate disposal expenses. Textile dyeing units, for example, may spend Rs. 5-15 lakhs annually on waste treatment and landfill fees. Circular practices such as transforming dye waste into usable pigments can eliminate these costs entirely while generating offsetting revenue. However, this requires market access to byproduct buyers, which is not universally available.

Revenue Generation: Realistic Scope

Circular practices can generate new revenue, but the scale varies significantly by sector and enterprise capability.

Refurbishment and repair services represent the most accessible opportunity. MSMEs with existing technical expertise can establish dedicated refurbishment divisions without requiring fundamentally new operational capabilities. An automotive parts supplier, for instance, can refurbish returned components at 30-40% of original manufacturing cost and resell them at 60-70% of new product prices, capturing price-sensitive market segments. However, this requires quality assurance systems, warranty provisions, and customer education investments that demand



[3] World Economic Forum and Ellen MacArthur Foundation. “Circular Economy Case Studies: India Manufacturing Sector,” 2021.

[4] European Commission. “Circular Economy Action Plan,” 2020.

[5] Case study data from technology deployment programs by Technology Development Board, Government of India, and sector-specific industrial associations (Indian Chemical Manufacturers Association, Indian Textiles Association).

[6] International Aluminum Institute. “Life Cycle Assessment: Recycled vs. Primary Aluminum Production,” 2020.

attention beyond simple operational adjustment.

Material recovery businesses operate on longer timelines. A garment manufacturer systematically collecting fabric waste might establish a secondary yarn or finished goods business. Industry research documents one Delhi-based apparel MSME that successfully transformed fabric waste into an eco-friendly furnishings line, generating 18% profitability improvement and creating 15 additional jobs.[7] Yet this outcome required entrepreneurial capacity, design capability, and existing market relationships/ preconditions not universally present across the MSME sector.

Product-as-a-Service (PaaS) models represent the most sophisticated approach but carry significant financial risks for MSMEs. Rather than selling products outright, enterprises retain ownership and responsibility for end-of-life management, generating recurring revenue. Conceptually compelling, PaaS models involve deferred revenue, inventory carrying costs, and working capital constraints that strain MSME financial structures. Implementation requires access to specialized financing instruments, green credit lines, equipment leasing partnerships, or structured lending



“The strongest pressure toward circularity now comes from outside India’s borders: global buyers are building ESG requirements directly into supplier contracts, turning documented waste reduction and material recovery from a reputational nicety into a condition of doing business. Policy frameworks for circular adoption are multiplying, but the link between stated intent and what actually happens on an MSME shop floor remains weak — closing that gap will take real investment in how information, financing, and technical support reach smaller firms.”

- Dr. Arvind Kumar Yadav,
PHD, Assistant Professor (Economics),
Manipur Central University, MPhil
(Economics)

that remain underdeveloped in many Indian markets.

Implementation Barriers: What MSMEs Actually Confront

Circular economy adoption encounters substantial practical barriers that academic literature and policy discussion often understate.

Technical and Infrastructural Gaps.

Implementing circular practices requires capabilities many MSMEs lack. Automated sorting equipment for waste streams, material testing protocols, and quality assurance systems for refurbished products demand both capital investment and technical expertise. For an MSME with 20-50 employees and limited access to engineering talent, these barriers are not trivial. The availability of such equipment and systems, while improving, remains concentrated in metropolitan regions and established industrial clusters.

Market Access Constraints.

Even when an MSME generates recovered materials or refurbished products, finding buyers requires market networks and quality certifications. A metal casting firm recovering aluminum from scrap faces uncertainty in material pricing; secondary aluminum markets are volatile and dependent on primary metal prices.[8] Similarly, selling refurbished products requires customer confidence in quality and durability, often necessitating third-party certifications that involve recurring costs.

Financial Barriers. Upfront capital requirements for circular infrastructure typically range from Rs. 10-100 lakhs depending on sector and scale. Traditional commercial lending to MSMEs remains expensive (typically 12-18% interest rates) and often requires collateral that small enterprises cannot provide. While green financing initiatives have expanded,



[7] Documented case through Delhi-based MSME cluster development programs and circular economy pilot initiatives (2021-2022). Specific attribution available through Delhi Government’s DSSIDC records.

[8] London Metal Exchange and Multi Commodity Exchange of India data on secondary aluminum price volatility (2019-2023).

uptake remains limited. As of 2022, green credit availability for MSMEs represented less than 2% of total MSME lending in India.[9]

Regulatory Fragmentation. Waste classification, disposal standards, and environmental compliance requirements vary significantly across states. An MSME operating in multiple states confronts differing hazardous waste protocols, discharge norms, and material recovery regulations. This fragmentation increases compliance complexity without creating uniform standards that could justify investment in standardized systems.

economy adoption, though implementation gaps persist.

National Action Plan on Circular Economy. The Government of India's Ministry of Environment, Forest and Climate Change released guidance emphasizing circular principles in manufacturing, construction, and waste management. However, this remains largely aspirational; enforceable standards and mandatory targets for MSMEs are limited.[10]

Plastic Waste Management Rules (2021). These regulations mandate extended producer responsibility (EPR), requiring manufacturers to

Initiatives. For construction and building materials sectors, the NCCBM promotes waste utilization standards and recycled material certification. MSMEs in these sectors can access technical guidance and standardization support through these channels.[11]

State-Level Programs. Several states have introduced targeted support. Karnataka's circular economy framework, Tamil Nadu's waste management initiatives, and Gujarat's industrial waste utilization policies provide varying levels of capital subsidies, technical support, and market facilitation. However,



Organizational Capacity. Circular practices require systemic thinking integrating design, production, waste management, and market engagement. For MSMEs organized around traditional linear operations, this represents organizational change, not merely operational modification. Retraining workforce, redesigning production workflows, and establishing quality controls for recovered materials demand management attention that competing operational pressures often displace.

Government Initiatives and Policy Framework: Current Landscape

India's policy environment increasingly supports circular

manage end-of-life plastic waste. For plastic-using MSMEs, this creates regulatory obligation and cost, but also incentivizes waste recovery and reuse. The rules effectively mandate certain circular practices, though compliance mechanisms vary by state.

Hazardous Waste Management Rules (2016). Particularly relevant for chemical, electroplating, textile, and pharmaceutical MSMEs, these rules impose strict disposal protocols while incentivizing waste minimization and material recovery. Non-compliance attracts penalties and operational closure, making waste management optimization economically rational.

National Council for Cement and Building Materials (NCCBM)

awareness and uptake among MSMEs remains modest, with information gaps limiting access to available support. [12]

Green Credit Lines. The Reserve Bank of India's green finance guidelines encourage commercial banks to extend favorable credit terms for environmental projects. However, actual implementation varies significantly across banks. MSME uptake of green financing remains constrained by limited awareness, collateral requirements, and perceived application complexity.

Technology Incubators and Accelerators. Organizations like the Technology Development Board (TDB) and various state-level innovation

[9] Reserve Bank of India. "Green Finance Report," 2022.

[10] Ministry of Environment, Forest and Climate Change. "National Action Plan on Circular Economy." Government of India publication.

centers provide support for circular technology development. However, these resources primarily serve enterprises with technical innovation capacity, a subset of the broader MSME population. The critical gap: While policy frameworks increasingly exist, the connection between policy intent and MSME-level implementation remains weak. Information dissemination, financial mechanisms, and technical support systems require substantial strengthening to translate policy frameworks into operational adoption.

Pathways to Circular Practice: Sequencing and Realistic Implementation

Rather than presenting circular adoption as a standardized roadmap, a more analytically useful approach examines the logical sequence and realistic constraints of implementation.

First, enterprises must understand their waste streams through a financial lens. The foundation is conducting a material audit: where does waste originate, what is its volume and chemical composition, and most critically, its financial value. For a textile dyeing unit, this means quantifying dye waste volume, measuring treatment costs, identifying potential recovery applications, and assessing market value for recovered dyes or pigments. Without granular understanding of waste streams and their costs, enterprises cannot identify which circular interventions represent genuine economic opportunity versus aspirational sustainability gestures. Many MSMEs cannot articulate their actual waste disposal costs and knowledge gap that prevents rational investment decisions. Initial audits often reveal unexpected financial opportunities in overlooked waste streams.

Second, circular practices achieve greatest impact when embedded



in product and process design. This involves selecting mono-materials over composites, eliminating non-degradable adhesives that prevent disassembly, and designing components for straightforward separation and reuse. Design-level changes typically generate greater waste reduction than end-of-line interventions, but they require investment in product redesign, potentially involving R&D costs and tooling changes. For MSMEs, this represents genuine capital expenditure. However, the payoff reduced material consumption, simplified production processes, enhanced product longevity often justifies the upfront cost. Critically, design changes position enterprises for longer-term competitive advantage rather than short-term cost savings.

Third, enterprises should identify 2-3 high-impact, low-cost interventions with rapid payback periods. Internal scrap capture, water recycling systems, or waste-to-byproduct partnerships with neighboring industries serve both organizational and financial functions. Organizationally, they demonstrate feasibility and build internal support for circular practices. Financially, they

“What stands out to us as investors is that circular economy adoption today tracks balance-sheet strength, not sustainability intent. The MSMEs demonstrating measurable ROI on waste recovery and material efficiency are precisely the ones we find more fundable — cleaner unit economics, lower input-cost volatility, better ESG positioning for export contracts. Until green credit genuinely scales beyond 2% of MSME lending, circular transformation will remain a well-resourced enterprise’s advantage rather than a sector-wide shift.”

- Mr. Rajesh Singla,
Fund Manager & CEO,
Alpha AMC

[11] National Council for Cement and Building Materials. Circular Economy Guidelines for Construction Waste Utilization. (<http://www.nccbm.org>)

[12] State government policy documents: Karnataka Circular Economy Policy Framework (2021), Tamil Nadu Solid Waste Management Rules (State-specific), Gujarat Industrial Waste Utilization Policy (2019-ongoing).



generate cash flow improvements that can fund subsequent investments. For an MSME with constrained capital, sequencing matters. Implementing low-cost waste capture before investing in expensive sorting equipment builds internal capability and generates evidence of financial return.

Fourth, MSMEs must invest in workforce development. Circular practices require skills traditional manufacturing may not develop: repair diagnostics, remanufacturing inspection, material sorting, and quality assurance for secondary materials. Government-supported vocational training programs exist through the National Skill Development Mission and sector-specific skill councils, but awareness and access vary. For enterprises in peripheral industrial clusters or rural areas, formal training infrastructure may be geographically distant, making capability building more challenging and time-intensive.

Fifth, circular practices function only through collaboration. Enterprises must identify suppliers who can provide clean secondary materials, downstream industrial users who can utilize byproducts, and potentially waste collection partners. In established industrial clusters (particularly in Rajasthan,

Maharashtra, Tamil Nadu, and Gujarat), such partnerships often exist; in nascent clusters, they must be deliberately cultivated. Partnership formation requires time, trust-building, and often informal network navigation. Relationships require demonstrated reliability, consistent quality, and mutual benefit, which extends implementation timelines for MSMEs with limited external network capacity.

Conclusion: Evidence, Realistic Scope, and Strategic Imperative

Documented evidence of circular economy impact on Indian MSMEs remains limited. Published case studies exist for garment manufacturers in Delhi, metal casting units in Rajasthan, food processors in Maharashtra but these represent outlier success cases rather than systematic patterns. The enterprises most likely to adopt circular practices tend to be larger MSMEs (employing 100+ workers), technically capable, geographically located in established industrial clusters, and already export-oriented. This matters for policy and scaling: circular adoption concentrates among successful, well-resourced enterprises. While this generates a sector-wide sustainability benefit, it does not represent an opportunity broadly accessible to the broader MSME population. Evidence-based policy must contend with this asymmetry.

The circular economy represents a legitimate opportunity for MSMEs to reduce costs, access new markets, and build resilience against resource price volatility and regulatory change. However, it is not a universal solution applicable across all sectors and enterprise scales at equal cost. For MSMEs operating in established industrial clusters with technical

capability, existing market networks, and access to capital, circular practices offer demonstrable financial and strategic benefits. These enterprises can realistically pursue comprehensive circular strategies.

For micro and small enterprises with limited capital, technical capacity, and market access, circular practice adoption is feasible but constrained. These enterprises benefit most from sector-specific support, government-facilitated waste valorization networks, subsidized technology deployment, and targeted credit mechanisms rather than expecting organic adoption. The policy imperative is not to mandate circular practices but to systematically remove adoption barriers: improving information availability about government support programs, expanding access to affordable financing, creating standardized waste recovery infrastructure in industrial clusters, and establishing market linkages that ensure recovered materials and refurbished products find economically viable buyers.

For MSMEs themselves, the message is pragmatic rather than transformational: examine your waste streams through a financial lens, identify circular interventions with clear payback periods, invest in organizational capability, and pursue partnerships that generate mutual benefit. Circular economy adoption delivers genuine business and environmental benefits, but success depends on realistic assessment of enterprise capacity and targeted removal of structural barriers. The wealth in circular economy adoption lies not in sustainability narratives, but in operational efficiency gains and incremental market expansion that strengthen long-term viability. **bwise**

The CLUSTER Route for Ecosystem Development

Alone, small units struggle to compete, together, in clusters, they become strong enough to export to the world.



There is an old saying that a single stick can be broken, but a bundle of sticks cannot. India's small manufacturers seem to have understood this arithmetic long before any economist wrote it down. Walk through Khurja and you will find pottery units stacked one against the other, kilns firing within shouting distance of each other. Walk through Rajkot and gold jewellery workshops

sit elbow to elbow, karigars sharing lanes, suppliers, even gossip. This is not an accident or overcrowding. It is a strategy, arrived at instinctively, over generations, long before "cluster development" became a line item in a government scheme.

This is the story of that strategy: the Indian MSME cluster, why it exists, what it has achieved, where it still falls short, and why, twenty-three

years into formal policy support, it matters more than it ever has.

What Exactly Is a Cluster, and Why Does It Form?

At its simplest, an MSME cluster is a geographic concentration of small enterprises making similar or related products, often bound together by history, community, and shared skill, more than by any formal contract. Moradabad did not become



a brassware town because a planner drew a line on a map. It became one because one generation of artisans taught the next, buyers began arriving because they knew where to look, and ancillary trades, polishers, packers, transporters, grew up around the core craft like ivy around a wall.

The scale of this phenomenon is easy to underestimate, and hard to pin down precisely, because no single

MSME Sector - Key Economic Indicators	
Metric	Figure
Share of manufacturing output	~35.4%
Share of exports	~48.6%
Share of GDP	~31.1%
Enterprises	Over 7.47 crore
Employment generated	Over 32.82 crore people

Source - Economic Survey 2025-26, tabled in Parliament, 29 January 2026

Cluster Development Programme (MSE-CDP), the flagship cluster scheme - Key Milestones	
Metric	Figure
Projects approved since inception (2003)	606
Projects completed since inception	364
Projects still ongoing	242
Central assistance released for CFCs, last 5 years	₹438.94 crore (Rajya Sabha reply, MoS Karandlaje)
Projects approved & completed, FY2025-26 (till 20.11.2025)	11 approved (₹253.23 cr total project cost; ₹177.52 cr GoI share); 2 completed (PIB Year-End Review 2025, 30 Dec 2025)
CFC projects completed, FY2021-22 to FY2023-24	18 (Rajya Sabha reply, Minister Jitan Ram Manjhi, July 2025)

Sources - (1)–(3) PIB Press Release, 14 March 2026, based on Lok Sabha written reply by MoS Sushri Shobha Karandlaje, 12 March 2026; (4) Rajya Sabha written reply, March 2026 (sansad.in); (5) PIB Year-End Review 2025, 30 December 2025; (6) Rajya Sabha written reply, July 2025 (sansad.in)

SFURTI Scheme - Key Progress Indicators	
Metric	Figure
Clusters approved since 2015-16	513
Committed Government of India assistance	₹1,332.95 crore
Operational clusters, artisans benefited	~3.03 lakh traditional artisans

Source - Lok Sabha written reply, 12 March 2026 (sansad.in)

government census counts “MSME clusters” nationally. What Parliament has been given, in written replies, is the count of clusters actually brought under formal schemes: 606 Common Facility Centre and infrastructure projects approved since MSE-CDP’s launch in 2003, and a further 513 clusters approved under the Scheme of Fund for Regeneration of Traditional

Industries (SFURTI) since 2015-16, together more than 1,100 formally sanctioned cluster interventions, per the Ministry of MSME’s own reply to the Lok Sabha on 12 March 2026. That is almost certainly a floor rather than a ceiling: it counts clusters that have applied for and received government support, not the wider universe of informal, self-organised clusters like

Khurja's or Moradabad's that existed long before any scheme did. Either way, the picture is unmistakable: clustering is not a niche pattern in Indian manufacturing, it is close to the default.

The economic logic behind this was described by Alfred Marshall as far back as 1890, when he observed that firms clustered together gain from a shared pool of skilled labour, from specialised suppliers who serve the whole neighbourhood rather than one client, and from the sheer speed with which ideas travel when competitors are also neighbours. A century later, Michael Porter built an entire theory of national competitiveness on the same observation. Clusters, in other words, are not a modern invention. They are an old truth that policy has only recently learned to support deliberately rather than leave to chance.

What a Cluster Should Actually Be

The word "cluster" gets used loosely, as a synonym for any town where one industry happens to dominate. That looseness is worth resisting, because the policy idea of a cluster, the one this article is built around, means something more specific than "lots of similar firms in one place." Geographic concentration is the

starting condition, not the definition. A cluster, in the sense that matters for MSE-CDP, SFURTI, or the Kohsetsushi and Fraunhofer models, has four features that together separate it from a mere agglomeration: a base of genuinely small, often informal units, not a handful of large firms that happen to share a pin code, since the policy logic only holds if units are individually too small to build institutional-grade infrastructure alone; shared, collectively-owned infrastructure, run through a Special Purpose Vehicle in which member units have a stake, not private assets a large player builds for itself; horizontal cooperation alongside competition, units that compete for the same buyers but still share labour and pool resources for things no single unit would build alone; and a common fate at the gate, where a buyer's due diligence is effectively evaluating the location rather than one firm.

Judging against these four markers, most of India's informally clustered towns, Khurja, Moradabad, Rajkot's jewellery lanes, fit comfortably. Some of the country's most famous "clusters," on closer look, do not, at least not any more.

The Many Faces of an Indian Cluster

If there is one mistake to avoid in discussing Indian clusters, it is treating

No country expects its small firms to build institutional-grade infrastructure alone. The state, sometimes with industry, builds it once, shared, at cluster or sector scale.

them as one thing. They are not. India's cluster map reads like a census of its craft and industrial history, and each type carries its own logic, its own constraints, and its own definition of success.

Traditional and artisan clusters, pottery, handloom, silk weaving, brassware, carry centuries of inherited skill as their real capital. Khurja's black pottery and Varanasi's silk weaving are not just economic activities; they are living inheritances. Here, the challenge is rarely skillful. It is translating that skill into a language modern buyers trust: consistent finishing, safety certification, design that respects heritage while meeting contemporary taste.

Gems and jewellery clusters operate at a different scale of density altogether. Rajkot alone houses an estimated 25,000 small gold jewellery units. The challenge here is less about skill and more about trust at scale, hallmarking, purity assurance, and processes like annealing and ultrasonic cleaning that a buyer in another country has no way of verifying except through a recognised standard.

Engineering and light manufacturing clusters, auto components, metal fabrication, machine tools, live and die by precision. A single micron of tolerance can be the difference





This is not an accident or overcrowding. It is a strategy, arrived at instinctively, over generations.

between a supplier contract and a rejected consignment. What these clusters need is not inspiration but instrumentation: common tool rooms, CNC facilities, and testing labs that verify what the eye cannot.

Textile and apparel clusters face perhaps the sharpest binary of all. Effluent treatment and dye-safety compliance are not a nice-to-have; they are the line between an export order and a closed door.

Food processing and agro-based clusters depend on cold chains, packaging, and food-safety infrastructure, the unglamorous plumbing that decides whether produce becomes profit or spoilage.

Leather and footwear clusters share textiles' central anxiety: effluent, tanning by-products, and the environmental compliance that global buyers now scrutinise as closely as the product itself.

What ties these together is not the product on the shelf but the pattern beneath it: many small, often informal units, working side by side, each individually unable to afford the one piece of infrastructure that stands between them and a serious buyer, and each able to reach it only by standing together.

Why Clusters Need Collective Support

It would be convenient to say that

small firms simply need more capital, and capital would solve everything. It would also be wrong. The real barrier is not scale in general; it is a handful of specific, binary gates.

A testing certificate is not something a buyer discounts if you are missing it - you are simply excluded. An effluent standard is not negotiable for an export order, you either meet it or you do not ship. This is the crux of the cluster argument: the problem an individual small unit faces is not that growth is slower without support, it is that participation itself is denied without it, regardless of how good the actual product is.

The stakes of getting this right have grown, because the sector these clusters

• MSME sector-wide statistics (manufacturing share, GDP share, export share, employment): Economic Survey 2025-26, as summarised in the Ministry of Finance/PIB release of 29 January 2026 (PIB Release ID 2219984).

• MSE-CDP projects approved/completed and SFURTI cluster figures: Lok Sabha unstarred question reply by Minister of State Shobha Karandlaje, 12 March 2026.

sit within has grown. MSMEs now account for an estimated 35.4% of India's manufacturing output and 31.1% of GDP, and their share of the country's exports has climbed to roughly 48.6%, according to the Economic Survey 2025-26. Over 7.47 crore enterprises, employing more than 32.82 crore people, sit within this sector, making it the country's largest employer after agriculture. Every one of those figures is, in effect, an argument for clusters: an economy this dependent on small units cannot afford to let binary gates like certification and compliance quietly exclude them from growth.

There is a second, quieter shift making this even more true today. Global buyers no longer evaluate suppliers one by one. Increasingly, they evaluate an entire cluster, its testing infrastructure, its environmental record, its ability to guarantee consistency across two hundred small, fragmented units feeding a single order. A cluster without shared infrastructure risks being judged, as a whole, unfit to supply, even if half its units are individually excellent. As the old proverb goes, a chain is only as strong as its weakest link, and in a modern value chain, that link is often the cluster's shared infrastructure, or the lack of it.

How Clusters Succeed: The Anatomy of a Working Model

When a cluster does succeed in building the shared institutions it needs - testing labs, common effluent plants, design studios, tool rooms, typically under the umbrella of what policy calls a Common Facility Centre - the change is not incremental. It is qualitative.

In Varanasi, shared testing and finishing infrastructure did not just add machinery to the silk weaving cluster; it changed what a weaver could credibly promise a buyer on the other side of the world. In Khurja, pottery units paired centuries-old craft with modern certification without diluting what makes the craft distinctive, proof



that tradition and standardisation are not natural enemies. In Rajkot, a shared facility costing under seven crore rupees gives an entire bazaar of small karigars access to hallmarking standards that a single unit could never have financed alone. The economics behind these successes rest on three compounding effects. **First, cost-sharing:** an asset unaffordable to one unit becomes affordable when its cost is spread across two hundred. **Second, market access:** shared infrastructure removes the binary gate that otherwise locks out even the most competitive small producer. **Third, agglomeration:** clusters with functioning shared infrastructure attract more specialised labour, more ancillary units, and more buyers who prefer sourcing from a location with demonstrated quality, a virtuous cycle that reinforces itself over time, much as Marshall predicted more than a century ago.

The Tirupur Question: Called a Cluster, Grown Past One

No discussion of Indian clusters is complete without Tirupur, and few examples illustrate the gap between the label and the model as clearly. Tirupur began, in the early twentieth century, as exactly the kind of cluster this article describes: a web of small subcontracting units, knitters, dyers, printers, each doing one stage of production and passing the garment down the chain. That structure still exists at the base. What has changed is the top of it. Decades of export growth have produced a layer of large, vertically integrated exporters that have progressively internalised the very functions a shared Common Facility Centre is meant to provide, building or buying their own dyeing and effluent-treatment process houses rather than pooling resources for a shared one. This inverts the logic the rest of this article rests on: the argument for

• MSE-CDP five-year allocation (₹438.94 crore): Rajya Sabha written reply by Minister of State Shobha Karandlaje (PIB Release ID 2244000).

• FY2025-26 MSE-CDP project-cost and completion figures: PIB "Year End Review 2025: Ministry of Micro, Small & Medium Enterprises," 30 December 2025 (PIB Release ID 2209712).



cluster infrastructure is that a testing certificate or effluent standard is a gate no individual small unit can clear alone, so it must be cleared collectively, but in Tirupur, the units large enough to matter most to the town's export numbers have largely cleared that gate privately, through capital, while the thousands of smaller subcontracting units beneath them still depend on informal networks and get a smaller, more precarious share of the gains.

None of this means Tirupur is not, in any sense, a cluster, it still shows real agglomeration effects: shared skilled labour, dense subcontracting networks, information that travels fast because everyone is a neighbour. But it is closer to a hybrid, part genuine small-unit cluster at its base, part large-firm industrial hub at its top, than to the collectively-owned, jointly-governed model MSE-CDP's Common Facility Centre approach is built to serve.

The idea was right in 1998. It is more right today.

Calling it "the Tirupur cluster" is not wrong so much as imprecise, and it is a useful caution for policymakers: scaling up a cluster's exports and preserving its original small-unit character can pull in opposite directions.

Looking Outward: How Other Nations Have Solved the Same Problem

India's instinct to cluster is not unique, and neither is the policy response required to support it. Every major manufacturing economy has, in its own way, built shared infrastructure for its small firms.

Japan offers perhaps the closest parallel, through its Kohsetsushi centres, roughly 170 local public technology and testing centres run by prefectural and municipal governments, serving manufacturers with fewer than 300 employees, often at nominal fees. Every prefecture has at least one; Tokyo alone has more than twenty. What distinguishes the Japanese model is density and endurance, these centres have been funded consistently for upkeep, not merely built once and left to age, which is a large part of why Japanese small manufacturers have remained reliable, quality-consistent suppliers to much larger firms for decades.

Italy took a different path altogether. Rather than the state building shared facilities top-down, small firms in textiles, leather, furniture, and ceramics organised themselves into consortia and district-level bodies, later formalised by regional law, to jointly manage services, research, and market access. It is cluster development grown from the ground up rather than handed down from above.

Germany's Fraunhofer-Gesellschaft, a network of roughly 75 applied research

institutes, plays a related but distinct role, less shared production capacity, more shared research and technology transfer, funded through a near-even split of government support, research grants, and industry revenue. It gives small Mittelstand firms institutional-grade technical capability they could never build alone, and is widely credited as one pillar of Germany's export strength.

China has leaned on a dense network of state-backed, sector-specific testing and certification platforms, often organised around an industry - software, robotics, marine equipment - rather than a geographic craft cluster, performing a similar quality-assurance function for smaller firms feeding larger supply chains.

The lesson across all four is the same: no country expects its small firms to build institutional-grade infrastructure alone. The state, sometimes with industry, builds it once, shared, at cluster or sector scale. Where India still has ground to cover, particularly against Japan, is density of coverage and, just as importantly, resourcing the upkeep of what has already been built. A well is only useful if someone keeps drawing water from it, and maintaining it.

The Indian Policy Story: Patience as a Virtue, and a Problem

India's cluster development effort has no recent enthusiasm. It traces back to the Technology Upgradation and Management Programme of 1998, was rebuilt as the Small Industry Cluster Development Programme in 2003, comprehensively revised in 2006, and renamed the Micro & Small Enterprises Cluster Development Programme (MSE-CDP) in 2007, with further revisions in 2010, 2013, 2019, and 2022. Twenty-three years of continuous

• FY2021-22 to FY2023-24 CFC completion count (18 projects): Rajya Sabha written reply by Minister Jitan Ram Manjhi, July 2025.

• State-wise cluster development figures (Tamil Nadu, Maharashtra, Karnataka, West Bengal): Parliamentary reply by then-Minister Nitin Gadkari, covering clusters developed FY2016-FY2019.

policy attention is a rare thing in Indian governance, and it deserves recognition on that basis alone.

The scheme is demand-driven: a state government or industry association identifies a cluster, commissions a diagnostic study, and shepherds a project report through appraisal. Government funding currently covers 60–80% of project cost, up to a ceiling of thirty crore rupees, with the cluster's own Special Purpose Vehicle contributing the balance and running the facility thereafter. That leverage is visible in the Ministry's own year-end accounting: in the current financial year alone, as of late November 2025, eleven newly approved projects carried a combined project cost of ₹253.23 crore, of which the Centre's share was ₹177.52 crore, the rest coming from states and the SPVs themselves.

The record, on paper, is respectable: 606 cluster infrastructure projects approved under MSE-CDP since inception, 364 completed, 242 still ongoing, according to the Ministry's written reply to the Lok Sabha on 12 March 2026. A separate, complementary scheme for traditional industries, SFURTI, has approved 513 clusters since 2015-16 with committed government assistance of ₹1,332.95 crore, benefiting an estimated 3.03 lakh traditional artisans, per the same reply. Total allocation under MSE-CDP has been uneven year to year, but Parliament was told ₹438.94 crore was released for Common Facility Centre projects alone over the last five years, against a backdrop where, by the government's own admission in an earlier reply, only 18 CFC projects were actually completed nationwide between FY2021-22 and FY2023-24, a reminder that sanctioned funding and delivered infrastructure do not move at the same pace. On the state-wise spread, the clearest official breakdown on record, covering clusters developed between FY2016 and FY2019, shows Tamil Nadu leading with 12, followed by Maharashtra with 8 and Karnataka with 5.

Both a generous and a critical reading are true simultaneously

A testing certificate is not something a buyer discounts if you are missing it – you are simply excluded.

here. A programme navigating land acquisition, SPV governance among competing unit owners, and state-level coordination is, by its nature, slow, and it continues to add functioning infrastructure every year. But a scheme this mature should, by now, show a tighter gap between what is sanctioned on paper and what is delivered on the ground. Rome, as they say, was not built in a day, but twenty-three years is not a day either.

What Needs to Change

The economics of clustering have never been in doubt; the coordination has. Three changes would move the needle furthest.

Faster sanction-to-delivery cycles.

The gap between a project being approved and a shed actually opening remains the single largest source of wasted potential. Land allocation and SPV governance among unit owners deserve as much policy attention as funding itself.

Resourcing for upkeep, not just construction. More than one study of completed cluster facilities has pointed to the same lesson Japan learned decades ago: infrastructure that is built but under-resourced for maintenance does not deliver its full value. A facility that opens with fanfare and falls into disrepair within a few years has solved nothing.

Density over isolated flagship projects. Japan's near-saturation coverage suggests that many modest, well-maintained facilities may serve small firms better than a few large, showcase ones. India's over 1,100 formally sanctioned cluster projects, across MSE-CDP and SFURTI

combined, are scattered across nearly every state, and the infrastructure meant to serve them should be too.

Why This Moment Matters More Than the Last Twenty-Three Years

Three shifts make cluster infrastructure more consequential today than at any point since 1998. As India pushes for a larger share of global manufacturing, a unit that cannot test its own output cannot credibly sell abroad, however competitive its labour cost. As global buyers diversify sourcing away from single-country dependence, they are evaluating entire clusters as ecosystems, not units in isolation, making shared infrastructure the precondition for inclusion in a global value chain at all. And as manufacturing moves toward digital traceability and automated inspection under what is loosely called Industry 4.0, the gap between what an individual micro-unit can afford and what a modern buyer expects only widens, making shared, cluster-level investment in advanced equipment less a luxury and more a survival requirement.

The Fair Verdict

No man is an island, the poet wrote, and no small manufacturer in India ever truly was one either – even before policy caught up to that fact. The cluster has always been where India's small enterprises found their real strength: not in isolated brilliance, but in shared shoulders.

The idea was right in 1998. It is more right today, given where global trade is heading, and given that the sector these clusters serve now underwrites nearly a third of GDP, more than a third of manufacturing, and close to half of India's exports. What remains is the harder, less glamorous half of the work: not dreaming up new schemes, but finishing, resourcing, and sustaining what has already been sanctioned. In a country that has never lacked craft or ambition, that may be the only ingredient still missing. **bwise**

Building a Water-Efficient Future for MSMEs

For MSMEs, every litre of water carries hidden costs, from energy and treatment to wastewater and maintenance. This article explores how simple, practical water-efficiency measures can cut operating costs, improve resilience and turn water management into a genuine business advantage.

Most factory floors are losing water somewhere. A pipe leaks behind a wall, a tank overflows on the night shift, cooling water runs straight into a drain instead of being routed back into the process, and hot condensate disappears down a pipe carrying both the water and the fuel that was burned to heat it. None of this stops production. Orders still ship, machines still run, and that is precisely why water loss is so easy to overlook.

For most MSMEs, water is treated as a background utility rather than a real cost. A plant manager usually knows down to the cent what goes into power, raw materials, labor, and freight, but water costs are scattered across half a dozen ledger lines and rarely add up to a single, visible number. Consider the actual path one litre takes through a plant: it gets pumped, treated, sometimes heated, used, and then treated again before it can be discharged or reused. When that litre goes down the drain, the water itself is the smallest part of what's being wasted. The electricity, fuel, chemicals, and labor that went into processing it disappear along with it.

This is why water efficiency belongs in the operations budget, not the sustainability report. Getting more work out of every litre you already pay for lowers overheads directly, and it makes a plant less exposed when local water supplies get tight. On thin margins, that difference shows up on the bottom line fast.

The real-world case studies collected in the Compendium on Best Practices on Water Use Efficiency in the Industrial Sector make this point concretely. The collection draws on examples from heavy power, steel,

The water already inside the factory may be worth more than it seems. Reusing, cascading and recycling water can help MSMEs reduce fresh-water demand without investing in expensive systems.

textiles, paper, tires, food processing, and fertilizers. The lesson for smaller operators isn't to copy the expensive systems used by large plants. It's that walking your own lines with a critical eye tends to turn up simple ways to save water, energy, and money together.

The Cost of Water Is Bigger Than the Water Bill

Look at what goes into running a standard boiler. Raw water is bought, treated to specification and heated with fuel until it becomes steam. When condensate is lost or steam leaks out through a worn trap, that water has to be replaced, and the replacement has to be heated from scratch.

Premier Green Innovations Private Limited took this on directly in their boiler loops and steam hardware. By raising their condensate recovery rate from 65 percent to 85 percent, and fixing steam-trap leaks, passing valves, and blowdown routines along the way, they cut both their fresh make-up water needs and their fuel bill.

What matters here isn't the specific equipment Premier Green used. It's the underlying approach. A water fix doesn't need to sit inside an ESG or sustainability line item. It can just as easily be routine maintenance, an energy-saving project, or a quick adjustment to boost output. Once water is tracked as a production input rather than a background utility, the calculation changes.

A plant owner weighing a fix like this usually wants to know the upfront cost, how much water it saves, whether the power bill drops, whether wastewater treatment gets cheaper, and how long the payback period runs. Answering those questions is what turns a vague green initiative into an ordinary business decision.

Speaking at a regional event on water efficiency, Shri Sumant Narain, Joint Secretary at the National Water Mission, pointed to how practical



tools and smarter methods reduce waste while improving output. His comments were aimed at agricultural systems, but the same logic applies to manufacturing: water efficiency comes down to extracting maximum value from every litre already purchased.

None of this requires new hardware as a starting point. It starts with figuring out where the water is actually going.

A basic water audit tracks site-wide consumption, identifies the biggest draw points, locates underground leaks, checks quality requirements at each stage, and flags where water can be rerouted or recycled. Installing simple flow meters at key points brings hidden usage into view, and daily monitoring makes sudden spikes obvious, usually pointing to a split pipe, a stuck valve, an overrun wash cycle, or a habit that's costing more than it should. For a plant that has only ever looked at the end-of-month municipal bill, real-time data like this tends to be an immediate wake-up call.

Leaks work the same way. A dripping fitting looks trivial during a walkthrough, but running continuously across every shift, it adds up to thousands of litres over a year, water that already carried processing costs before it hit the floor. At Tata Power's Jojobera plant, a leaking underground fire line was nearly impossible to locate. Rerouting the pipe above ground made leaks



visible and easy to patch, saving an estimated 65 thousand litres per hour in fresh water.

None of this requires tearing out and rebuilding a plant layout. Maintenance and water management are closely linked. A leaking line, a jammed valve, or a failed steam trap can look like a routine repair ticket, but left unfixed, it bleeds operating cash day after day.

The Water Already Inside the Factory May Be Worth More

Once the obvious leaks are patched and waste is cut, the next question is simpler than it sounds: does every step in the facility actually need fresh, high-purity water?

In most plants, water that's no longer clean enough for a high-spec process is still perfectly usable for a secondary task, as long as it meets basic safety, product quality, and regulatory standards. That's the logic behind water cascading: use the cleanest water where quality genuinely matters, then pass it down to lower-spec jobs that don't need high-purity input.

The Compendium documents several operations that recovered water right before it reached the outflow pipe. In one case, filter backwash that would normally go straight to the effluent plant was settled and treated instead, reclaiming about 65 thousand litres a day. Another fix recovered around 145 thousand litres per day in boiler condensate.

For MSMEs, this calls for a fairly simple shift in thinking. The goal usually isn't finding a new water source, but getting more use out of the water already paid for. Depending on the shop floor, that might mean catching cooling runoff for secondary washdowns, using treated effluent for groundskeeping or utility lines, harvesting roof runoff, or adjusting a wash process to use less fresh water up front.



The specific fix looks different in every factory. A food processor can't approach water reuse the same way a dye house does, and a small machine shop has different requirements than a cardboard mill. But the underlying rule holds across all of them: match water quality to what the process actually needs, instead of running clean tap water into every line out of habit.

This is where the standard Reduce, Reuse, Recycle model earns its place on the shop floor. Reduction comes first: stop buying water that isn't needed and fix the leaks. Reuse comes next: cascade water into lower-spec jobs wherever the process allows it. Full recycling and treatment systems come last, and only once the equipment costs make financial sense. None of this is about pushing every small shop toward an expensive zero-liquid-discharge plant. It's about making better use of the water already inside the walls.

Water Efficiency Is Also Business Resilience

There's a sharper reason MSMEs need to pay attention here: running out of water stops production outright, and no amount of efficient bookkeeping fixes a dry tap in the middle of a shift.

A dry tap does more than raise utility bills. It means paying premium rates for emergency water tankers, shutting down lines, overheating chillers or boilers, delaying wash cycles, and missing delivery dates. It can also mean idle labor, since workers still need to be paid even when the line isn't moving, and it can mean scrambling to explain a missed shipment to a client who has other suppliers to choose from. A large company with multiple plants, backup sources, and deep reserves can usually absorb a temporary shutdown at one site while the rest of the business keeps running. An MSME rarely has that cushion. Working on tight cash flow and strict delivery windows, a single disruption of a few days can be enough to lose a client relationship that took years to build, and one lost account can matter far more to a small plant's annual revenue than it ever would to a larger competitor. That makes water



A leaking pipe, an overflowing tank or wasted cooling water may seem insignificant, but together they can quietly drain operating cash. The first step is simply understanding where the water is going.

efficiency a form of baseline insurance, not a discretionary upgrade. Water saved is less that has to be pumped, stored, and treated in the first place. Water reused reduces how dependent the plant is on any single source, whether that's a municipal connection, a borewell, or a tanker contract. A fixed leak stops a slow, ongoing drain on cash that would otherwise go unnoticed for months. A streamlined process, one that uses less water to begin with, gives the plant more room to absorb a bad week without missing a delivery. Together, these small changes add up to something closer to operational slack: a buffer that lets a business keep functioning when conditions outside its control get worse.

The risk is that all of this usually stays invisible until a supply emergency actually hits. A plant can run fine for years without a second thought about its well or municipal feed, then discover during a heatwave, a monsoon shortfall, or a period of local industrial competition for water, that buying extra tanker water is either ruinously expensive or simply not available at any price. By then, the options are limited and costly. Building efficiency into daily routines well before a crisis hits is less about going green and more about basic risk management, the same instinct that leads a plant to keep a backup generator or maintain safety stock of a critical raw material.

The wider water situation makes this shift increasingly urgent. Speaking at the first Regional Conference on Enhancing Water Use Efficiency in the Irrigation Sector, Ms Archana Varma, Additional Secretary & Mission Director, National Water Mission, highlighted the prevailing water-stress scenario and emphasised the need to strengthen water conservation and water-use-efficiency measures. She also stressed the importance of coordinated action between central and state governments to ensure more efficient use of water. While her remarks were made in the context of irrigation, the underlying concern extends well beyond agriculture: for businesses that depend on a reliable water supply, efficiency is becoming an increasingly important part of preparing for water stress rather than responding to it after a disruption occurs.

From Government Initiative to Factory-Floor Action

Small manufacturers don't have to work this out on their own. The Bureau of Water Use Efficiency (BWUE) is working to bring practical water-saving methods into standard industrial practice, drawing on fixes that are already working on real factory floors. The goal isn't identical equipment for every shop, but a shared habit of measuring usage, cutting clear waste, tuning processes, and sharing what works.

As part of that effort, BWUE published the initial Compendium on Best Practices on Water Use Efficiency in the Industrial Sector, developed with direct input from industry groups. It was released by the Hon'ble Minister of Jal Shakti on World Water Day 2026 and brought together real engineering fixes from across different manufacturing sectors.

The next phase is already underway. BWUE is preparing the Second Edition of the Compendium, scheduled for release during India International

Water efficiency is also business resilience. Saving and reusing water reduces dependence on external supplies and gives factories greater room to withstand shortages, rising costs and production disruptions.



Ms Archana Varma, Additional Secretary & Mission Director, National Water Mission

Water Week (IIWW) 2026, running September 22 to 26, 2026, in New Delhi. This edition aims to expand the library with practical setups from factories not featured in the first book.

For an MSME owner, contributing to this is more than a mention in an official report. It's a chance to document a shop-floor fix and demonstrate that real resource efficiency doesn't require a large corporate R&D budget. A small factory that found a better way to clean parts, recycle wash water, cut line losses, fix a hidden leak, or reuse treated discharge has developed something another plant manager can use immediately.

This is where industry input becomes essential. Government bodies can build the platform, but the actual technical fixes come from the factory floor itself. The second edition is meant to gather those field experiences and turn isolated shop-floor tricks into shared industry practice.

Industry associations have a role to play in identifying and submitting real case studies, using the standard format from the first edition and focusing on units not yet featured, so the book covers broader ground. Clear, high-resolution photos of actual plant setups, piping changes, and equipment help make these write-ups practical enough for other engineers to replicate.

Taking part isn't about compliance paperwork or chasing recognition. It's a useful prompt to ask a simple question about your own operation: what have we figured out here that could help another plant cut its costs?

A fix developed on one factory floor can solve a problem on another. A process change that saves a few thousand litres a month in one plant, copied across hundreds of similar operations, adds up to substantial savings across an entire industrial cluster. That's the real value of a nationwide knowledge-sharing effort: taking solutions that exist in individual factories and making them available more broadly.

The message for MSMEs isn't simply "use less water." It's about auditing where water actually goes, identifying where money is being wasted, tightening the process, and sharing what works. Programs like BWUE and the Compendium provide the framework, but industry leaders need to provide the real-world data.

Industrial water efficiency won't be solved purely through large projects and complex technology. It will be built through thousands of ordinary operational decisions across factories: a technician patching a high-pressure leak, a manager auditing an outdated wash cycle, an owner choosing to recycle cooling water instead of buying more, a business publishing its data so the next plant doesn't have to start from zero.

From One Factory's Solution to Another's

The real obstacle is that many small shop owners simply don't know where to start. Few have dedicated engineering teams, spare cash for unproven experiments, or time to work through dense technical reports. That's exactly why documenting real shop-floor fixes matters.

The BWUE Compendium works as a practical reference drawn from real operating conditions. Its value for an MSME isn't in recommending a particular brand of equipment, but in showing the range of ways plant managers have already solved this problem, from simple valve adjustments and monitoring routines to full water recovery, reuse loops, and line upgrades.

The upcoming second edition extends that by adding more field-tested setups to the public record. For smaller operations, these case studies close the gap between an interesting idea and an actual installation on the shop floor. There's rarely a need to design a custom setup from scratch when another plant nearby has already solved the same problem, tested the plumbing, and confirmed the payback period.



“Refuse Reduce Reuse and Recycle mantra should be adopted in the water sector too strictly in the same order. Best practices include Transition to water less process, water conservation, Reuse within the system followed by treatment and recovery. Recovery and Recycle should be the last option since it is not sustainable technically and financially. Water cannot be looked at in isolation. MSMEs aspiring to reduce their water footprint should do the same with a low carbon footprint and low material footprint. A life cycle assessment should be done for alternatives and the best options should be chosen. With MSMEs contributing to 46% of the exports, products with low Water and carbon footprint is vital not only to be competitive in the global market but also attract private investment and customer base who are increasingly leaning towards green economy. With the looming climate change crisis water and energy security will enable MSMEs to becoming low risk and resilient.”

- Ms. Indumathi M Nambi,
PhD Fellow INAE, Professor,
IIT Madras

That's how efficiency spreads through an industrial district. A fix tested in one machine shop becomes the standard in the next one. A practice adopted in one industrial park gets picked up by a neighboring one. A small maintenance change gradually becomes standard practice across an entire sector.

None of this requires a large capital budget on day one. It starts with a factory owner walking the floor and asking where water is being used that doesn't actually need to be.

The answer might be sitting in a dripping pipe, a valve that doesn't seal properly, an inefficient wash tank, a cooling system dumping warm water down the drain, or a process nobody has questioned simply because it's always been run that way. In other cases, the fix might call for dedicated recovery, basic treatment, or closed-loop recycling. Either way, the starting point is the same: understanding what the water coming through the meter actually costs.

For MSMEs, this is the real shift in thinking. Water efficiency isn't about becoming a zero-impact green factory overnight. It's about tightening operations one line at a time, lowering monthly costs, and protecting the production capacity that took years to build. Every liter entering a facility carries hidden costs: energy to pump it, money to treat it, labor to move it, and another bill when it leaves as wastewater. When that litre goes down the drain unused, all of those costs go with it.

Rather than focusing only on how much water a plant consumes, the more useful question is how much value is being pulled out of each litre it buys. That's the point where water management stops being an environmental checkbox and becomes a genuine operating advantage, and where the cheapest litre of water turns out to be the one a plant never had to buy in the first place. **bwise**

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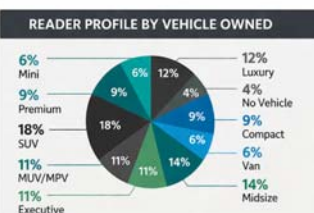
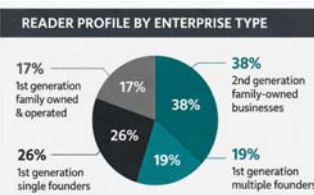
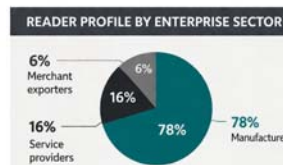
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