CMA DIGEST

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From the Editor's Desk

Dear Readers,

Greetings from CMA!

The August edition brings together a rich blend of perspectives on business, industry and the evolving economic environment. From global geopolitics and economic trends to ethics, customer trust and financial decision-making, the articles offer valuable insights into the opportunities and challenges shaping organisations today.

The insights from the industrial visit to Seshasayee Paper and Boards demonstrate how technology, sustainability, people and professional management can come together to create enduring value.

The edition also turns our attention to emerging opportunities in the waste economy and the evolving role of ISO in organisational effectiveness and strategic performance. Together, these perspectives reinforce a simple message: sustainable success comes from the ability to anticipate change, embrace innovation and remain grounded in values.

We trust that the articles and perspectives featured in this edition will provide readers with valuable insights and contribute to a deeper understanding of the evolving business and economic environment.

Best regards,
Dr. Vandana Madhavkumar
Editor
CMA Digest

CMA
COIMBATORE MANAGEMENT ASSOCIATION

Monday Musings

Monday Musings – 03rd August 2026 Speaker: **Prof. Sreeraman Nandhi**

Why Rest of the World Wants to Trade and Collaborate with India

Prof. Sreeraman Nandhi, in his talk on *"Why the Rest of the World Wants to Trade and Collaborate with India,"* spoke about the significant changes in the global geopolitical environment after COVID-19. The Russia–Ukraine war, the election of Donald Trump as US President in 2025, the emergence of Asia, the expansion of the BRICS bloc, and the US–Israel–Iran conflict are among the developments that have contributed to a more volatile and uncertain global environment.

He noted that these geopolitical disruptions have accelerated the shift towards a **multipolar world**. Geopolitical relations and economic policy positions are expected to be the key factors shaping the future global environment.

Prof. Nandhi observed that geopolitical relations are likely to be shaped by distinct blocs rather than loose alliances. Middle powers such as **India, Brazil, Australia and the UAE** will also play an important role in shaping these relationships. In this context, India has emerged as an important country on the global map. Political stability over the past decade, initiatives such as **Viksit Bharat** and **Make in India**, the new era of Free Trade Agreements, evolving trade policies, and India's diplomatic relationships with several countries have strengthened its position and made India an increasingly important partner for global trade and collaboration.

Monday Musings – 10th August 2026 Speaker: **Dr. P. Pon Meenakshi**

"Global Economy 2026: Storm or Sunrise" Essential insights for Business leaders in a changing World

Dr. Pon Meenakshi, in her talk on *"Global Economy 2026: Storm or Sunrise,"* examined the key economic trends, risks and opportunities likely to shape 2026.

She highlighted the rapid growth of artificial intelligence and the possibility of an AI bubble arising from high valuations and excessive investment. Persistently high or rising interest rates could place further pressure on financial markets. She also discussed the affordability crisis, particularly rising housing and consumer costs, which could contribute to continued inflation and higher interest rates.

The presentation noted that markets outside the United States may perform better in 2026, with emerging markets potentially attracting investors due to relatively attractive valuations and growth opportunities. Quality stocks may also regain importance as investors increasingly focus on financially strong and resilient companies.

China remains a concern, with weak domestic conditions and increasing pressure from exports potentially adding to international tensions.

Political changes, deregulation and declining immigration were also identified as factors that could affect economic growth and financial markets.

Overall, the presentation highlighted that 2026 may present both risks and opportunities, requiring businesses and investors to remain cautious and focus on longer-term economic trends.

Monday Musings – 17th August 2026 Speaker: **ManiRanjitham P**

Beyond the Numbers: Ethics and Integrity

Ms. Mani Ranjitham P, in her talk on "Beyond the Numbers: Ethics and Integrity," highlighted the importance of ethics and integrity in organisations. She emphasised that sustainable success depends not only on financial performance but also on the quality of decisions, behaviour and governance practices. Decision-making, she noted, is contextual and requires consideration of stakeholders, timing and possible consequences.

As organisations grow, increasing transactions, complexity and operational pressures make strong controls, accountability, transparency and a culture that encourages employees to speak up essential for managing risks. Through workplace scenarios, participants examined issues related to confidentiality, conflicts of interest, vendor relationships and reporting of misconduct.

The session also covered key findings from the **ACFE 2026 Report to the Nations**, including common fraud and integrity risks such as corruption, asset misappropriation, financial statement fraud, workplace misconduct and technology- and data-related compromises. The report estimates that organisations lose around 5% of their annual revenue to fraud, with reported losses exceeding US$3.4 billion across the cases studied.

Participants were also introduced to the evolution of fraud theories, including the **Fraud Triangle** (Pressure, Opportunity and Rationalisation), **Fraud Diamond** (adding Capability) and **Fraud Pentagon** (adding Arrogance). These frameworks provided an understanding of the factors that can contribute to fraud and the importance of strengthening prevention, detection and governance mechanisms.

The session concluded by highlighting the role of ethics in building trust and accountability and supporting sustainable organisational growth.

Monday Musings – 24th August 2026 Speaker: **Prof. S. B. Srinivasan**

TURN CUSTOMER MOMENTS INTO TRUST

Every Customer Engagement Is a Trust Opportunity

Prof. S. B. Srinivasan, in his talk on "Every Customer Engagement is a Trust Opportunity," highlighted that every customer interaction creates a memory and that organisations need to consider what kind of memory they are creating. The session explored how every customer engagement can either strengthen or erode trust.

Customers experience an organisation as one integrated entity, rather than through its individual departments. Although Sales, Marketing, Branding, Service and Operations may function separately, customers experience one brand and one overall experience. When something goes wrong, they generally experience the outcome without distinguishing which department was responsible.

Prof. Srinivasan emphasised that trust is built through the customer's actual experience. While promises create expectations, it is execution that determines whether those expectations are met. Behaviour shapes experience, repeated experiences build trust, and trust can contribute to market leadership.

Using the examples of **CaratLane and Gillette**, he illustrated how small decisions can influence customer trust. While the CaratLane example showed how protecting a process can affect trust, the Gillette example demonstrated how employee ownership and empathy can strengthen customer relationships.

The session also introduced the **3-Circle Confluence of Sales, Marketing and Branding**, highlighting how alignment among the three can improve demand, experience and perception, with trust emerging when they converge.

The session concluded with the message that **every customer touchpoint is a brand moment, and everyone in the value chain has a role in shaping it**. The brand is ultimately reflected in the choices employees make in their interactions with customers.

Monday Musings – 31st August 2026 Speaker: **Venkatesh R**

The need for financial advisory in businesses

Mr. Venkatesh R, in his talk on "The Need for Financial Advisory in Businesses," highlighted that borrowing is an important decision for any MSME or corporate. It is not simply about obtaining funds from a bank or financial institution; it involves long-term commitments relating to interest, repayment, security, conditions and other associated requirements.

He emphasised that the first responsibility of a financial advisor is to assess whether borrowing is appropriate for the client and, more importantly, to identify the **"right fit."** This includes selecting the right bank or financial institution, determining the right amount, negotiating appropriate pricing and terms, and choosing the right financing structure—whether working capital, term loan, project-based, funded or non-funded facilities.

The basic principle of financial advisory, he noted, should be **"Do what is right by the client."** This requires three key qualities: **knowledge, relationships and ethics**. Financial advisors need knowledge of financial products, banking and lending processes, as well as an understanding of different business models and industries. Strong professional relationships and continuous networking are equally important. Above all, ethical conduct and consistency between one's values, words and actions are essential for building a strong reputation.

Drawing an analogy with a medical doctor, Mr. Venkatesh explained that a financial advisor must understand the client's concerns, assess the situation, diagnose the requirement, recommend an appropriate solution and follow up. The advisor's role is therefore not merely to facilitate borrowing, but to protect the client's financial interests and recommend what is appropriate for the business.

With around 40 banks serving approximately 6 crore MSMEs and 18 lakh corporate companies in the country, he observed that there is considerable scope for financial advisors specialising in business borrowings, with the need for such services expected to grow further.

Report on the 18th Industry Visit to M/S. Seshasayee Paper and Boards Limited, Pallipalayam, Erode, Tamil Nadu – 638007, on Saturday, 8th August 2026

The 18th Industrial Visit for the Management Committee Members and Faculty Representatives of Students' Chapter Institutions was successfully organized by the Coimbatore Management Association (CMA) on Saturday, 8th August 2026, to M/s. Seshasayee Paper and Boards Limited (SPB), Pallipalayam, Erode, Tamil Nadu.

The visit was organized with the objective of providing participants with practical exposure and valuable managerial insights into the operations of one of India's traditional and highly reputed industrial organizations.

SPB represents a remarkable corporate journey, having successfully navigated several economic and business challenges over the decades while continuing to grow through professional management, technology adoption, operational excellence, sustainability, and strong organizational values.

CMA specifically selected Seshasayee Paper and Boards Limited for this industrial visit because of its extraordinary journey and remarkable achievements. The company was established on 18th September 1960, when its foundation stone was ceremonially laid by the former Prime Minister and the then Minister of Commerce and Industry, Shri Lal Bahadur Shastri, in the presence of Shri K. Kamaraj, Chief Minister of Madras State, and Shri R. Venkataraman, Minister for Industries, Madras State.

The company commenced commercial production in December 1962 with the commissioning of a 20,000 tonnes-per-annum integrated facility at its Erode unit, comprising a Pulp Mill and two Paper Machines (PM-1 and PM-2). The facility was capable of producing writing, printing, kraft and poster varieties of paper.

Today, as SPB enters its seventh decade, the company continues to demonstrate resilience, innovation and sustainable growth. It's Mill Development Project – III (MDP-III), implemented during the challenging years of the COVID-19 pandemic at a project cost of ₹288 crore, was successfully completed.

Major upgradation works were undertaken in the Chemical Recovery Plant, Wood Pulp Mill, Paper Machine-5, Paper Machine-2 and Paper Machine-4.

These facilities are now operating at their designed capacities and efficiencies. Remarkably, the entire project cost was funded through internal accruals, along with the prepayment of term loans availed by the company.

The major objectives achieved through the project include:

- Increase in paper production capacity to 1,65,000 tonnes per annum.
- Increase in pulp production capacity to 1,54,000 tonnes per annum.
- Upgradation of the Recovery Island.

- Successful entry into the multi-layer boards segment by modifying two machines for board manufacturing.

A 20-member delegation visited the manufacturing facility at Pallipalayam, Erode, where the participants were briefed on the remarkable growth story of the SPB Group.

The delegates learned how the organization had built a strong reputation over more than seven decades through its emphasis on technology adaptation, quality, sustainability, employee welfare, customer satisfaction and social commitment.

The delegation was also introduced to the inspiring entrepreneurial journey of Shri S. Viswanathan, the Founder of SPB. Affectionately known as SV, he was a lawyer who became a freedom fighter and subsequently an industrialist. His vision, integrity, determination and foresight laid the foundation for an enduring industrial legacy.

Today, his values and vision continue under the leadership of Shri N. Gopalaratnam, Chairman, who carries forward the organization's commitment to excellence, progress and sustainability.

During the interaction session, Shri Ganesh B. Bhadti, Executive Director – Operations & Projects, explained the enormous potential of the Indian paper industry.

He indicated that the Indian paper industry has a market size of more than 1 lakh crore, with annual production of approximately 25 million tonnes, a growth rate of around 7% CAGR, and employment generation for more than 2 crore people, both directly and indirectly.

An interesting discussion took place regarding the increasing global emphasis on paperless administration and the perception that paper production necessarily leads to deforestation.

Shri Bhadti explained that almost 100% of the wood used by SPB is procured from cultivated lands through sustainably managed agro-forestry plantations, many of which are FSC (Forest Stewardship Council) certified. The company also continuously promotes tree cultivation and afforestation programmes.

He further highlighted that approximately 70% of the raw material used for paper production is recycled fiber. SPB also works extensively with farmers to promote the cultivation of fast-growing tree species. The company's engagement with the farming community extends to several lakh farmers.

The discussion provided the delegates with a broader perspective on sustainable paper production and challenged some commonly held perceptions regarding the relationship between paper consumption and deforestation.

Shri Srinivas, Director – Finance & Secretary, explained the distinctive operating model of SPB as a completely integrated pulp and paper manufacturer, covering the entire process from fiber to finished paper.

One of the notable operational achievements highlighted was the plant's capacity utilization of approximately 110%, which the company strives to maintain consistently. This contributes to higher productivity per employee and improved operational efficiency.

He explained that SPB implemented phased Mill Development Programmes (MDPs), making significant capital investments while maintaining a strong financial discipline and a policy of being debt-free.

The management also emphasized the importance of maintaining a low asset turnover ratio and ensuring that capital investments generate sustainable long-term growth. It was highlighted that the approximate capital expenditure requirement for SPB is around ₹65,000 per tonne of production, compared with an estimated ₹90,000 to ₹1,10,000 per tonne for competitors. This cost advantage, according to the management, contributes significantly to SPB's competitive position.

The delegates were particularly impressed by the company's high level of automation and end-to-end digitization. Digital systems have been integrated across the organization, beginning with raw-material inward processes and extending through manufacturing, marketing and sales.

The delegates were also briefed on the strategic diversification undertaken by the SPB Group into several complementary businesses.

The Group has significant interests in:

- Ponni Sugars, with a strong presence in the sugar industry and an important role in supplying bagasse as a raw material to SPB.
- High Energy Batteries (India) Limited, engaged in advanced energy solutions for specialized and critical applications.
- SPB Projects and Consultancy Limited, providing innovative engineering solutions and consultancy services.
- The Group's manufacturing facility at Tirunelveli, with an annual production capacity of approximately 90,000 tonnes, which was acquired and subsequently amalgamated with SPB in 2012.
- Seshasayee Institute of Technology, an engineering institution offering various engineering programmes, including Paper Technology, thereby contributing to the development of technically skilled manpower for the paper industry.

Following the informative interaction session, Dr. P. Marimuthu, General Manager – R&D/Technical Services, and Shri Radhakrishnan, Chief Manager – Chemical Recovery took the delegates on a guided tour of the paper manufacturing facility.

The delegates had the opportunity to witness a world-class paper manufacturing facility equipped with advanced machinery and technologies sourced from different parts of the world. The visit provided valuable first-hand exposure to the various stages of pulp and paper manufacturing, chemical recovery, automation, process control and quality management.

One of the interesting aspects observed by the delegates was the presence of startup companies and strategic business partners within the plant ecosystem. These organizations functioned as suppliers and contractors associated with SPB. This approach enabled the company to ensure the timely supply of raw materials, efficient execution of contracts, consistent quality and long-term relationships with its business associates. The delegates appreciated this collaborative approach as an innovative model for developing a strong and reliable industrial ecosystem.

Safety emerged as one of the key areas of emphasis during the plant visit. The delegates observed that safety norms are implemented very strictly throughout the manufacturing facility, without compromise. Continuous training is provided to shop-floor employees to strengthen safety awareness, operational discipline and quality consciousness. The systematic approach to employee training demonstrated the organization's commitment to protecting its workforce while maintaining high standards of productivity and product quality.

The delegates were particularly impressed by SPB's approach to water management and its contribution to the surrounding farming community. The plant consumes approximately 20,000 cubic metres of water per day, equivalent to around 40 cubic metres per tonne of paper produced. The wastewater generated during the manufacturing process is appropriately treated and subsequently supplied to nearby farmers for irrigation. The treated water reportedly supports irrigation across approximately 2,000 acres of agricultural land, free of cost. This initiative provides substantial support to the farming community and represents an excellent example of industrial operations being integrated with community welfare. The delegates also learned that farmers benefiting from these initiatives cultivate sugarcane, which is subsequently supplied to Ponni Sugars, another Group company. This demonstrates an interesting circular linkage between industry, agriculture and community development.

Another significant historical aspect shared with the delegates was the role played by SPB Founder Shri S. Viswanathan in the establishment of Tamil Nadu Newsprint and Papers Limited (TNPL). During 1979, at the initiative of the then Chief Minister of Tamil Nadu, Dr.M.G.Ramachandran, Shri S. Viswanathan was instrumental in establishing a world-class paper mill for the Government of Tamil Nadu at Karur. TNPL has subsequently developed into one of the prominent industrial enterprises in the state, with a substantial business scale.
This episode further demonstrated the wider contribution of SPB's leadership and expertise to the development of the paper industry in Tamil Nadu.

Shri Ramakrishnan, Chief Manager – Cost Accounts, and Secretary & Correspondent of SPB Matriculation and Higher Secondary School, elaborated on the organization's commitment to employee welfare and social responsibility.

SPB has undertaken several notable welfare and CSR initiatives, including:

- Providing accommodation for a significant number of employees in a well-planned residential colony.
- Running a school for the children of employees and workers.
- Providing drinking water facilities to nearby villages.
- Providing lift irrigation facilities to the local farming community.
- Supporting contract farming initiatives.
- Undertaking various community development activities.

These initiatives demonstrate the organization's commitment to creating value not only for its shareholders and customers but also for its employees and the communities surrounding its operations.

The entire industrial visit was meticulously coordinated by Shri Ramakrishnan, Chief Manager – Cost Accounts, beginning from the initial communication received from CMA. The programme was scheduled and executed with remarkable precision. The minute-by-minute coordination, systematic plant visit arrangements and detailed interaction sessions reflected the high degree of professionalism and commitment demonstrated by the SPB team.

The delegates greatly appreciated the hospitality, openness and willingness of the SPB management to share its modern management practices, operational insights and organizational experiences.

The industrial visit provided the delegates with a unique opportunity to witness first-hand the functioning of a professionally managed organization driven by values, technology, sustainability, operational excellence and social responsibility. This visit also provided the delegates with several valuable managerial and organizational lessons, particularly in the areas of:

- Leadership and visionary management.
- Technology adaptation and continuous modernization.
- Strategic capital expenditure planning.
- Operational excellence and high-capacity utilization.
- Automation and end-to-end digitization.
- Quality management and process efficiency.
- Sustainable sourcing and environmental responsibility.
- Water conservation and resource optimization.
- Employee welfare and continuous training.
- Strategic supplier and contractor partnerships.
- Community development and CSR.
- Financial discipline and debt-free growth.

- Diversification and long-term business strategy.

With nearly seven decades of industry experience, robust infrastructure, strategic location advantages, a diversified product portfolio and an unwavering commitment to quality and innovation, Seshasayee Paper and Boards Limited continues to strengthen its position as a leading organization in the paper industry and as an important part of a diversified business group.

The visit also demonstrated how a traditional industry can continuously reinvent itself through technology, innovation, professional management and responsible business practices while remaining strongly connected to its employees, business partners, farmers and the wider community.

At the conclusion of the visit, the delegates expressed their sincere gratitude to the President and Secretary and CA. Ramji, the senior member of the Coimbatore Management Association for organizing such a meaningful, informative and well-structured industrial visit and expressed their desire that CMA continue organizing similar knowledge-enriching industrial visits in the future.

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Bridge Conclave – 24th August 2026

The CMA Bridge Conclave 2026 was held on 24 August 2026 at Sri Ramakrishna Institute of Technology, Pachapalayam, Coimbatore, from 10.30 a.m. to 1.00 p.m. The conclave brought together industry professionals, academicians and students and provided an opportunity to understand industry expectations, emerging trends and the skills required to prepare for the workplace. The speakers included **Dr. Nithyanandan Devaraaj,** Managing Partner, SAA Enterprises; Qualified Independent Director/Board Member; Due Diligence & Capability Assessor; former Managing Director of German and Japanese MNCs; and President, CMA; **Dr.N.Raveendran,** Vice President – Enterprise-wide Solutions (CIO), Sakthi Finance Ltd./ABT Industries Ltd., and Vice President, CMA; **Mr. Janakiram Raju; CA S. Meena**; and **Mr. R. Varadarajan**, Rajshree Sugars & Chemicals Limited. The session was anchored by **Mr. Puneet Krishnan,** Secretary, CMA.

Management Quiz August 2026

Q1. What is meant by a "Slump Sale"?
Q2. What does Grey Market Premium (GMP) refer to in the context of an IPO?
Q3. What is Merchant Discount Rate (MDR)?
Q4. Adani Wilmar is now officially known as:
Q5. Which British brewer has re-entered the Indian market after an absence of more than six decades?
Q6. What is India's current Total Fertility Rate (TFR)?
Q7. Which global active-wear brand is Reliance Brands Limited set to launch in India?
Q8. Wipro Consumer Care & Lighting has acquired a 60% stake in which skincare brand?

For answers see page 13

The Waste Economy: India's Quiet USD 12 Billion Opportunity

The Waste Economy: India's Quiet USD 12 Billion Opportunity

Garbage, for most investors and business leaders, remains one of India's least examined infrastructure stories. Yet beneath the country's approximately 62 million tonnes of municipal solid waste generated every year, a resource-recovery industry projected to reach nearly USD 12 billion by 2030 is taking shape. The businesses that learn to design and integrate this system, rather than merely service individual parts of it, could define the sector's next decade.

waste was still seen mainly as a sanitation or environmental issue and not generally accepted as serious commercial subject. But the sector deserves closer attention. Across conversations with investors, operators and policymakers, we repeatedly encountered the same underlying problem: regulations existed, capital was available and technology could be sourced, but the operating system connecting these elements was incomplete.

A manufacturer could not fulfil its Extended Producer Responsibility obligation because there was no authorised recycler within an economically viable distance. A hospital was paying a substantial premium for biomedical-waste disposal because the nearest Common Biomedical Waste Treatment Facility was three districts away. A waste-to-energy project had capital, technology and a municipal contract, but poor feedstock quality restricted the plant to approximately 40% of its designed capacity. The problem was not a lack of intent or investment. The system architecture was broken.

The global context makes this failure more striking. The world generates nearly 2.24 billion tonnes of municipal solid waste annually, but less than one-fifth undergoes meaningful recovery. The recoverable value permanently destroyed, including metals, plastics, organics and rare earths, is estimated at USD 80–120 billion every year. At the same time, the global waste-management industry is valued at approximately USD 2.08 trillion. An industry of this scale spends enormous capital on collection, transportation and disposal while recovering only a fraction of the value embedded in the material it handles. This is no longer merely an operational-efficiency issue; it is a systems-level design failure and, simultaneously, one of the largest untapped opportunities within the circular economy.

India presents a particularly important paradox. The country has established the Solid Waste Management Rules 2016, E-Waste Management Rules 2022, Biomedical Waste Management Rules 2016, Plastic Waste Management Rules 2022 and Battery Waste Management Rules 2022. Yet only around 30% of municipal solid waste undergoes formal processing. The regulatory architecture is substantially in place, but the enforcement and processing infrastructure required to activate it remains inadequate. Formal capacity being developed today is therefore being built ahead of a demand wave that regulation has already created, but has not yet fully delivered.

International experience shows that technology alone does not determine performance. Germany recovers approximately 67% of materials and has made landfill use almost negligible, while the European Union average is close to 48%, supported by formal collection exceeding 90%. The difference lies in consequence-driven enforcement, producer accountability through EPR, sustained infrastructure investment and the integration of informal workers into the formal system. These are the institutional foundations on which recovery technologies become economically effective.

India's waste value chain is fragmented across segregation, collection, transfer, sorting, processing and final disposal. These activities are managed by different institutions operating with different incentives, data systems and performance measures. A weakness at one stage degrades the economics of every stage that follows. The annual losses identified in our analysis include USD 8–12 billion of material value from inadequate source segregation, USD 1.5–3 billion of revenue from the collection gap, USD 1–1.5 billion of avoidable transfer and transportation costs, USD 1.5–2 billion from sorting and Material Recovery Facility discounts, USD 0.7–1.2 billion from processing assets operating at only 40–60% utilisation, and more than USD 2.4 billion in deferred liabilities arising from non-compliant disposal sites.

The most important intervention is source segregation. When organic waste is mixed with dry recyclable material at the point of generation, contamination progressively becomes irreversible. India's urban source-segregation compliance rate is approximately 45%. Every 10-percentage-point improvement in compliance can reduce downstream processing costs by 15–20%, while simultaneously increasing the value of recovered material. This demonstrates why processing plants cannot be evaluated independently of their upstream collection and feedstock architecture.

The sector's economics are equally counterintuitive. The most visible activities are not necessarily the most profitable. Collection and transportation generally operate at EBITDA margins of 5–10%. Margins rise to 15–25% in Material Recovery Facilities, 20–30% in waste-to-energy, 25–40% in e-waste processing, and 30–40% in pharmaceutical and biomedical waste management. Technology platforms and the integration layer can potentially generate margins exceeding 40% at scale. Mid-chain recovery opportunities, including e-waste, biomedical waste, battery recycling, MRF networks and EPR-compliance platforms, offer indicative target IRRs ranging from 22% to 40%.

E-waste illustrates this value-recovery opportunity particularly clearly. Global e-waste generation reached approximately 62 million tonnes in 2022, growing at 4–5% annually, while only 22.3% was formally collected and recycled. India generates around 3.2 million tonnes of e-waste each year, making it the world's third-largest generator. This annual stream contains more than USD 2.4 billion of embedded recoverable value at 2025 prices, yet formal recyclers capture less than 20% of it.

The concentration of recoverable metals is remarkable. Mobile phones contain approximately 4 grams of gold per tonne of devices, compared with only 1–4 grams per tonne of mined gold ore. Urban mining can therefore offer gold concentrations 50–100 times higher than conventional mining. The decisive competitive differentiator is processing technology: hydrometallurgical systems can achieve gold recovery rates of 95–99%, compared with 60–80% through conventional smelting. When this capability is combined with EPR-backed processing fees, the resulting business model becomes more defensible. Compliance revenue can form the base case, while recovered-metal sales provide commodity-linked upside.

Attero Recycling provides an operating example of this model, with 500,000 tonnes of licensed capacity, more than 250 EPR clients across 12 export markets, and a hydrometallurgical processing backbone. Its significance lies not merely in scale, but in the combination of technology, regulatory compliance and multiple revenue streams.

Battery recycling is the next extension of the urban-mining opportunity. The first substantial wave of end-of-life electric-vehicle batteries is expected between 2028 and 2032. Operators investing in lithium-ion recycling capacity today are positioning themselves ahead of a regulation-driven feedstock cycle that is likely to expand significantly. The estimated window to build ahead of this wave is only three to four years. Early investment can create advantages in technology, approvals, feedstock relationships and

EPR-compliance infrastructure.

Waste-to-energy presents a different investment proposition. India currently has 14 operational plants against an estimated requirement of more than 200, while utilisation of available potential remains at approximately 6%. The bottleneck is not simply capital or technology; it is the sequence in which infrastructure is being developed and the quality of contractual risk allocation.

Mixed Indian municipal waste frequently has calorific value below 1,200 kcal per kilogram, while most plants require approximately 1,500–2,000 kcal per kilogram. Large-scale energy conversion cannot operate reliably unless segregation and Refuse-Derived Fuel pre-processing are established first. RDF also creates an independent off-take opportunity through the cement industry, which is targeting a 25% thermal substitution rate by 2030. Municipal concessions must additionally provide longer tenors, indexed tipping fees, assured feedstock standards and enforceable payment-security mechanisms. Waste-to-energy is therefore best understood as a sequencing and contract-design challenge, rather than merely a technology problem.

Biomedical and pharmaceutical waste have a more structurally protected demand profile. India generates approximately 800–900 tonnes of biomedical waste every day, with volumes growing at 7–8% annually. Around 198 Common Biomedical Waste Treatment Facilities are registered, although the gap between registration and active operation remains significant outside major cities.

Hospitals cannot avoid generating biomedical waste, nor can they use informal disposal channels without exposure to criminal liability. Standard biomedical waste commands approximately 8–15 per kilogram, while specialised pharmaceutical streams, including cytotoxic compounds, hormones and expired injectables, command 25–50 per kilogram. The authorisation process for a new treatment facility takes approximately 18–24 months, creating a meaningful regulatory moat. Consequently, EBITDA margins of 30–40% among leading facilities are not merely the result of exceptional operating performance; they are supported by captive demand, route density, compliance-led pricing and high barriers to entry.

Technology is also changing the economics of the entire chain. AI-based route optimisation has produced 20–25% savings in fuel and maintenance in Indian smart-city pilots. IoT-enabled bins have improved collection efficiency by 20–40% and reduced overflow incidents by 60–70%. AI-driven optical sorters can process more than 80 items per minute with accuracy exceeding 95%, while blockchain-based EPR traceability is improving the credibility of compliance certificates and could eventually enable them to develop into tradeable financial instruments.

The larger opportunity, however, is not any single technology. It is the integration layer connecting material-flow tracking, incentive coordination, compliance management, processing capacity and data monetisation within one operating architecture. The future waste-management company may resemble a technology and financial-information platform that also manages the physical movement of material. The data generated by that network could ultimately become more valuable than the tipping fees collected.
The risks should not be underestimated. Feedstock quality remains the highest-probability and highest-impact risk across waste-to-energy, composting, RDF and MRFs. Municipal contracts can weaken otherwise viable projects through inadequate tenors, poor tariff design and uncertain payment security. Technology investments may underperform in operating environments without adequate training and accountability. Non-EPR e-waste and battery-recycling volumes remain exposed to commodity prices, while poorly planned formalisation can displace informal workers without securing the collection networks they currently support.

None of these risks is a structural reason to avoid the sector. They are reasons to design investments more carefully. Stronger models will secure feedstock before deploying capacity, build close to regulatory moats, treat compliance-linked income as the base case, structure commodity revenue as upside and create long-term contractual protection around capital-intensive assets.

India does not require another round of broad regulation. It requires credible enforcement, wider development of transfer stations and systematic replication of successful municipal systems such as the Indore model. For operators, the economically sound sequence is to begin with high-value recovery and then integrate backwards to secure feedstock. For capital providers, the opportunity lies in identifying where regulatory demand, infrastructure scarcity, processing capability and data ownership converge.

The fundamental shift is from waste handling to system integration, from compliance administration to capital formation, and from treating discarded material as a disposal problem to designing it as a resource-recovery system. The companies and cities that make this transition first will not merely participate in India's waste economy. They will shape how it operates for the next several decades.

FUTURE FORWARD – ISO 9001:2015 → 2026

Dr Nithyanandan Devaraaj
Managing Partner – SAA Enterprises
Qualified Independent Director/ Board Member, Due Diligence & Capability Assessor
Former MD of German & Japanese MNCs

Thanks to the Organizations I was with, was amongst the earliest Adopters of ISO as a Management System. Despite being long associated, I always wonder about the task & tussle in adherence to the Systems, let alone the visible benefits the Organization reaps from having an ISO Certified Management System. Many a times, I have noticed that Management Systems survive in isolation even with the supposedly strong commitment by the Top Management.

At shop level, People to a considerable extent, have found ISO Management Systems more an interruption than a saviour. Due to which, in Majority of the Organizations ISO remains a fad than a realistic Management Tool. Having certified for ISO is widely believed to have its advantages – from Market and Customer perspective, as a Tool to Attract and sometimes, a Tool to Retain.

Personally, and professionally, I have always believed, and of course demonstrated as well, that any System adopted with conviction by the Top Management and promulgated all across the Organization brings in highly desirable results, consistently. Key is the holistic absorption as part of DRMs, and certainly not in parallel. Success of any Management Tool in an Organization, I strongly attribute to Top-Down Approach.

The Genesis:

India emerging as a Manufacturing Hub and a Bankable Market necessitated a common platform for people to assess capability and capacity of Organizations for collaborative working, Branding apart. Any Good Organization Run Professionally certainly had documented system for their own Monitoring, Control and Management, even prior to introduction of ISO. It was easier for such Organizations to quickly convert to ISO Systems and Procedures. What started as a Privileged Tool, over the Years ISO became a common platform, facilitated by proliferation of Certifying Bodies. From Manufacturing, ISO as a Standard, moved across Industries including Educational Institutions. More than a Quality Management System, ISO is now considered to be an Effective Organization Management System, beyond that of Process Management.

Transitions:

Certain industries looked at ISO quite critically, identified certain insufficiencies as a common tool. Starting with Automotive Sector, every Sector aspired to bring in more stringent requirements specific to their sectors in the name of User Protection and Safety. Those remain specific due to both Cost and Convenience of universalization across Industries.

Over the years, evolution of consumer aspirations and consumer protection movement called for further strengthening of ISO. As an Organization, ISO picked up the good and practicable necessities from those of Industry Specific standards. Periodical Changes were made in Standards and imposed through various clauses. From mundane paper work, ISO became an **Operational Tool** and, in the process, evolved from being a **Reactive to a Proactive Tool**.

Evolutions:

As an Intrapreneur, I have always enforced an **Integrated Working, focused on Effectiveness beyond Efficiencies**. Silos are certainly needed to bring focus and efficiency, without which may result in Organizational disarray – meaning fixing of **Responsibility & Accountability**.

In more than a decade that passed, **impact of Businesses on the Stake Holders** necessitated a System beyond that of Organization. ISO recognized this need and included as part of the standards calling for **ESG Focus and Risk Mitigation**, both for the benefit of the Organization and the Stake Holders. As we move into the future, the changes envisaged alongside AI evolution leaves no choice but for the ISO and its Constituent Organizations to be prepared for.

As a result, expect ISO to move ahead of Monitor and Control to that of Leadership and Performance. Built on the fundamental framework Resilience, Sustainability, Digitalization and Value Creation, Culture Building and Business Process Transformation will be the salient aspects. ISO may thus become a Strategic Tool, whether it provides a Long Run Sustainable Unique Advantage or not.

Remarks:

ESG induced 3P (People – Planet – Profits) approach has forced upon Businesses to demonstrate Sustainability by way of Consistent Performance. While it is a choice now until the new ISO standard becomes effective, it will be more a compulsion to retain the Certification.

People, Processes & Systems should synergize for Organizational Effectiveness. Success of any Tool will continue to remain **People Determined**. In my experience, though the Auditors and Assessors play a key role in successful implementation at a Client, Tools have always been beneficial to the Organization, even if there are No Sayers.

It is a debate for another time – whether ISO assures success and helps to improve Profitability. Such a question arises with very many ISO Certified Organizations unable to sustain Businesses, resulting in Closures. But one thing is for sure – if ISO is adopted whole heartedly, it will at least help us to be prepared at appropriate time and take course corrections. It's worth the investment – interims of Time, Money and Efforts.

Jai Hind.

Nithin

""Management is efficiency in climbing the ladder of success; leadership determines whether the ladder is leaning against the right wall."

— Stephen R. Covey

"Management is about persuading people to do things they do not want to do, while leadership is about inspiring people to do things, they never thought they could."

— Steve Jobs

Quiz Answers

1. Transfer of an entire business or distinct business unit as a going concern for a lump-sum price
2. Price at which IPO shares are traded in the grey market before stock exchange listing
3. Fee paid by businesses to banks/payment service providers for processing digital transactions
4. AWL Agri Business Limited
5. Lion Brewery Co.
6. 1.9
7. Fabletics
8. Dermatouch