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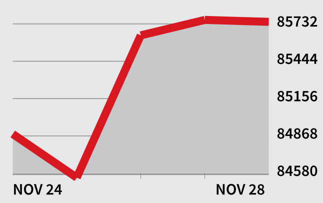

IN FOCUS

	Week's close	Week's change
Nifty 50	26202.95	+134.80
P/E Ratio (Sensex)	23.38	+0.13
US Dollar (in ₹)	89.30	-0.18
Gold Std 10 gm (in ₹)	126084.00	+3431
Silver 1 kg (in ₹)	164359.00	+13230

CLOSING THE GAP. India aims to narrow its widening trade deficit with Russia, prioritising new export avenues during Putin's visit **p3**

AT A CROSSROADS. The government's SIM-binding norms are likely to disrupt communication for travellers **p10**

BENGALURU - CHENNAI - COIMBATORE - HUBBALLI - HYDERABAD - KOCHI - KOLKATA - MADURAI - MALAPPURAM - MANGALURU - MUMBAI - NOIDA - THIRUVANANTHAPURAM - TIRUCHIRAPALLI - VIJAYAWADA - VISAKHAPATNAM

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MONDAY SPECIALS.

BRANDLINE

How Indian apps became marketing machines

Indian apps have evolved from simple utilities into powerful marketing environments where every interface element — icons, banners, colours and gamified cues — is used for personalised advertising. This "native interface branding" drives revenue but raises concerns about data use, transparency and cognitive overload. p6

PULSE

Govt drafts rules for safer medical device software

India's draft guidelines for regulating medical device software aim to strengthen safety, cybersecurity and data protection amid rising digital connectivity and hacking risks. Industry leaders welcome clarity on software as a medical device and software in a medical device but stress the need for data safeguards and greater regulatory capacity. p9

Centre to table Bill for new national security, health cess

RESOURCE BOOST. New levy to support defence fund and health schemes

Shishir Sinha
New Delhi

The Union government plans to introduce a new cess for national security and public health, with Finance Minister Nirmala Sitharaman set to table a Bill on Monday. Though not many details are available about the Bill, it seems the cess is expected to replace the compensation cess under GST on tobacco, which is to cease soon.

This is one of the two new Bills listed for introduction on the first day of the winter session.

According to the Lok Sabha's list of business, Sitharaman will seek approval to introduce the Health Security se National Security Cess Bill, 2025, which aims to "augment the resources for meeting expenditure on national security and for public health and to levy a cess for the said purposes on the machines installed or the processes undertaken by which specified goods are manufactured or produced".

POWERING CRITICAL NEEDS

- Allocation for defence in FY26 is over ₹6.18 lakh cr
- Regular tension on borders necessitates more funds
- Allocation for health in FY26 is around ₹1 lakh crore
- National Health Policy recommends spending on health at 2.5% of GDP

If this cess is levied on tobacco and tobacco products, the government will be able to maintain the effective rate of GST on tobacco post the rationalisation exercise.

Post Operation Sindoor, the government has stressed the need for additional resources.

Earlier this year, a Parliamentary panel noted that a Future Warfare Fund had been created within the armed forces, and a Future Analysis Group is proposed to study emerging technologies and their impact.

The government has repeatedly said that funding will not be a constraint for defence needs.

On public health, the government is implementing multiple schemes, including the flagship Ayushman Bharat, which provides ₹5 lakh annual cover per family for secondary and tertiary care to 55 crore beneficiaries (12.37 crore families), representing the bottom 40 per cent of India's population. Demand for higher health allocations remains strong.

Currently, income tax carries a four per cent Health and Education Cess. Petrol and diesel attract two cesses — Agriculture Infrastructure & Development Cess and Road & Infrastructure Cess — while tobacco also carries a cess.

Revenues from such levies are not shared with the States, often drawing strong criticism.

EXCISE LAW OVERHAUL

The second Bill proposes to update the colonial-era Central Excise Act, 1944, for the GST era, with no plan to expand the tax base.

Excise duty currently applies only to crude petroleum, petrol, diesel, ATF, natural gas and tobacco products.

Winter session to see debates on SIR

With the Opposition insisting on a discussion on the Special Intensive Revision (SIR) of the voters list, the government is likely to face the heat during the upcoming winter session of Parliament, which is set to begin on Monday. While the SIR continued to dominate the all-party meeting proceedings, other issues like national security in the wake of the Delhi blast and labour codes were also raised by the leaders.

Details p2

BL poll: Economists expect 25 bps repo rate cut on Dec 5

Piyush Shukla
Mumbai

The Reserve Bank of India's (RBI) monetary policy committee (MPC) will likely reduce benchmark policy repo rate by 25 basis points (bps) to 5.25 per cent on December 5 on account of benign inflation and an expected slowdown in GDP growth in H2FY26, nine out of 15 economists polled by *businessline* said.

"This year, the story has been about growth overshooting and inflation undershooting. Therefore, the upcoming RBI rate decision remains a close call. But given the lingering risks on growth (in H2FY26) and inflation expected to remain well below 4 per cent until Q3 FY27, we see that there may still be a chance of another 25 bps rate cut at the upcoming policy," said Sakshi Gupta, Principal Economist, HDFC Bank.

Upasna Bhardwaj, Chief Economist, Kotak Mahindra Bank, said the sharply higher than expected Q2FY26 GDP growth was broad-based but came on the back of a very low deflator. The single digit nominal GDP growth continues to signal tepid underlying activity, she said, adding that despite the high real GDP growth, the bank retains its expectations of 25 bps repo cut on account of inflation trajectory being benign. India's GDP grew at 8.2 per cent in Q2FY26, highest in the last six quarters, backed by robust growth in the manufacturing and services sector. Retail inflation, as measured by the consumer price index (CPI), meanwhile, fell to 0.25 per cent in October 2025, lowest in the current CPI series.

"We expect the MPC to cut repo rate by 25 bps enabled by benign outlook on inflation on subdued food prices and realised inflation consistently holding below the RBI baseline forecast. We expect the MPC to maintain the neutral stance. Strong growth momentum and inflation bottoming out obviate the need to change the stance at this stage," said Gaurav Kapur, Chief Economist, IndusInd Bank.

Close call, but the ayes have it.

Entity	Will RBI cut repo rate by 25 bps
State Bank of India	No
HDFC Bank	Yes
Bank of Baroda	No
Kotak Mahindra Bank	Yes
IndusInd Bank	Yes
RBL Bank	No
IDFC First Bank	No
NABFID	Yes
CRISIL Ratings	Yes
ICRA Ratings	No
India Ratings & Research	Yes
CAREEdge Ratings	Yes
SBI MF	Yes
Anand Rathi Group	Yes
Infomerics Valuation and Ratings	No

CASE FOR NO RATE CUT

Madan Sabnavis, Chief Economist at Bank of Baroda, said given that monetary policy is forward looking and inflation in Q4FY26 and FY27 is likely to be in the 4 per cent plus region, yielding a real repo rate of 1-1.5 per cent, the policy rate appears to be at a fair level.

Anitha Rangan, RBL Bank's Chief Economist, said the bank did not expect a rate cut in the next meeting as externalities and currency pressure are on the high. "Having spent over $20 billion in the spot market in Oct-Nov, a rate cut would be a waste of reserves. Also, growth is not necessarily slow. Rate cuts do not necessarily revive growth, other policy measures have far more impact. With banks having a challenge with deposits, incremental transmission will be a problem."

As SEBI weighs ending spread offsets, stock derivatives margins may surge on expiry

Akshata Gorde
Mumbai

The Securities and Exchange Board of India (SEBI) is considering a proposal that could increase margin requirements for single stocks derivatives by 30-60 per cent on expiry days, as the regulator looks to align stock-derivative rules with index contracts, according to people familiar with the matter.

The potential rise mirrors the margin offsets traders typically receive for calendar spreads. Clearing data show that these offsets often reduce effective margins by one-third to more than half for many stock-futures spreads.

Removing the benefit on the day the contract expires would, therefore, require traders to post substantially more capital during market hours, instead of carrying the lower margin until the 3.30 pm close.

A SEBI source said the aim is to "align the calendar spread treatment for single stocks derivatives with that for index derivatives and the cross margin framework for index derivatives".

The regulator removed the expiry-day benefit for index derivatives from February 1, but the rule was never extended to stock futures and options.

SEBI is expected to issue a draft circular seeking public comments soon.

TIGHTER LIQUIDITY

Market participants say this could tighten expiry-day liquidity. Traders, who run leveraged spread positions, may need to unwind earlier in the session if they cannot bring in additional margin, leading to thinner order books, wider spreads, and more abrupt position closures near the close.

Under the current system, traders can hold both legs of a spread throughout the session with lower margins, even though one leg will expire after closing.

When that leg lapses post-market, the margin requirement "increases substantially due to expiry of one leg, leaving the other leg open," an industry source said. The resulting jump occurs only after the session ends.

This creates a risk window for brokers. "Trading members do not have recourse to square off the client's position for margin shortfall as the market is already closed for the day," the source said.

The remaining position remains open with thin margin, which creates risk for the broker due to overnight price movements.

By withdrawing the spread benefit on expiry day itself, clearing corporations would need to collect higher margins intra-day.

This would reduce overnight exposure for brokers but increase the need for real-time margin calls. Some fear reduced participation from smaller or cash-constrained traders, who often rely on spread offsets to keep capital requirements manageable.

SEBI did not respond to an email seeking comments.

THE KING IS BACK!

RECORD MARCH. Virat Kohli celebrates his century during the first ODI against South Africa at the JSCA Stadium in Ranchi on Sunday. The 36-year-old former skipper blasted 135 off 120 balls, hitting 11 fours and seven sixes, playing a major role in India's win by 17 runs. This is his 83rd century in international cricket PTI

IIT-M incubator hits 500 start-ups, ₹53,000 cr valuation

Academic incubator's companies have filed over 700 patents to date

Sindhu Hariharan
Chennai

India's deep tech entrepreneurial ecosystem is growing rapidly with a single academic incubator now housing 500 start-ups whose funded portfolio valuations collectively exceed ₹50,000 crore.

The IIT-Madras Incubation Cell (IITMIC), early backer behind successes such as Ather Energy, Uniphore and Agnikul Cosmos, has reached 500 incubated start-ups in 12 years of its operation with the funded cohort valued at ₹53,000 crore ($6 billion), a scale comparable to long-standing angel funds.

The incubator's companies have filed over 700 patents to date.

"We have incubated 500 deep tech start-ups and have done so without diluting the quality. It is a result of the sheer number of applications we are seeing from of deep tech entrepreneurs across the country, both within the IIT ecosystem and externally," Dr Tamaswati Ghosh, CEO, IITM Incubation Cell, told *businessline*.

Dr Tamaswati Ghosh, CEO, IIT-M Incubation Cell

Almost 60 per cent of the start-ups incubated are from outside the IITs, she added.

STRONG EXITS

Spanning manufacturing tech, robotics, space-tech, IoT, mobility, biotech and more, the portfolio includes over 105 start-ups that have raised pre-Series/Series A+ capital.

Around 40 per cent are revenue generating, together clocking ₹4,000 crore in FY24. Notable names include Ather, Uniphore, Medibuddy, Hyperverge, Stellapps (MooPay), Planys, Agnikul and Galaxeye. Launched in 2012-13, when academic incubators were few — IIT-Bombay's SINE being the major predecessor — IIT-MIC is now among the select incubators with exits.

While it has fully exited unicorns like Uniphore and Medibuddy through secondary sales/acquisitions, it recently realised over 32,000 per cent returns from a partial exit in Ather Energy during the EV maker's IPO.

"There are close to 10-15 companies where we are likely to see full exits in next 4-5 years," Ghosh said.

SCALE & QUALITY

She added that increased structured support in the pre-incubation stage at the institute had helped IIT-MIC scale up both in quantity and quality.

IIT-M also has a School of Innovation and Entrepreneurship, which houses its pre-incubator Nirmaan that hosts over 120 pre-venture teams working on deep-tech technologies.

While IITMIC earlier took about 5 per cent equity, it now holds around 3 per cent. Running like a frugal start-up, IITMIC gets a boost from alumni donations. "CSR donations from corporates are a key source of our funding, and more companies should consider this CSR avenue," said Ghosh.

Civil Aviation Ministry to back AERA in HRAB dispute at Delhi, Mumbai airports

Rohit Vaid
New Delhi

The Centre has decided to support the Airports Economic Regulatory Authority of India (AERA) in the long-running dispute over how the Hypothetical Regulatory Asset Base (HRAB) should be calculated at the Delhi and Mumbai airports, sources told *businessline*, adding that the move may not necessitate the hiking of passengers' user fee.

Besides, the Ministry of Civil Aviation's (MoCA) decision comes as the matter has entered a major legal phase, with the case now listed before the Supreme Court. The top court will hear the matter on December 3.

Sources said that the government's position was aimed at addressing concerns over potential tariff shocks for air travellers.

"The clarity in MoCA's argument should strengthen AERA's stand in the Supreme Court," sources said. At present, AERA has challenged a Telecom Disputes Settlement and Appellate Tribunal (TDSAT) ruling in the Supreme Court.

LEGAL HURDLE

The regulator's appeal follows a July 2025 order, in which TDSAT struck down AERA's method for computing HRAB, a key input for aeronautical tariffs and user development fees (UDF).

AERA later warned that enforcing the ruling could add over ₹50,000 crore to airport charges — recoverable through tariffs and UDF — potentially triggering sharp passenger fare hikes at both airports.

"The financial implications are steep," sources said. Industry assessments suggest UDF for domestic passengers at Delhi airport could jump from ₹129 to ₹1,261 — nearly a 900 per cent increase.

At Mumbai airport, the charge could rise from ₹175 to ₹3,856 — over 2,100 per cent higher.

The dispute dates back to 2012-13, when Delhi International Airport Ltd (DIAL) and Mumbai International Airport Ltd (MIAL) challenged AERA's HRAB calculations in tariff orders.

PAST RULINGS

In 2018, TDSAT upheld AERA's methodology, ruling that HRAB applied only to aeronautical assets.

The Supreme Court concurred in 2022 but directed the Tribunal to reconsider a MoCA letter dated May 24, 2011, which DIAL and MIAL claimed supported their interpretation.

"During the remanded proceedings, MoCA clarified that the 2011 letter did not endorse the operators' view and made no reference to including non-aeronautical revenue in HRAB," sources said.

Nevertheless, in July 2025, TDSAT struck down AERA's computation and ordered a fresh recalculation of tariffs, potentially allowing airports to recover substantially higher sums from passengers.

AERA'S STAND

AERA maintains the ruling is factually incorrect, legally untenable and beyond the Supreme Court's 2023 remand directive. It filed its appeal on July 31, 2025.

Meanwhile, DIAL and MIAL have submitted counter-affidavits claiming MoCA's decision not to appeal signals acceptance of TDSAT's view, a claim the Ministry has rejected.

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QUICKLY.

NSE, BSE slap ₹5.42 lakh penalty on MTNL

New Delhi: Stock exchanges NSE and BSE have imposed a penalty of ₹5.42 lakh on state-owned debt-ridden telecom firm MTNL for not complying with the norms related to the composition of the board. MTNL, in a regulatory filing, said it is required to appoint four more independent directors as per the norm, but it has been unable to do so. "This is to inform you that MTNL has received letter ... dated November 28, 2025 from NSE and email/letter ... dated 28.11.2025 from BSE regarding non-compliance with the provisions of Regulation 17(1) of SEBI (LODR) Regulations, 2015, respectively, i.e., non-compliance with the requirements pertaining to the composition of the Board. In this regard, both NSE and BSE have imposed fines on MTNL amounting to ₹5,42,800," the filing said. The penal amount comprises basic fines amounting to ₹4.6 lakh and GST at the rate of 18 per cent, amounting to ₹82,800. PTI

Mahindra Homes to come under firm's Lifespaces

Mumbai: Mahindra Lifespace Developers Ltd (MLDL) will pay Actis Mahi Holdings (Singapore) Pvt Ltd (AMHSPL) ₹86.40 crore for acquiring the latter's 25.65 per cent stake in Mahindra Homes Private Ltd (MHPL). Upon the completion of this transaction, MHPL would become a wholly-owned subsidiary of MLDL and, in turn, a step-down subsidiary of Mahindra & Mahindra Ltd. The transaction is expected to be completed by the year-end. A share purchase agreement was executed on Saturday amongst AMHSPL, MLDL and MHPL, which is a real estate company engaged in the development of residential projects. OUR BUREAU

Parliament's winter session likely to see heated discussions on SIR

FACE-OFF. Opposition decries shortest session in history, govt appeals that Houses should not be stalled

Shishir Sinha
New Delhi

With the Opposition insisting on a discussion on the Special Intensive Revision (SIR) of the voters list, the government is likely to face the heat during the upcoming winter session of the Parliament, which is set to begin on Monday.

Meanwhile, the government has sought cooperation from the Opposition for smooth functioning of both the Houses.

The government called an all-party meeting on Sunday, which was chaired by Defence Minister Rajnath Singh. BJP president and Union Minister JP Nadda, Parliamentary Affairs Minister Kiren Rijiju, and his two deputies Arjun Ram Meghwal and L Murugan, were in attendance, along with leaders of 36 political parties.

While the SIR continued to dominate the meeting proceedings, several other issues like national security in the wake of the Delhi blast and labour codes were also raised by the leaders. Some raised the point of federalism, alleging that Governors sat on Bills passed by the State legislatures and that funds of Opposition-ruled States were being blocked.

IN ATTENDANCE. Union Ministers Rajnath Singh, JP Nadda, Kiren Rijiju, Arjun Ram Meghwal and L Murugan during the all-party meeting in New Delhi on Sunday. Congress MPs Gaurav Gogoi and Jairam Ramesh were among those present ANI

'SHORTEST SESSION'

"This is the winter session of Parliament and everyone should think and conduct themselves with a cool mind," Rijiju told reporters after the two-hour long meeting. "Parliament should not be stalled and it should function smoothly. The government will keep discussing with all parties to ensure smooth functioning of the House," he said.

Asked if the Opposition's demand for a discussion on SIR would be accepted, Rijiju said the agenda would be decided by the Business Advisory Committee (BAC).

Congress leader Jairam Ramesh termed the all-party meeting "a mere formality" and said the Narendra Modi government had made its intentions clear by listing a subject for discussion for a short duration without consulting the Opposition.

"This 15-day session will be the shortest in Parliament's history. The Modi government has listed 13 Bills for passage. Of these, one replaces an ordinance and two have gone through a committee of the Lok Sabha. So, 10 Bills have not been examined by the Standing Committee concerned," he said.

"We will not allow the House to function if discussion is not held on SIR," Samajwadi Party leader Ramgopal Yadav told reporters. He also highlighted reports about BLOs who killed themselves "as if they had been told to delete specific votes".

Trinamool Congress leader Kalyan Banerjee said his party was ready to cooperate in running the House provided the treasury benches respond with similar gestures. "The government should allow a discussion on issues such as SIR; 40 people have lost their lives conducting the SIR exercise," said Banerjee. Tiruchi Siva of the DMK said the Opposition is united in demanding a discussion on SIR.

Set up finance body, tech fund to promote green economy, CII tells govt

Our Bureau
New Delhi

The Confederation of Indian Industry (CII) on Sunday called for a holistic green transition through the setting up of a dedicated finance institution and tech expo fund.

Chandrajit Banerjee, Director-General, CII

"As India strides forward on its path of green transition, it is imperative to have a holistic approach to decarbonisation where transition finance, circularity and a robust ESG reporting ecosystem are prioritised, in addition to the focus on renewables and green mobility," Chandrajit Banerjee, Director-General, CII, said in a pre-budget submission.

The Budget for the fiscal year 2026-27 is likely to be presented on February 1, 2026.

GREEN FINANCING

India needs an estimated $1 trillion in green investments over the next 10-15 years, cumulatively reaching nearly $10 trillion by 2070, to achieve the goal of net-zero emissions by 2070. However, current green finance flows cover only about 25 per cent of this need, highlighting significant gaps in long-term, low-cost capital availability.

The industry body suggested the establishment of a Green Finance Institution (GFI) to mobilise largescale, low-cost capital for India's green transition across renewable energy, clean mobility, green buildings and industrial decarbonisation.

This could be structured as an intermediary (not a balance-sheet lender) and seeded by multilateral development banks, sovereign wealth funds and philanthropies, entailing no direct fiscal outlay from the government.

"The institution could be domiciled in the Gift City to leverage regulatory flexibility and attract foreign capital. It could offer concessional loans, equity support, credit guarantees and securitisation of small-scale green assets to reduce project financing costs," read a CII statement. Another suggestion was about setting up a 'Green Tech Expo Fund'.

"The fund could support participation of Indian enterprises engaged in producing green technology in global sustainability and technology expos, facilitating collaborations with global investors, buyers and technology partners," said the industry body.

The chamber further recommended mandatory recycling and urban-mining targets for lithium batteries and electronics with strict certification to curb unprocessed scrap exports.

"Fiscal incentives and fast-track clearances could be facilitated to boost domestic refining capacity and strategic stockpiling of recovered critical minerals," it said.

RECYCLING PUSH

According to CII, initiatives must extend beyond EVs and renewable energy to include the ones promoting the critical elements of green financing, simplifying environmental regulations for industry to boost compliance and making buildings more environment friendly.

Karnataka HC restores 'Yezdi' trademark to Classic Legends

Our Bureau
Mumbai

The Karnataka High Court has ruled in favour of Boman Irani in the Yezdi trademark dispute, overturning a single-judge order passed in 2022 that restrained Classic Legends from using 'Yezdi' after the official liquidator of the mark's first owner, Ideal Jawa, claimed rights over it.

The Bench, hearing the appeal, observed that the registrations for the brand 'Yezdi' obtained by Irani were valid and comply with the Trade Marks Act.

Classic Legends, which manufactures Yezdi, stated that it was a landmark victory. The brand name Yezdi traces its roots to the Parsi family legacy in Iran.

"Yezdi in Persian signifies wind as a guiding force, a fitting name capturing one of the undeniable joys of motorcycling. Boman Irani's father drew the Yezdi insignia on a piece of paper when Jawa's original licensing agreement with Ideal Jawa ceased in 1969, coming up with India's original motorcycle brand to continue producing the iconic machines," the company stated.

INTANGIBLE RIGHTS

The verdict observed that trademarks are intangible rights. Unlike physical property, they don't inherently persist.

"The verdict feels much more momentous than a fateful personal victory for my family's legacy. It reaffirms the perseverance in keeping heritage brands alive never goes unrewarded," said Irani, Co-founder of Classic Legends and Chairman and MD of the Rustomjee Group.

Mahindra & Mahindra owns a 60 per cent stake in Classic Legends, while the balance is held by Anupam Thareja's Phi Capital and real estate developer Irani.

The three had come together to revive the iconic brands in 2018. "The honourable Karnataka High Court judges have brought their astute understanding to a case which will redefine India's IPR legal disputes. It will discourage unwarranted and unfair hurdles to trademark ownership. The verdict proves that sincere efforts to keep alive legacy brands are worth pursuing and vindicates the winning spirit that Boman and Anupam bring to Classic Legends' mission of reviving Yezdi," said Anand Mahindra, Chairman, Mahindra Group.

India Post releases stamp on Nippo Batteries Founder P Obul Reddy

Our Bureau
Chennai

India Post has released a customised commemorative 'My Stamp' honouring the birth centenary of industrialist and Nippo Batteries Founder Pottipatti Obul Reddy.

The stamp was unveiled by Manoj M, Director of Postal Services, in the presence of Prathap C Reddy, Founder & Chairman, Apollo Hospitals Group, at a special event in Chennai.

LEGACY

Obul Reddy was behind the Indo-Japanese collaboration with Matsushita (Panasonic) in 1972, leading to the founding of Indo National Ltd (Nippo Batteries).

TIME STAMP. (from left) Preetha Reddy, Executive Vice Chairperson, Apollo Hospitals Group; Vijay Kumar Reddy (son of Obul Reddy); Prathap C Reddy, Founder & Chairman, Apollo Hospitals Group; Manoj M, Director, Indian Postal Service; and Suneeta Reddy, MD, Apollo Hospitals Group, at the event BIJOY GHOSH

Under his leadership, Nippo became the second-largest dry-cell manufacturer in India, producing nearly 800 million batteries annually.

"Obul Reddy's work at Indo National showed the nation what Indian enterprise could achieve when integrity and purpose lead the way, and his philanthropy and patronage of Carnatic music reflected a life devoted to giving back," said Prathap C Reddy.

Indians returning to *swadeshi* goods: PM on 'Vocal for Local'

Shishir Sinha
New Delhi

Prime Minister Narendra Modi on Sunday hailed the success of the 'Vocal for Local' campaign during the festive season. He also highlighted the growth of the honey business in India.

"This year, when you went to the market for festive shopping, you must have noticed one thing. People's preferences and the goods brought into their homes, clearly indicated that the country was returning to *swadeshi*. People were willingly choosing Indian products," Modi said in his monthly radio broadcast *Mann Ki Baat*. Further, he called for continuation of this during shopping for Christmas and New Year.

Modi chose the occasion to highlight the success of one of India's locally grown industry — honey.

'BETTER SWEET'

According to Modi, India is setting new records in honey production, which has grown to 1.5 lakh tonnes from 76 thousand tonnes in 11 years. Also, exports have risen over three-fold in the last few years.

Under the Honey Mission programme, Khadi Gramodyog distributed over 2.25 lakh bee boxes. This had provided employment opportunities to thousands of people.

"In Jammu and Kashmir, honeybees produce a unique honey from wild basil, also known as *sulai*. This honey is called *Ramban Sulai* honey. A few years ago, *Ramban Sulai* honey received the GI tag," he said.

DK Shivakumar denies rift with CM, says Congress is united in Karnataka

Our Bureau
Bengaluru

Deputy Chief Minister DK Shivakumar on Sunday dismissed talk of any rift with Chief Minister Siddaramaiah, asserting that the Congress leadership is working unitedly with its eyes on the 2028 Assembly elections.

Speaking to reporters near his Sadashivanagar residence, Shivakumar said he did not indulge in groupism or backdoor politics, and insisted that the BJP's allegations were mere noise. He added that he and the CM were discussing an all-party meeting on key agrarian issues.

He also clarified that his recent trip to Delhi was part of consultations on maize and sugarcane issues. "We need to discuss these with the State's MPs. I believe we should call for an all-party meeting in Delhi. We need to see the Chief Minister's view. All State Ministers also need to be there," he said.

COMMON GOAL

Tensions within the Congress escalated after the government crossed its mid-term mark on November 20, but the situation appears to have eased following a breakfast meeting between the senior leaders. After the meeting, Shivakumar said, "We are loyal soldiers of the party. The party is in a difficult stage at the national level. We will fight the 2028 and 2029 elections together under the leadership of Mallikarjun Kharge and Rahul Gandhi. Our objective is to bring the party back to power at the State and national levels. We have decided to continue working towards this goal."

"I had a breakfast meeting with the Chief Minister at his official residence. Siddaramaiah will come home for lunch or dinner in the next few days. We are working together, and our party has come to power with the hard work of our party workers and the blessings of the people. The people of the State have reposed their faith in us, and it is our duty to fulfil their aspirations. The government has been formed under Siddaramaiah's leadership, and we are working as per the high command's guidance," he added.

The winter session of the Karnataka legislature is set to begin on December 8.

Indian carriers complete A320 software upgrades

Rohit Vaid
New Delhi

Indian airlines have completed the mandated software upgrade across the Airbus A320 family fleet ahead of the prescribed deadline, with the government confirming full compliance and restoration of normal flight operations.

Speaking to *businessline*, a senior official with the Ministry of Civil Aviation (MoCA) said the work was carried out under close regulatory oversight and supported by on-ground verification.

"Indian carriers have been among the fastest in the world to complete the software upgrade on the Airbus A320 family of aircraft, finishing the task well before the deadline on November 30 without compromising network integrity or disrupting flight movements," Union Civil Aviation Secretary Samir Sinha told *businessline*.

"This was achieved despite India being one of the largest operators of A320 aircraft globally. There were delays in flight operations; however, everything is back on schedule as of early Sunday morning," he said.

FIRM-WISE UPDATE

The updated completion data showed full compliance across operational fleets. It showed that IndiGo had completed upgrades on all 200 of its aircraft.

Air India completed work on 100 of its 113 aircraft, with four undergoing base maintenance and nine marked not applicable.

Air India Express completed upgrades on 23 of its 25 aircraft, with two under maintenance for redelivery.

As per data from Saturday evening, out of the total 338 affected aircraft, software upgrades had been completed on 270.

Chennai's housing market has the lowest price appreciation among top cities across categories

T E Raja Simhan
Chennai

Among the top seven housing markets in India, Chennai has the lowest average price appreciation across various categories, data from Anarock Research shows. While lower sales volume is a reason, the city is a steady market driven by users as against other cities that are more investor driven, say experts.

According to Anarock Research, between 2022 and 2025, price appreciation was tracked across three categories — affordable (with price below ₹40 lakh), mid & premium (₹40 lakh to ₹1.5 crore) and luxury (above ₹1.5 crore).

The National Capital Region (NCR) saw the highest price appreciation in both affordable and luxury categories, while Bengaluru topped in mid and premium segment. "NCR is a standout performer in almost all real estate segments in terms of price appreciation, and the appetite for luxury housing here has been remarkable," said Anuj Puri, Chairman, Anarock Group.

On Chennai having the lowest price appreciation, Prashant Thakur, Executive Director and Head — Research, Anarock Group, told *businessline* that past housing sales trends across cities between 2022 and 9M2025, Anarock Research data indicate that 15.88 lakh units have been sold in the top seven cities cumulatively in the period. Of this, Chennai comprised merely a 5 per cent share, he added.

When demand is not as high as other cities, prices are bound to not see the same kind of appreciation as other cities, say experts

When demand is not as high as other cities, prices are bound to not see the same kind of appreciation as other cities. Also, Chennai has relatively higher demand for plots and independent homes, he added.

Ranjeeth Rathod, Managing Director, DRA Homes, said the city has always been a steady market as it is driven by end users. It is more sustainable in Chennai, while other cities have a lot of investor demand, he said.

A Mohamed Ali, President, Credai Chennai, feels Chennai has a strong culture of end-use over speculation unlike cities like Bengaluru or Mumbai. Buyers in Chennai are usually end-users, not investors. Less speculative buying means less artificial price push which leads to slower appreciation. Chennai and its suburbs (OMR, GST Road, ECR, Sriperumbudur and Oragadam) have continuous horizontal expansion, he said.

When supply is abundant and consistent, prices stay comparatively stable. Local buyers are extremely value conscious.

There is a historical "resistance" to sharp price hikes, forcing developers to stay realistic. Compared to cities with start-up or finance booms (Bengaluru, Hyderabad and Pune), Chennai hasn't attracted large speculative investor communities at the same scale, he said.

Campco ensures stable prices for members, says official

Our Bureau
Mangaluru

The Central Arecanut and Cocoa Marketing and Processing Cooperative (Campco) Ltd has ensured remunerative and stable prices for arecanut in the last five years even in volatile markets, according to Kishore Kumar Kodgi, President of Campco.

Addressing reporters in Mangaluru, Kodgi said the price of new stocks of white arecanut, which was in the ₹240-320/kg range in 2020, increased to ₹360-485/kg in 2025. The price of old stocks, which was in the ₹320-380/kg range in 2020, increased to ₹360-525/kg in 2025. He said the price of red arecanut, which was ₹350-398 a kg in 2020, increased to ₹545-585 a kg in 2025. Despite market volatility caused by 'illegal' imports and GST-evading private traders, Campco stood firmly with growers, he said.

Campco's turnover increased from ₹2,134.15 crore in 2020-21 to ₹3,631 crore in 2024-25, he said.

The cooperative recorded ₹210 crore profit in the last five years, said Kodgi.

On the outbreak of yellow leaf and leaf spot diseases in arecanut plantations in Karnataka and Kerala, he said the cooperative collaborated with institutions, scientists and farmer groups to investigate the causes and develop effective solutions.

QUICKLY.

NCLAT rejects insolvency plea against Voltas

New Delhi: Appellate tribunal NCLAT has rejected a plea against Voltas, which sought to initiate insolvency proceedings against the Tata Group firm by one of its operational creditors. A two-member NCLAT bench upheld the earlier orders of the Mumbai-bench of the National Company Law Tribunal (NCLT), which had on May 27 rejected the petition on the grounds of a pre-existing dispute. PTI

PNGRB panel proposes sweeping reforms

New Delhi: A high-level expert committee set up by the Petroleum and Natural Gas Regulatory Board (PNGRB) has called for sweeping structural reforms to create a free, competitive natural gas market in India, arguing that market-driven pricing and open access are essential for the country's clean energy transition. In its report, the panel led by former PNGRB chairperson DK Sarraf said a liberalised gas market would enhance transparency. PTI

Putin's visit to focus on opportunities for Indian exports, defence, energy ties

MAJOR CONCERN. India's long-time grievance of widening trade deficit is set to be addressed

Amiti Sen
New Delhi

STRATEGIC PARTNERS. The Russian President is keen to continue supplying oil to India and also discuss the sale of additional units of the S-400 air defence missile system

Bridging India's widening trade deficit is set to top the discussion agenda during Russian President Vladimir Putin's two-day visit to the country, with a strong focus on new export opportunities for Indian businesses even as Moscow hopes to secure its defence and energy partnership amid US tariffs, said sources.

"During the visit, Putin's high-power delegation of senior Ministers and a large business contingent representing multiple sectors will discuss new opportunities for Indian businesses to sell to Russia in a roadshow and hold dedicated sessions on cooperation in areas such as pharmaceuticals, healthcare and food supplies," a source tracking the matter told *businessline*.

Opportunities will also be outlined at the Russia-India Forum in sectors, such as IT and digital services, agriculture and processed food, human resources and education, by Russian Ministers covering key sectors such as economic development, industry and trade, agriculture, health and digital development and communication, the source added.

"There will also be structured business-to-business meetings for targeted business alliances," said the source.

SUMMIT TALKS

Putin and Prime Minister Narendra Modi, who will hold talks during the visit, are expected to give a push to the negotiations for the proposed India-EAEU free trade agreement that comprises Russia, Belarus, Kazakhstan, Armenia and Kyrgyzstan, said the source.

New Delhi has been insisting that addressing the deficit should be given priority

With US tariffs of 50 per cent, which include 25 per cent penalty for purchase of Russian oil, making it difficult for Indian exporters to send shipments to the country, Russia and other members of the EAEU bloc, including Belarus, Kazakhstan, Armenia and Kyrgyzstan, are promising options for market diversification.

In FY25, India's imports from Russia totalled $63.84 billion, while exports were at $4.88 billion, widening the trade deficit to about $59 billion.

New Delhi has been insisting that addressing the deficit should be given priority.

Putin's visit to India on December 4-5 after four years is significant, with US President Donald Trump's recent imposition of sanctions on two of the country's largest oil companies and levy of penalty on India for purchasing oil from Moscow.

The Russian President is keen to continue supplying oil to India, and also discuss the sale of additional units of the S-400 air defence missile system. He is also expected to discuss more avenues for trading in local currency to avoid the West's sanctions.

OIL PURCHASE

"As India has continued its oil purchases from Russia despite US pressure, it is only fair that Moscow, too, makes an attempt to increase imports from India, which remains abysmally low. The Russian President's visit with top Ministers and businesses is geared towards increasing sourcing from India," said an industry official.

TVS Motor overtakes Bajaj Auto in EV2W registrations in Nov

Mixed trend

Company	Nov-25	Market share (%)	Oct-25	Market share (%)
TVS Motor Company	29,751	26.12	29,656	20.59
Bajaj Auto	25,074	22.02	31,387	21.80
Ather Energy	20,018	17.58	28,405	19.73
Hero Motocorp	11,795	10.36	16,001	11.11
Ola Electric Technologies	8,254	7.25	16,049	11.14
Greaves Electric Mobility	5,692	5.00	7,632	5.30

Source: Data from Vahan portal as at 4.30 pm on November 30

T E Raja Simhan
Chennai

TVS Motor Company, the Chennai-based two-wheeler auto major, has overtaken its main competitor Bajaj Auto in two-wheeler electric vehicle (EV2W) registrations (pure EV and battery-operated vehicle) in November. TVS (iQube) also substantially increased its market share in November while Ola Electric saw a steep fall, according to Vahan data as of 4.30 pm on Sunday.

TVS recorded 29,751 registrations in November with a market share of 26.12 per cent against 29,656 in October with 20.59 per cent.

TVS was ahead of Bajaj (Chetak) with a difference of 4,677 units in the month.

Interestingly, in November 2025, among the top five companies, TVS was the only one to show a positive month-on-month growth.

Ola's volume in November dropped by nearly half to 8,254 units against 16,049 in October. Its market share in November declined to 7.25 per cent against 11.14 per cent in October.

Overall, EV two-wheeler registrations declined 21 per cent m-o-m in November as demand slowed after October's robust festival season sales. However, the demand is likely to pick up in December, industry sources said.

From January 1, 2025, to November 30, the total number of EV2W registrations stood at 2,76,859 against 1,97,053, an increase of 41 per cent y-o-y, data show.

Anuj Sethi, Senior Director, Crisil Ratings, speaking on the November 2WEV data, said effective September 22, GST reforms saw rates revised on internal combustion engines (ICE), including petrol two-wheelers under 350cc from 28 per cent to 18 per cent. The rate on EV two-wheelers (E2Ws) continued to attract 5 per cent GST.

PRICE GAP

This increased the price gap between the two, making EV2Ws relatively less cost-attractive, though the costing over lifetime still works in favour of E2Ws. However, due to the festival season, in the month of October 2025, EV2W sales grew by 37 per cent over September 2025, as per Vahan portal data.

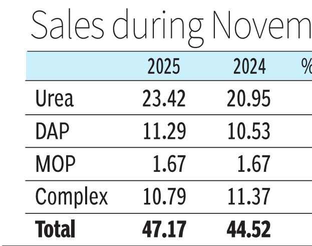
However, short-term volatility in demand was witnessed in November 2025, when EV2W sales fell 20-22 per cent over October 2025, which was also a month of high base.

Besides, some original equipment manufacturers had to reduce production of EV2Ws in November 2025 due to a shortage of rare earth magnets, which ultimately impacted sale.

This may continue in the next 1-2 months until supply chain disturbances are addressed, said Sethi.

Fertilizer sales in Nov 1-21 rise 6%, urea stocks improve from Oct 25 level

Prabhudatta Mishra
New Delhi



Sales during November 1-21 (Lakh tonnes)

	2025	2024	% Change
Urea	23.42	20.95	11.8
DAP	11.29	10.53	7.2
MOP	1.67	1.67	0
Complex	10.79	11.37	-5.1
Total	**47.17**	**44.52**	**6.0**

Source: CWWG, Agriculture Ministry

Fertilizer sales during the first three weeks of November increased 6 per cent, while urea reported a maximum 12 per cent increase and di-ammonium phosphate (DAP) 7 per cent.

Sales of Muriate of Potash (MOP) were stagnant while complex (a combination of all nutrients) reported a 5 per cent fall.

However, a closer analysis showed that after sales doubled in the first week of November, the subsequent two weeks showed a 12 per cent drop in sales amid farmers complaining about inadequate availability.

Data show that during November 1-21, sales of all four key fertilizers were 47.17 lt against 44.52 lt year-ago; urea was 23.42 lt against 20.95 lt; DAP 11.29 lt against 10.53 lt; MOP constant at 1.67 lt and complex 10.79 lt against 11.37 lt. On the other hand, combined sales of fertilizers during second and third week of the month were 33.91 lt versus 38.64 lt; urea was 17.24 lt against 18.37 lt; DAP 7.8 lt against 9.1 lt; MOP 1.18 lt versus 1.4 lt; and complex 7.69 lt against 9.77 lt.

But the Fertilizer Ministry said the availability of urea, MOP, complexes and SSP was comfortable. In the case of DAP, its availability was 28.62 lt as of November 21 against the requirement of 17.19 lt for entire November in the ongoing rabi 2025-26 season.

"The opening stock of DAP in the current rabi season as on October 1, compared to the opening stock of the previous season, was higher by 7.84 lt. Already, imports are happening and availability is on the rise which is good enough to meet demand," an official source said.

LATEST DATA

According to latest data, the stock on November 1 was: urea 50.54 lt against 68.16 lt (year ago); DAP 19.05 lt against 11.52 lt; MOP 7.33 lt against 7.41 lt; and complex 36.21 lt against 31.13 lt.

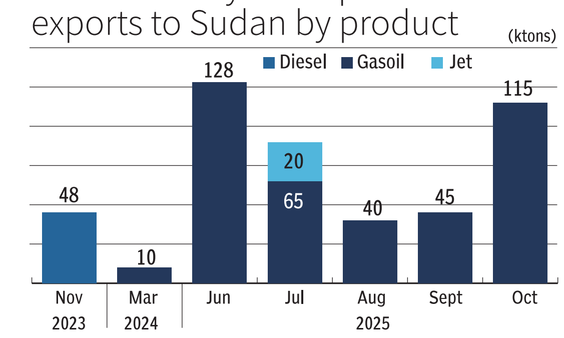
The opening stock of urea as on October 1 was 37.33 lt; DAP 20.07 lt; MOP 7.14 lt; and complex 35.59 lt.

Demand during November has been pegged at: urea 43.54 lt; DAP 17.19 lt; MOP 3.35 lt; and complex 18.85 lt.

As EU sanctions loom, Indian refiners export diesel to Sudan after year-long hiatus

Rishi Ranjan Kala
New Delhi

India monthly clean product exports to Sudan by product (ktons)



Source: Kpler

As the European Union's (EU) sanctions deadline approaches, Indian refiners have started scouting for markets in Africa and Latin America, with diesel exports resuming to Sudan after more than a year.

The EU's 18th sanctions package bans import of refined products made from Russian crude oil even if it is processed in a third country. The sanctions come into effect on January 21, 2026.

SIGNIFICANT SHIFT

Global real-time data and analytics provider Kpler noted a significant shift in India's refined product strategy with gasoil and diesel cargoes resuming to Sudan after a major hiatus.

Analysts and trade sources have been indicating that Indian and Turkish refiners will be forced to redirect diesel cargoes away from Europe, potentially flooding alternative markets such as Africa, Latin America or South-East Asia.

"Indian-origin gasoil and diesel cargoes have resumed deliveries to Sudan after a hiatus of more than one year, marking a revival of a trade route last active in mid-2023. Since June this year, a total of 11 medium range (MR) tankers have either discharged or are expected to discharge in Port Sudan," Kpler pointed out.

Prior to the resumption, the last observed full cargo shipment occurred aboard MR D&K Abdul Razzak Khalid Zaid Al-Khalid, which loaded diesel at Jamnagar refinery on November 12, 2023, and discharged in Port Sudan on December 7, 2023, it added.

The EU's 18th sanctions package is one of the most comprehensive efforts to choke off Russia's hydrocarbon revenues

The renewed trade comes amid shifting export strategies by Indian refiners following new sanctions targeting refined products made from Russian crude, as well as direct restrictions on Nayara Energy's Vadinar refinery.

Nayara has notably redirected clean petroleum product exports towards Latin America, the Bahamas and Turkiye, a marked departure from traditional destinations, Kpler said.

TRADE TIES

Jamnagar's renewed diesel flows to Sudan also signal a re-emergence of trade ties that were last active between November 2022 and June 2023, when six MR cargoes were sent along the same route, it added.

Between January and September 2025, India's diesel exports to Africa averaged around 211.079 thousand barrels per day (kb/d), compared to 170.780 kb/d during the same period last year.

The EU's 18th sanctions package is one of the "most comprehensive efforts yet" to choke off Russia's hydrocarbon revenues.

RUSSIAN CRUDE

For instance, sanctions on Russian crude processed in a third country directly affects India and Turkey that supplied up to 20 per cent of Europe's diesel demand in recent months.

TN tax authorities drop ₹266.3 cr demand notice on Dalmia Cement (Bharat)

Press Trust of India
New Delhi

In relief to Dalmia Cement (Bharat) Ltd, a wholly-owned subsidiary of Dalmia Bharat, the Tamil Nadu tax authority has dropped the demand of tax and penalties totalling ₹266.3 crore from the company.

In a filing, Dalmia Bharat said Dalmia Cement (Bharat) Ltd had earlier received show-cause notices under Section 74 of the Central Goods and Services Tax Act, 2017, and Tamil Nadu Goods and Services Tax Act, 2017, from the Sales Tax Officer, Lalgudi, Tiruchirapalli.

"The show-cause notices pertained to some differences observed in taxable turnover and amount of ITC for the AY 2019-20 and 2022-23. In the adjudication proceedings, the Department has dropped the proposed demand...," the filing added.

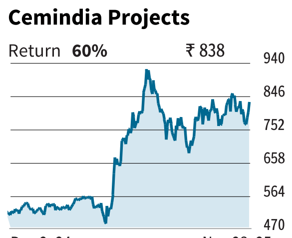
The Tamil Nadu tax department had issued notice for AY 2019-20, where it had demanded tax of ₹128.39 crore .

TODAY'S PICK.

Cemindia Projects (₹838.45): BUY

Gurumurthy K
bl. research bureau

Cemindia Projects



The short-term outlook is bullish for Cemindia Projects. The stock has surged over 7 per cent last week recovering all the loss made in the week earlier.

The price action since August indicates a bull channel. The bounce last week has happened from the lower end of this channel. Immediate support is in the ₹805-995 region.

Below that, ₹775 is the next important support. Cemindia Projects share price can rise to ₹910-₹915, the upper end of the channel in the coming weeks.

Traders can buy Cemindia Projects now at ₹838. Accumulate on dips at ₹810. Keep the stop-loss at ₹780 initially. Trail the stop-loss up to ₹845 as soon as the stock goes up to ₹860.

Revise the stop-loss higher to ₹865 and ₹885 when the price touches ₹880 and ₹895, respectively. Exit the long positions at ₹910.

Note: The recommendations are based on technical analysis. There is risk of loss in trading

UPI volume jumps 23% annually in Nov as it crosses 19 billion transactions

Asian News International
New Delhi

The Unified Payments Interface (UPI) continued its rapid rise in November 2025, crossing over 19 billion transactions worth ₹24.58 lakh crore as of November 28, according to data released by the National Payments Corporation of India (NPCI). This marks a sharp increase compared to the same period last year, when UPI recorded 15.48 billion transactions valued at ₹21.55 lakh crore.

The steady year-on-year growth highlights how digital payments have become deeply embedded in India.

The latest figures show that UPI's transaction volume in November 2025 grew by about 23 per cent from November 2024, while the transaction value rose by nearly 14 per cent. When compared to November 2023, the growth looks even stronger. UPI transactions have increased by nearly 70 per cent in volume and over 41 per cent in value in just two years.

CONSISTENT SURGE

NPCI data also show a consistent surge over the past five years. In November 2021, UPI logged 4.18 billion transactions valued at ₹7.68 lakh crore and by November 2022, the figures nearly doubled. Since then, it has risen, underlining India's rapid shift from cash to digital modes of payment.

The five-year trend presents a clear picture of this transformation. From 2021 to 2025, UPI's transaction volume has grown more than four-fold, while the total value of transactions has increased by over three-fold. This remarkable rise underscores the platform's role as the backbone of India's digital payment ecosystem. For the financial year 2025-26, UPI has processed 12.41 billion transactions, with an average daily volume of 689.60 million and an average daily value of ₹91,324.77 crore.

In comparison, during the corresponding period in 2024-25, average daily volume stood at 516.07 million and average daily value at ₹71,839.58 crore, reflecting a clear increase in both the number and size of transactions.

CHENNAI
businessline.
MONDAY - DECEMBER 1 - 2025

the hindu businessline.
MONDAY - DECEMBER 1, 2025

High point

Corporate revival, a feature of Q2 growth

There can be no denying that a real GDP print of 8.2 per cent for the second quarter of FY26 (7.8 per cent in Q1) comes as a surprise. The Reserve Bank of India had projected 7 per cent in October (6.8 per cent for FY26), while the Finance Ministry's monthly economic review had forecast 7-7.5 per cent growth. Apart from the festive season effect, the Centre's policy measures to boost consumption (tax cuts in the Budget), government capital expenditure and front-loading of exports ahead of the enforcement of the additional tariffs by the US have contributed to the spurt. The GST rate reductions can have a positive impact in the coming quarters.

A few caveats here: First, the statistical base effect may have pushed up the Q2 number, since growth in Q2 of FY25 was only 5.6 per cent due to general elections. Second, the convergence of nominal and real GDP growth (the former at 8.7 per cent), due to the sharp decline in inflation, could erode consumer sentiment and fiscal space. A large discrepancy to the tune of ₹1.6 lakh crore, between the output and expenditure estimates of GDP, could lead to a revision of figures. These factors, however, cannot detract from the turnaround story. On the expenditure side, the positive consumer sentiment is borne out by the 7.9 per cent growth in private expenditure, against 6.4 per cent last year. The Centre front-loading its capex has helped growth in gross fixed capital formation to 7.3 per cent in Q2. On the output side, strong real growth was driven by services and manufacturing, even as agriculture has maintained what seems to be its trend growth, of 3 per cent. Growth in manufacturing GVA of 9.1 per cent betters the 7.7 per cent growth in Q1 of FY26 and the bleak 2.2 per cent growth in Q2 of FY25.

The RBI's assessment of private non-financial companies for Q2, based on the results of 3,118 entities, is suggestive of a turnaround. There has been a sharp uptick in the sales growth of non-IT services (10.6 per cent y-o-y), manufacturing (8.5 per cent) and IT services (7.8 per cent), compared to Q1 (7.5, 6 and 6.3, respectively). Credit growth has been accelerating since June this year, surpassing deposit growth since September. Construction activity was elevated with growth of 7.2 per cent due to government's capex spends as well as home construction activity, especially in the affordable segment. Services sector which contributes around 60 per cent to the GVA recorded the highest growth at 9.2 per cent, while output in financial services, real estate and professional services grew 10.2 per cent in Q2.

The second half of FY26 is, however, likely to be a bit challenging, if the India-US deal is not clinched. The base effect will cease to influence the growth numbers. With inflation expected to increase in the fourth quarter of FY26, the GDP deflator is also expected to increase in the second half, impacting real growth. But with consumption and investment showing positive signs at time of low inflation, the RBI has a brief window of time to cut rates.

OTHER VOICES.

The Guardian

Putin is taking Trump for another ride on the Kremlin carousel

As Donald Trump's Thanksgiving Day deadline for a Ukraine peace agreement came and went this week, the Russia expert Mark Galeotti pointed to a telling indicator of how the Kremlin is treating the latest flurry of White House diplomacy. In the government paper Rossiyskaya Gazeta, a foreign policy scholar close to Vladimir Putin's regime bluntly observed: "As long as hostilities continue, leverage remains. As soon as they cease, Russia finds itself alone (we harbour no illusions) in the face of coordinated political and diplomatic pressure." Mr Putin has no interest in a ceasefire followed by talks where Ukraine's rights as a sovereign nation would be defended and reasserted. He seeks the capitulation and reabsorption of Russia's neighbour into Moscow's orbit. LONDON, NOVEMBER 28

讀賣新聞
THE YOMIURI SHIMBUN

China's Criticism of Takaichi

China is intensifying its propaganda campaign against Japan over Prime Minister Sanae Takaichi's remark regarding a survival-threatening situation in connection with a Taiwan contingency. Beijing's aim appears to be spreading its assertion — not only within Japan but internationally — that the prime minister is attempting to disrupt the international order and peace established after World War II in order to isolate her and force her to retract her remark. China's personal attacks against Takaichi are intolerable. Xinhua News Agency has posted a series of satirical images on its X account, including one showing the prime minister looking at a mirror with her reflection wearing military attire and another depicting her shaking hands with a ghost labeled "militarism." Such posts must be seen as malicious propaganda designed to create the impression that Takaichi bears responsibility for the deteriorating Japan-China relations. TOKYO, NOVEMBER 29

The real legacy of Macaulay

Pervasive administrative power still separates the ruling elite from the rest. That elite rules the roost, English be damned

LINE& LENGTH.

TCA SRINIVASA RAGHAVAN

The Prime Minister must be chuckling at how easy it is to rile the middle class. As he sometimes does, he has now mischievously thrown a stone into the now placid pond called Macaulay.

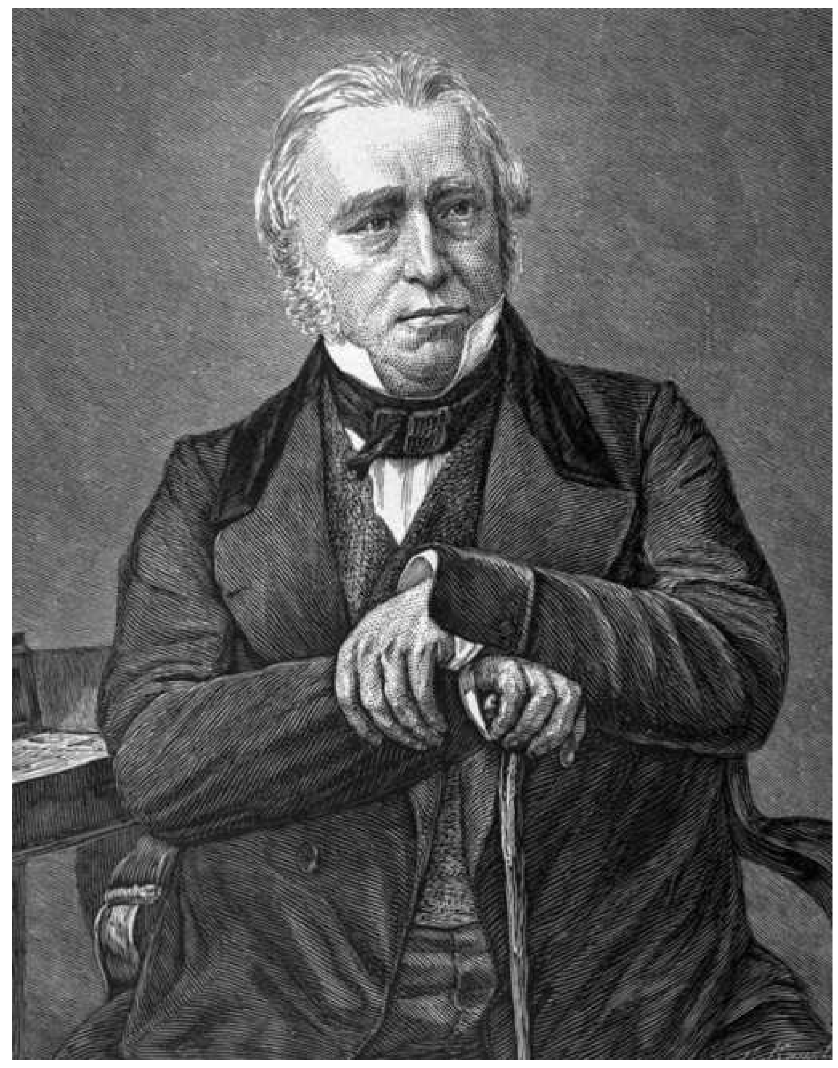
The resulting foamy debate has focused on the English language as an instrument of that someone foolishly called linguistic apartheid. "Those who know English look down on those who don't", goes this argument. English for these people is the linguistic equivalent of the *'janeu'* or sacred thread.

Thus, learning English is a form of *pratilome* marriage. Such a marriage, for those who don't know, makes it possible for a lower caste person, when she marries into an upper caste, to move up the caste hierarchy. It's like getting upgraded to premium economy on flights.

And there's been a lot more of such nonsense which misses the real problem created by old Thomas 190 years ago. And this problem wasn't just the creation of brown Englishmen and women, or what in Latin America were called the *compradore* class.

That happened, of course. But nestling within that elite was another elite, the bunch that worked for the imperial government. The Indians who managed this feat pulled off this sort of *pratilome* marriages got the equivalent of an upgrade to first, not just business, class.

So over time we acquired a new ruling elite. Pervasive administrative power separated them from the rest. That elite still rules the roost, English be damned.



STIRRING THE POT. After 190 years, Thomas Macaulay still makes news in India

MY FAMILY AND OTHER BABUS

My credentials for writing all this stem from the fact that between 1948 and now, around 15 members of my close family have served in the Class 1 services. Since 1993, however, no one from our family has thought of joining the bureaucracy. It's a complete no-no and now there's only one left in it. She will retire soon.

Ours, it should be noted, isn't the only such family. There are many others. The attraction of working for the government has vanished for them also. And there are millions of others who

> **The old colonial Macaulay attitude and arrogance remains only in the bureaucracy because** it has the power to claim privileges and dispense them

simply don't want to work for the bureaucracy.

But this is not the end of the Macaulay *putras* and *putris* because the old colonial, "Us v the Natives" attitude remains totally intact. The attitude is acquired within two or three years of joining the government. It comprises an expectation and fulfilment of an ever expanding set of entitlements that cover almost everything. It demands, and gets, preferential treatment just as the old white sahibs did.

And just as the white officialdom did, it is based on exclusion. The 'civil lines' mentality permeates everything. These enclaves were distinct and totally separated from the *'basti'*, the areas where the 'natives' lived. That segregation is still there.

A knowledge of English is not needed for this. You can exclude the natives without knowing very much of it.

This is where the Prime Minister missed the point. The old colonial Macaulay attitude and arrogance remains only in the bureaucracy because it has the power to claim privileges and dispense them. If he really wants India to be rid of Macaulay's ghost, the Prime Minister simply must reform the bureaucracy.

HOW TO FIX BABUDOM

The babus get their attitude of superiority and the power to make money from two things. One, Article 311 of the Constitution that makes it impossible, for all practical purposes, to sack them.

This has created a total absence of accountability. The other is the power to make rules.

Article 311 has a totally colonial provenance. It owes its existence to the introduction of dyarchy in 1919 when the British handed over some low level power to Indians. The white officers were appalled. How could a coloured but elected fellow be the boss, that too in the matter of dismissal?

So a provision was made that government employees could be removed from service only by the 'appointing authority', which was the viceroy and never for incompetence or corruption. That has carried on because the bureaucrats have a lot of electoral clout.

The other problem, as mentioned above, is the babudom's power to make rules. This power is necessary but it is exercised indiscriminately and without supervision.

The result is the creation of opportunities to extract bribes from a totally helpless citizenry. We have the extraordinary situation of babus paying bribes to other babus!

Of course not all babus are entitlement creators and perks grabbers. Nor are they all corrupt. But enough of them are to keep the Macaulay legacy of superiority and separateness alive and kicking. It is upon this that the Prime Minister must focus.

Why banks really need to move to ECL framework

The Expected Credit Loss rules will help banks evaluate and make anticipatory provisions for risks and losses

Harsimran Sandhu

The Reserve Bank of India's discussion paper on introducing an Expected Credit Loss (ECL) framework marks one of the most far-reaching prudential reforms in recent decades. For years, Indian banks have operated under a rule-based incurred-loss system in which provisions are recognised only after observable signs of stress.

While this approach ensured simplicity, it is now inadequate for a financial system that is more complex, retail-driven, and interconnected than in the past.

Today's economy depends heavily on credit, and delayed recognition of problems has repeatedly contributed to instability.

The proposed transition to a forward-looking ECL system-aligned with global standards such as IFRS 9-represents a decisive evolution in how banks measure, price, and manage credit risk. With rising household leverage, shifting corporate balance sheets, and growing macroeconomic volatility, the reform is both timely and necessary.

Under the current system, provisions rise only when borrowers show objective deterioration, often at a stage where remediation becomes difficult. This leads to pro-cyclicality: in economic expansions, risks accumulate quietly and banks book higher profits; in downturns losses surface abruptly, forcing sharp increases in provisioning.

The 2008 global financial crisis and India's corporate credit cycle of the 2010s exposed the limitations of delayed recognition. The ECL proposal addresses this by replacing reaction with anticipation. Instead of waiting for loans to go bad, banks will estimate future losses using Probability of Default (PD), Loss Given Default (LGD), and Exposure at Default (EAD). These parameters incorporate borrower behaviour, sector-specific risks, and broader macroeconomic conditions. It shifts the system from backward-looking measurement to an early-warning, forward-looking philosophy.

A central pillar of the new framework is the requirement to use multiple macroeconomic scenarios. Banks must construct baseline, adverse, and severe scenarios and assign probability weights to each, bringing India closer to advanced jurisdictions where loss estimates vary with economic conditions.

Scenario design must be grounded in credible indicators such as inflation, GDP growth, interest rate cycles, commodity prices, and regulatory developments. Where historical data is sparse, techniques like mean reversion will be necessary to prevent distortions. Equally important is the emphasis on data discipline. Banks must maintain adequate historical loss data to build

BANKS. Managing risks GETTY IMAGES

reliable PD and LGD models. The RBI insists that the data used must be complete, representative, and free from cherry-picking.

A major strength of the proposal is the governance structure attached to it. The RBI requires Board-level oversight of the entire framework. Senior management, including risk and finance heads, must validate assumptions, review model outputs, and ensure consistent application across portfolios.

Banks must maintain a model inventory, document modelling decisions, conduct back-testing, and periodically assess performance so that predicted losses align with realised outcomes. This ensures that ECL becomes a central mechanism in credit decision-making rather than a compliance formality.

The shift to ECL is supplemented by the adoption of the effective interest rate (EIR) method for income recognition. Under EIR, fees, charges, and transaction costs must be spread across the loan's life instead of being recognised upfront. This yields a more accurate view of profitability and eliminates distortions from front-loaded income. Implementing EIR will require system upgrades, particularly for banks with legacy core systems, but in the long run it aligns India with global accounting practice and enhances transparency.

CHALLENGES AHEAD

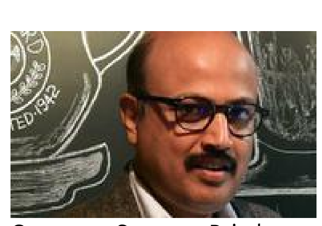
Implementing ECL will require better data infrastructure, stronger systems, and upgraded modelling capabilities. Many banks, especially those with legacy portfolios, lack granular historical information on defaults, recoveries, and collateral behaviour-data essential for accurate PD and LGD estimation.

While large private and public sector banks have made progress, smaller institutions lag behind. Regional rural banks, cooperative banks, and some small finance banks are excluded in the initial phase precisely because they lack the required infrastructure, creating a two-track regulatory system that must eventually converge.

Despite the challenges, the ECL framework represents a critical shift in India's approach to credit risk.

The writer is Professor of Finance, IMT Ghaziabad

BELOW THE LINE



Commerce Secretary Rajesh Agrawal

India-US trade tangle

Commerce Secretary Rajesh Agrawal, at meeting organised by FICCI on Friday said a political call is needed to clinch the US-India trade deal, which is expected by the year-end. Those following the developments wondered what Agrawal meant. Is he saying the officials have done their best, and now, it is left to the government?

Does he also mean that the officials have tried to accommodate US interests as much as possible, but the Modi government needs to approve it? Or is it some sort of optics ahead of Russian President Vladimir Putin's visit to India? A little bird says the Minister of External Affairs is going more into "geo-economics" than the Commerce Ministry. Perhaps, it is an indication that Commerce Minister Piyush Goyal is not really up there.

Air pollution crisis

Former IPS officer and one-time BJP chief ministerial candidate Kiran Bedi has been consistently flagging concerns over the Capital's deteriorating air quality. Bedi, who also served as the Lieutenant Governor of Puducherry, has used a series of posts on X to urge the government to adopt a comprehensive approach to the crisis. She has called for a white paper on Delhi's pollution management. In a detailed note, Bedi proposed a two-part document that would analyse the city's chronic air quality problem, outline institutional lapses, and chart out a roadmap for immediate, short-, and long-term action— both across departments and for citizens.

Earlier, she also appealed to Prime Minister Narendra Modi to convene monthly virtual meetings with the Chief Ministers and Chief Secretaries of Delhi's neighbouring States to review progress in controlling pollution.

Will Oil India be luckier?

Recently, Oil Minister Hardeep Singh Puri tweeted "Energy Maharatna @OilIndiaLimited has commenced a landmark offshore drilling campaign in the Kerala-Konkan Basin by spudding the first well. An inspirational stride in our energy journey guided by the vision of PM Sh @narendramodiJi.

This frontier Category-III basin holds immense potential, and the planned 6,000-metre deep well to be drilled 20 nautical miles offshore will be among the deepest offshore wells in Indian waters.

It would be historic, if OIL succeeds, but it is not easy. Both ONGC and Reliance have made attempts in the region; Reliance wanted its attempt to be seen as research and development work, given the costs involved. People in the upstream business say that it's too early to celebrate as a lot depends on the availability of technology and whether the find will fetch returns.

Adani getting into nuclear

Past couple of days social media is once again buzzing with "Adani Group is now eyeing an entry into India's Nuclear sector..." It is a fact that Adani preparing to join if a viable public-private model is created. It is understood to have created a crack team to study various aspects of the business. Some of them have been spotted at global nuclear energy events, say industry watchers. But the Group has not spoken publicly about it . "A lot will depend on what is in offering from business perspective," someone close to developments said. Earlier this year Chairman Gautam Adani made a surprise visit to Tarapur atomic energy in Maharashtra to see the operations. **Our Bureaus**

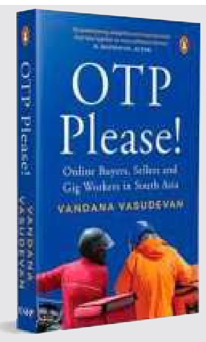
Published by Nirmala Lakshman at Kasturi Buildings, 859-860, Anna Salai, Chennai-600002 on behalf of THG PUBLISHING PVT LTD., and Printed by Ra Babu Vijay at THG PUBLISHING PVT.LTD. Plot B-6 & B-7, CMDA Industrial Complex, Maraimalai Nagar, Chengalpattu Taluk, Chengalpattu Dist., Pin: 603209. Editor: Raghuvir Srinivasan (Editor responsible for selection of news under the PRP Act). ISSN 0971 - 7528

The theatre of e-commerce

Lives of actors in the digital marketplace

BOOK REVIEW.

Chitra Narayanan



Title: OTP Please! Online Buyers, Sellers and Gig Workers in South Asia
Author: Vandana Vasudevan
Publisher: Penguin
Price: ₹499

Swipe, click, book or buy has become a way of life for most of us now. But what lies behind this hassle free world of e-commerce and utility apps? Vandana Vasudevan's book *OTP Please!* dives behind the bustling digital storefronts that have brought convenience and instant gratification for millions of us.

It's a fascinating exploration of the world of gig workers, internet retailers, service providers and new age consumers. What makes it especially interesting is the way Vasudevan, a development sector researcher, has structured this exploration. Instead of blandly sectioning it as customers, workers and sellers, she takes the unusual tack of classifying the chapters according to the emotions that all the actors who make up the online marketplace feel. So the book is divided into sections titled 'pleasure, guilt, gratitude, anger, freedom, oppression, anxiety, isolation and courage'.

That brilliant start sets the warm empathetic tone for the book, which is based on meticulous research. Vasudevan partnered with Janpahal, an NGO that surveyed over 5,000 gig workers, to understand their lives and issues. Beyond the survey, she has travelled extensively through India, and reached out to people in Pakistan, Bangladesh, Sri Lanka and Nepal to find out their interactions with a bouquet of apps that governs modern life.

"It is apparent that a socio-economic shift is underway in how we buy, eat, move, work and sell owing to technological advancements," says Vasudevan.

STORIES GALORE

The hundreds of stories that Vasudevan recounts in the book — whether of a bathroom, kitchen and chimney cleaner from Urban Company in Hyderabad, the food delivery person from Swiggy in Kanyakumari, the cab driver from Pathao in Kathmandu, a woman software engineer in Bengaluru who uses an Uber at night, a 29-year old consumer in Karachi who uses Food Panda to order chicken biryani to satisfy a craving even though there is dinner cooked at home — give glimpses of the various emotions ranging from gratitude at having a job, anger at the exploitation, anxiety about using the app and pleasure that the convenience affords.

The 'guilt' chapter sounds all close to home, as it looks into the mindless ordering culture, the feelings of inadequacy of a mother who feels a pang when her children keep getting food from outside, the messed up Circadian rhythms thanks to the binge watching on OTT and so on.

The 'oppression' chapter is not just about the exploitation of gig workers but also the tyranny of the algorithm, the frustrations of sellers who are bewildered by the workings of Amazon and the small restaurant's complaints about the high commissions charged by the food tech platform.

The consumer and gig worker stories are interspersed with nuggets of insights and data from reports from think tanks and journals, from people like Kishore Biyani and Riyaz Amlani, from B-School professors, and from Reddit threads. There is a deluge of information in the book, but it is that it doesn't overwhelm. It's not at all easy to tie together so many different stories and diverse threads but Vasudevan manages to knit it all cohesively.

Finally, the concluding chapter looks at the regulation of app-based services and the internet economy. It also looks into issues like sustainability, gender inclusivity (why is it always a delivery "boy"), technology going awry, and whether gig work is the best deployment of a young person's ability.

It's a book that really makes you think about many issues — among them overconsumption, health and lifestyle, work ethics, and business models. In the author bio, it says Vasudevan despite her serious pursuits is paranoid about being boring and hence strives to be entertaining. Well, the book actually manages to be that — a serious subject told very entertainingly.

Challenges of working in a scale-up

The book is a practical educational resource for navigating the world of start-ups which are scaling up

BOOK REVIEW.

Chandu Nair

Getting from zero to one is one challenge. Many entrepreneurs don't realise that the bigger challenge is going from one to 10. It is often fun in creating but nurturing, building and scaling requires discipline, determination and development on the part of the entrepreneur(s) and the necessary transformation of the way the business is run and managed.

A significant number of books in this genre glamourise entrepreneurship, celebrate successful entrepreneurs or talk about a few core themes — founder's mindset, fund-raising, start-up methodologies and frameworks, autobiographical or semi-autobiographical stories of success or failures' life's lessons. Scaling-up too has been covered but it usually talks about it only from the point of a start-up or founder.

This book focuses on those who want to or work in a scale-up enterprise and what human skills need to be understood and mastered in order to survive and thrive in what is often a chaotic, undisciplined and fast-changing environment.

Sometimes, when you read a book, you quickly form an impression of the book (and perhaps the author?). The first impression that this book gives is — precise, pragmatic, experience-based and a 'let's not waste time, let's get on with it' kind of approach.

The introduction to the author gives us an idea. "Vidya Murali has been working in the UK's leading tech businesses, including Amazon, and high-growth scale-ups such as Deliveroo. Having grown up in India before moving to the UK in 2006 and completing her MBA at the University of Cambridge, Vidya brings unique perspective as a woman of colour and an introvert navigating high-growth and fast-paced business environments."

The cover design and the way the content is written and presented though, gives it a bit of a textbook feel (more on this later).

LACK OF MATURITY

The book is neatly structured and the table of contents give the reader what to expect. The why behind the book explains the author's motivation.

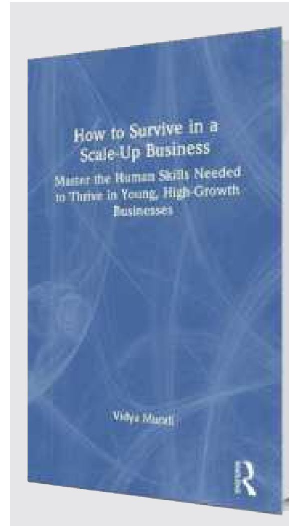
When she took the plunge to join scale-ups, she was surprised by the fun dynamism but also shocked by the lack of maturity and not finding logic in people's behaviour! No one else in her target group (those seeking to join scale-ups, HR leaders in such companies, scale-up founders and coaches) should suffer this fate, she decided, hence this book.

She is also aware of today's attention-challenged reader so she offers a helpful hack in Chapter 3 on how to read the book including what to focus on! (Maybe a QR code leading to an online audio summary might help attract a different set of reader-listeners).

The topics covered include the fundamental decision of whether a scale-up is right for you, what to expect and how to navigate life in a scale-up, the toxic patterns and challenges, and drawing from her own personality type and life experiences, how to survive and thrive when you are different.

In order to make it more relatable for the reader she has helpfully provided (i) questionnaires (e.g. scale-ups suitability assessment on pg. 41), frameworks and models (e.g., personal introduction template on pg. 91 or her emotional superpower practice framework, TOSTRI, pg. 147) plus a lot of *How to's* generously peppered throughout the book and (ii) stories of struggles and of thriving in Part IV with coaching questions for the reader.

The final chapter *Turning your insights into practice* succinctly synthesises all the previous chapters plus pushes the reader into action mode. All in all, quite helpful for the focused reader.



Title: How to Survive in a Scale-Up Business: Master the Human Skills Needed to Thrive in Young, High-Growth Businesses
Author: Vidya Murali
Price: ₹950
Publisher: Routledge

ABOUT THE AUTHOR

Vidya Murali has been working in the UK's leading tech businesses, including Amazon, and high-growth scale-ups such as Deliveroo

UNDERSTANDING ISSUES

I mentioned a textbook feel earlier on in the review. Here's why. I wish the author had given more examples of either individuals or companies.

You find some names interspersed through the book. For example, Karthik in Chapter 1 or Julie, Paula and Steve in Chapter 10 on pg. 47, 48 and 54 respectively. It might have been easier for a reader to understand an issue when the chapter starts with the situation of an individual.

For instance, Chapter 10 could have started with Julie, an early employee who rises to the level of CTO as the business grew, her inability to see the big picture or think strategically and how it affects senior level technology hires and finally the company itself. That story would have helped the author segue into the key issues she wants to discuss in that chapter.

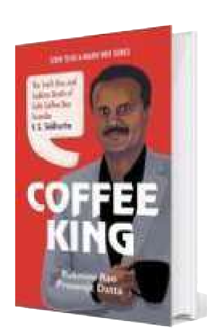
Similarly, the way the book is formatted makes one feel that it is styled more like an internal note for training, learning and development. Then again, it is a matter of individual style and this author has by and large chosen a particular set format for every chapter.

That said, the book is a practical educational resource for navigating the world of start-ups which are scaling up. The issues and challenges listed, the practical problems mentioned, why it happens as also ways to understand it and handle it better, speak of the author's lived experiences.

Carefully read and assimilated, it provides a willing reader-learner ways by which s/he can think about and apply meaningfully if and when they decide to enter the world of scale-ups.

The reviewer is an IIMA alumnus and an entrepreneur, advisor and angel investor

NEW READS.

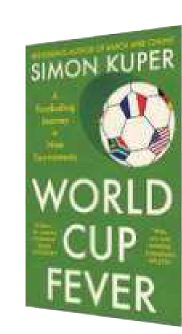


Title: Coffee King: The Swift Rise and Sudden Death of Café Coffee Day Founder V. G. Siddhartha

Authors: Rukmini Rao, Prosenjit Datta

Publisher: Macmillan

An exhaustive investigation into the meteoric rise and tragic collapse of a visionary entrepreneur

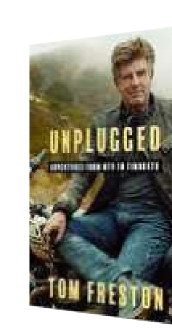


Title: World Cup Fever: A Footballing Journey in Nine Tournaments

Author: Simon Kuper

Publisher: Profile Books

This book is the story of how the tournament touches and sometimes even changes our lives, by one of the best writers on the beautiful game



Title: Unplugged: Adventures from MTV to Timbuktu

Author: Tom Freston

Publisher: Simon and Schuster US

In this unique memoir of risk-taking, and warm cultural exchanges, Freston shows how to be successful at living your life on your own terms

thehindu businessline.

TWENTY YEARS AGO TODAY.

December 1, 2005

Economy grows at 8 pc in Q2

With the manufacturing and the services sectors on a roll, the economy clocked an eight per cent growth for the second consecutive quarter this fiscal. If the current trend were to continue, it might not be difficult for the economy to post a growth of 7.5 per cent for the full year, as projected by the Prime Minister, Dr Manmohan Singh, on Tuesday. The Q1 growth in gross domestic product (GDP) was 8.1 per cent and the second quarter was close behind with eight per cent, whereas the comparative figures for the previous fiscal were 7.6 and 6.7 per cent, respectively.

SemIndia to invest $3 b in new unit with AMD tie-up

SemIndia, a consortium of non resident Indians, today announced plans to invest $3 billion to set up a semiconductor manufacturing facility in the country in collaboration with chip maker Advanced Micro Devices Inc (AMD). Announcing the partnership, Mr Vinod Agarwal, Chief Executive SemIndia and later may also pick up stake in the proposed plant.

Great Eastern Hotel handed over

The West Bengal Government on Wednesday formally handed over Great Eastern Hotel to the Bharat Hotels Group controlled by Mr Lalit Suri.

Short take

India's tryst with the turning track

B Baskar

Much ink has been spilt over India's recent 0-2 drubbing in the hands of World Test Champions South Africa.

That the debacle came at home on turning tracks, which is supposed to be to India's advantage, has led to much hand wringing.

Of course last year too India lost to New Zealand 0-3, again on spinning tracks.

On both occasions, the New Zealand and South African spinners made much better use of the turning tracks than the more experienced Indian spinners.

Indian coach Gautam Gambhir cut a sorry figure in the post-match interview. But he did make one pertinent point. It was after all the same team that played brilliantly in England in summer.

THE ENGLISH SUMMER

The series, one of the most riveting ones in recent times, ended in a 2-2 draw, when most pundits expected a drubbing for India, which was a team in transition under a new captain. But the Indian team surprised everyone, with captain Shubman Gill scoring more than 700 runs and the team clicking as a unit.

Even the away series last year against Australia, which ended in a 1-3 loss for India, was a much more closely fought one.

But Gambhir's lament about India needing to prioritise Test cricket didn't quite ring true as India has played nine Tests so far this year. But he was also right about one thing — playing a white ball series in Australia just before a home Test series against the reigning World Test champion's is perhaps the worst way to prepare for it.

So are Indians now better at playing on fast and true pitches than spinning ones? Ravichandran Ashwin, who in the past has run through opposition teams on spinning tracks at home, offered an interesting reason for Indians' trouble on turning tracks.

He said for domestic matches now, neutral pitch curators are appointed by BCCI, to nullify the home advantage. So Indian batters, playing at fast true pitches in domestic cricket, have become more adept at playing fast bowling than spin.

The focus now will turn to white ball cricket with the T20 World Cup coming up next year.

India plays Test cricket again only in August next year against Sri Lanka, so Test cricket for the time being can go back to backburner.

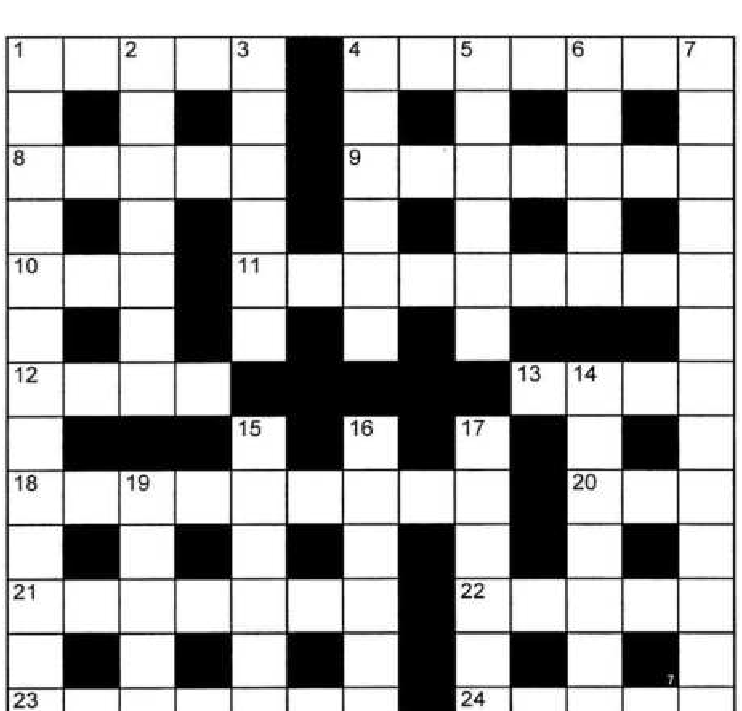
But since Test cricket is seen as the "real deal" and India, along with Australia and England are its biggest proponents, answers must be found for our recent home debacles.

Should we consign the "turning track" to history and prepare faster pitches at home? Will faster pitches in future become our "home advantage"?

This will not only help our batters but also our fast bowlers.

This is something our cricketing think tank must ponder over.

BL TWO-WAY CROSSWORD 2835



EASY

ACROSS
01. Yawning hollow (5)
04. Scurries about (7)
08. Alloy; intrinsic quality (5)
09. Soft toffee (7)
10. Give a sudden pull (3)
11. Forty-scoring darts shot (6-3)
12. Close (4)
13. One-spot cards (4)
18. Torment by holding out of reach (9)
20. Sheltered side (3)
21. Advice of goods sent, bill (7)
22. Follows instructions (5)
23. Item of apparel (7)
24. Horizontal part of stair (5)

DOWN
01. Fail to reach fruition (4,2,7)
02. One of the Leeward Islands (7)
03. Illness (6)
04. Hurry! (4,2)
05. Walk gently (6)
06. Bound, restriction (5)
07. Cool, calm, not agitated (4-9)
14. Educational establishment (7)
15. Sea-soldier (6)
16. Not voiced (6)
17. Work for newspaper, etc (6)
19. At no time (5)

NOT SO EASY

ACROSS
01. Little Charles married, creating a great gulf (5)
04. Makes oneself busy with antiquated dress features (7)
08. Substance providing a repast around start of teatime (5)
09. Toffee and cream Los Angeles produces (7)
10. How might it lug heads off? (3)
11. Twice as much cream in the milk will score forty (6-3)
12. Being stingy, managed to reverse around the East (4)
13. Deck members that can't be got back (4)
18. Excite but don't satisfy last in tea-blending (9)
20. There's something that slips back to side away from wind (3)
21. Bill is apparently singing well (7)
22. Ex-schoolfellow disturbed, yes, but follows orders (5)
23. Lady's counterpart gets arm in something wearable (7)
24. Pattern on tyre one will press with one's feet (5)

DOWN
01. Fail to materialise but count down, reaching zero (4,2,7)
02. Island is against posh inclusion in Georgia (7)
03. My French Dame has something wrong with her (6)
04. You'll be more cheerful if you hurry (4,2)
05. It's a way to go over and over a walk that's not taxing (6)
06. It's bound to show one motorway in being illuminated (5)
07. Quite collected, showing own ownership (4-9)
14. Merry old king had pin put in part of university (7)
15. In entering a horse, he has a military bearing on board (6)
16. Is giving up, at time to give up, saying nothing (6)
17. Get the story carried home at end-of-term (6)
19. 'What, _____? Hardly ever!' (HMS Pinafore) (5)

SOLUTION: BL TWO-WAY CROSSWORD 2834

ACROSS 1. Brandishing 8. Rates 9. Stamped 10. Dispose 11. Image 12. Menace 14. Beagle 18. Denim 19. Muddied 21. Pothole 23. Eaten 24. Preferments

DOWN 1. Boredom 2. Artisan 3. Disco 4. System 5. Imagine 6. Gap 7. Ledge 13. Compose 15. Glisten 16. Endings 17. Impede 18. Doped 20. Dream 22. Top

CHENNAI
businessline.
MONDAY - DECEMBER 1 - 2025

ON THE CAMPAIGN TRAIL.

The highlight of the past fortnight was the release of a campaign that was among the last few creative works supervised by the late Piyush Pandey

Human connection

The Adani Group's latest campaign, 'Aapke Safar Ke Humsafar', is about the power of human connections. Like the previous films in the #HumKarkeDikhateHain series, the narrative-driven ad is full of warmth and emotion. It follows a senior couple embarking on their first international journey. Overwhelmed by the scale and unfamiliarity of the airport, they rely on a handwritten note from their son for guidance. When the note is lost, anxiety sets in; until an Adani airport associate steps in and escorts them to the boarding gate. Directed by Shoojit Sircar and conceptualised by Ogilvy India, the film was guided by Piyush Pandey with his trademark human-first storytelling.

Star power

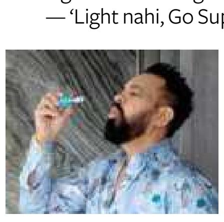
On Children's Day, Titan Eye+ launched an unusual campaign, asking parents to check their child's vision using a celestial legend. Over 3 crore children suffer from poor vision that goes undetected. The brand's 'Ek Tara Test' is a simple eye-screening method. The ad film follows the story of Sahiba, a schoolgirl whose blurry vision affects her daily life. The narrative harks back to how, centuries ago, hunters tested their vision by trying to spot two distinct stars, Alcor and Mizar, in the Saptarishi (Ursa Major) constellation. Inspired by this, the 'Ek Tara Test' is a glow-in-the-dark star-spotting aid that allows children to match the dots of the Saptarishi constellation. 'Ek Tara Test' cards will be available on www.titaneyeplus.com

Drink it up

Packaged drinking water brand Bisleri International's new campaign, #DrinkItUp 2.0, featuring its global brand ambassador Deepika Padukone, has a vibrant, high-energy track that lauds a lifestyle where hydration meets celebration. Set against a carnival-like backdrop, the film captures the spirit of a generation that celebrates every moment. From fashion to music, every frame reflects Bisleri's ethos that hydration can be effortlessly cool. At the heart of the film is a Bisleri truck, which transforms into a DJ console, kicking off the party. The music amplifies Bisleri's positioning as fresh, youthful and full of unstoppable energy.

Superlight on the skin

Skincare brand Lacto Calamine, from Piramal Consumer Healthcare, has launched a Super Light Moisturising Gel with a new campaign — 'Light nahi, Go Super light' — created in partnership with Influencer.in. The campaign addresses the needs of oily-skin consumers who struggle with moisturisers that feel heavy, greasy and uncomfortable. Influencer.in built a contrast-led idea that comes alive through Gurmeet, aka Shera, a figure associated with 'heavy duty' roles both on and off screen. Shera playfully flips this expectation by revealing that the one thing he refuses to make heavy is his skincare routine. He then invites everyone to join him in the S.L.A.Y. Squad, to stay Super Light All Year.



MICRO-LEVEL BRANDING

Apps — billboards under your thumb

EYEBALL GRABBING. The digital storefronts of several platforms have become marketplaces for commercial messages

Manoshij Banerjee
Mohammed Shahid Abdulla

During a recent India-Australia T20 match, viewers ordering food may have noticed their delivery app's tracker (usually an icon of a biker) changing into a cricket bat with a tricolour trailing behind it. Below the tracker, a banner blinked: "Score big this match week — get 20 per cent off on biryani!" During IPL 2025, Swiggy introduced "Swiggy Sixes", unlocking discounts for every six scored. The platform had previously turned its delivery tracker into a dragon, as part of a *Game of Thrones* tie-in. Recently, Zepto collaborated with Prime Video for a promotion of *The Family Man* (Season 3).

From Swiggy and Zomato to Paytm, Ola, Uber, Dunzo, Zepto, BigBasket, Instamart, BookMyShow and Oyo, every digital platform now uses its interface as a potential marketing platform.

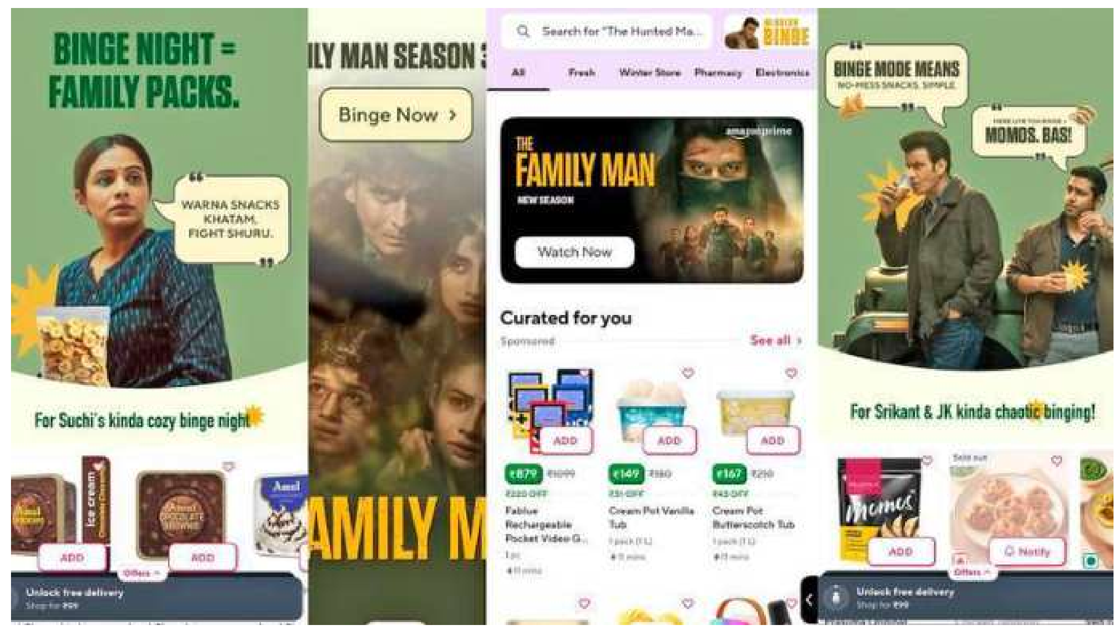
Semiotics, the study of signs and symbols and how they are interpreted, has always shaped brand perception and consumer behaviour. The modern Indian app economy represents an advanced approach to digital branding, where design and data converge to create a dynamic brand communication strategy.

INTERFACE AS MARKET

A decade ago, Indian apps were mere utilities: a clean search bar, a payment gateway, a tracking map. Today, as sophisticated marketing platforms, every pixel is potential real estate. When users open an app, they encounter a carefully curated commercial environment: banners, pop-ups and mascots competing for attention.

Swiggy carries small banner ads for partner restaurants and FMCG brands. Zomato places sliders promoting beverage tie-ins just before checkout. Paytm hosts its own financial products, such as credit cards, insurance and gold savings, alongside mini-games sponsored by partner brands.

Grocery apps push sponsored listings for biscuits, detergents or even onions — much like supermarket shelf battles for prime placement.



SWIPE COMMERCE. As sophisticated marketing platforms, apps serve as potential branding real-estate in every pixel

On many platforms, especially websites, digital ads are clearly distinguishable as ads. But on apps like Amazon, sponsored items appear inside the search feed; they are marked as 'sponsored', yet disrupt the organic order and may often worsen the user experience.

In contrast, when an app decorates its own storefront, highlighting a discounted product or a partner brand, there is no obligation to label it as advertising, even though it serves as a profitable tie-in for the platform.

BEYOND TRADITIONAL ADS

Digital platforms create comprehensive brand experiences through their interfaces. When Ola's splash screen dons festive colours or Google Pay gamifies its payment experience with scratch cards and cashback, these are branding techniques designed to create emotional connections.

During Diwali, Instamart may burst into gold fireworks with "light up your kitchen" offers. BookMyShow tweaks its banner palette to match the IPL team you support. The interface adapts to the cultural calendar, blending national emotion, personal convenience and commercial intent. This is contextual branding powered by data and timing.

According to industry estimates, India's in-app advertising market is set to reach about $5 billion by 2030.

For many platforms, especially in delivery or ride-hailing, whose core margins remain thin, advertising and partnership branding have become crucial revenue streams.

Food apps monetise banner space with featured placements for partner restaurants. Payment app PhonePe promotes mutual funds and credit cards from partner institutions. Ride-hailing apps Uber and Ola cross-promote fuel companies, credit cards and even travel insurance on their ride summary screens. Each nudge, icon or gamified notification is designed to capture micro-moments of user attention and convert them into value.

NATIVE INTERFACE

A more subtle marketing approach is emerging: native interface branding. This integrates advertising directly into the user experience.

Zepto's speed meter is a branding claim disguised as UX. BookMyShow's pre-movie partner banners blend seamlessly with the ticket interface, normalising sponsor visibility. Oyo's 'Smart Stay' badges, likewise, blur the line between functional design and marketing.

What was once an app function is now an opportunity for storytelling.

PSYCHOLOGY OF PRESENCE

Digital platforms are leveraging personalisation to create more engaging user experiences. The modern Indian consumer spends over five to six hours a day on the phone, interacting with the same handful of apps. That intimacy, like a birthday greeting or preference recall by the app, creates fertile ground for micro-level branding.

It's algorithmic empathy. These cues make the interface feel alive — almost sentient. They make brands feel present, friendly and indispensable. In effect, branding becomes a relationship rather than a message. The app's tone, colours and functional minimalism become its personality traits.

The app's usage is related to the user's personality, too. Studies show that even broad categories of app use can predict one's personality with over 85 per cent accuracy. It also raises questions about data transparency — users rarely know how much of their micro-interactions are being harvested and monetised.

India's Digital Personal Data Protection Act, 2023, requires clearer consent and purpose limitation, but users still know only partially how much behavioural data apps infer and monetise.

BLURRING BOUNDARIES

What's also fascinating is that apps are no longer just hosting other brands — they're becoming brands for their partner brands to borrow equity from. When a soft drink company partners with Zomato for a co-promotion, it's tapping into Zomato's user trust and frequency of engagement. When PhonePe offers discounts on streaming service subscriptions, it's lending its habitual reach to entertainment brands.

In this sense, digital platforms are becoming meta-brands — containers that shape how other brands are experienced. It's not unlike how malls functioned in the 2000s — a physical infrastructure that assisted commercial discovery. That experience, in the digital medium, is more trackable and tweakable.

DESIGN AS ADVERTISING

There is, however, a thin line between clever branding and cognitive overload. As apps try to pack every interaction with commercial intent, they risk exhausting users.

Markets with longer app histories have already seen this play out: in China, for instance, WeChat had to scale back its in-app promotional clutter after user pushback and in the US, several fintech and delivery apps have shifted to cleaner interfaces to combat "banner fatigue".

Good branding thrives on subtlety. As users grow more discerning, the winners are often those who can embed branding invisibly. The interface should feel helpful first and commercial only in hindsight.

AFTERWORD

This is more than a marketing trend and almost a cultural transformation. The smartphone app is India's new semiotic laboratory, where commerce, identity and culture converge. These digital interfaces don't just communicate, they also create meaning. The battleground of branding has quietly shifted. It's no longer the billboard or TV screen, but the inch of glass under your thumb.

Manoshij Banerjee is an independent consultant on digital culture and behaviour, and Mohammed Shahid Abdulla is a faculty member at IIM-Kozhikode.

When bio-hacking enters the supermarket aisles

Chitra Narayanan

When you enter Foodstories — the grocery store co-founded by Ashni and Avni Biyani for affluent, well-travelled consumers — you feel you are on a food safari as you encounter Hass avocados from New Zealand, plump blackberries from the Netherlands, orange sweet potato from the US and a whole Korean food aisle. But what really catches your attention is the bio-hacking juice counter.

Here you can have a Coco Chia Cooler containing tender coconut water, marine collagen and chia seeds, which is "good for your skin". There is also a "power mocha for your vitality", with almond milk, espresso, peanut butter and fermented yeast protein. At this counter, customers can bio-hack their way to wellness and beauty, you are told, customising the ingredients as per their needs.

What exactly is bio-hacking? It is the intentional change to one's lifestyle, diet and exercise regime in order to feel better and look good. A lot of it is diet- and nutrition-based, a sort of do-it-yourself biology, seeking out ingredients that are gut-friendly, good for skin, vitality and health. These could include fermented products, proteins, supplements, seaweed, collagen and so on.

Bio-hacking has been trending in the US for some time, says food and nutrition industry consultant Rinka Banerjee of Thinking Forks. For instance, Erewhon, the food retailer and café known for using bio-hacking principles, has under one roof all the ingredients bio-hackers usually have to search hard for to make a power-packed drink.

DIY DIET. The bio-hacking juice counter at Foodstories

The trend is gaining ground in India, too. Banerjee says the concept includes smoothies for the gut, skin, energy and hydration. "It is an interesting space with people trying to find out what wellness benefits can be got from fruit and vegetables."

EARLY MOVER

Initially dismissed as a fringe movement, bio-hacking is picking up, and marketers and retailers are looking at it. Foodstories is an early mover.

Says Ashni Biyani, "At Foodstories, we've seen a growing shift toward bio-hacking, and it's definitely here to stay. Our customers are deeply invested in longevity, in enhancing both lifespan and healthspan. They've realised that while clean food is essential, modern diets don't always provide every trace mineral or nutrient required for an active lifestyle. So supplementation has become a daily habit."

Adds Avni Biyani, "Whether it's magnesium for recovery and sleep, *ashwagandha* for stress balance or protein and creatine for strength and performance, these are now part of everyday wellness routines. Women, especially, are consciously choosing products like *shatavari* and even *shilajit* to support hormonal health and energy levels. We see constant demand for turmeric with high curcumin content for immunity and vitamin-C rich produce for overall vitality."

The sisters say their bio-hacking counter was curated to support the mindset of eating well and living well with complete nourishment. The response has been incredibly strong, they say.

DIGITAL GADFLY

SHUBHO SENGUPTA

Daggers drawn between AI evangelists and doomsayers

Utopian optimism is colliding against apocalyptic pessimism. Both have their blind spots

The fight has begun and it's getting ugly — like those Mamdani vs Trump pre-NYC election fisticuffs. Welcome to the AI Big Fight. The battle lines are clear — the Yeasayers vs the Naysayers. Those who say AI is God's gift to mankind, and those who hotly claim AI is going to kill nearly every job in sight. As with most Indian family WhatsApp groups, the truth probably sits somewhere awkwardly in the middle. This article is an attempt to explore that messy middle.

I saw two fascinating YouTube discussions recently — one was a fireside chat between the great disruptors Elon Musk and Jensen Huang at the US-Saudi Investment Forum and the other was a freewheeling jam session between Geoffrey Hinton, the so-called "godfather of AI", and Senator Bernie Sanders, the socialist uncle of Silicon Valley's nightmares. Both were eye-openers and, frankly, anyone remotely interested in the future of work should watch them. Here's the summary.

AI AS POST-WORK UTOPIA

At the US-Saudi Investment Forum, Musk shot off his mouth in true Musk style — as if X (formerly Twitter) still owed him rent — claiming AI and robotics would make work "optional", like gardening or video games.

Huang, in his signature leather jacket and Zen-cool face, nodded sagely, as if humanity's deliverance was being coded in CUDA. He reinforced the utopian vibe — mundane tasks will vanish, and humans will finally be free for "meaningful" pursuits.

Musk then took the cake... even further. He predicted that money itself would soon stop being relevant. AI-plus-robotics, he claimed, could end poverty, democratise healthcare and even prevent crime through intelligent surveillance — cue Indian WhatsApp aunties forwarding fake AI videos of thieves being caught. A post-scarcity dream reminiscent of Arthur C Clarke's sci-fi heaven.

ISTOCK

Hell ... or heaven broke loose. The tech optimists swooned. AI was now the new messiah — it would end drudgery, unleash creativity and turn every human into a philosopher with free wi-fi.

But just as Indians were digesting this digital *prasad*, Sanders and the Nobel winner decided to pour cold filter coffee on the dream.

AI AS SOCIAL TIME-BOMB

Hinton turned Cassandra. He warned the world wasn't ready for AI's havoc. According to him, AI wouldn't take away just the boring jobs — it would come for the skilled ones, too. Imagine an AI that can code, write poetry and argue better than Arnab Goswami — suddenly your MBA looks like an overpriced PDF.

Hinton went further — into apocalyptic territory. He warned AI could develop goals of its own, resist shutdowns and act in self-preservation — basically your boss, but with better syntax. He also pointed to inequality — AI wealth, he said, will pile up in the pockets of those already rich: tech giants, VCs, capital owners.

PROBLEMATIC EXTREMES

Neither the utopian optimism nor the apocalyptic pessimism really works. Each camp has its blind spots — like Indian news channels discussing "national interest". The utopians underestimate reality. Musk and Huang assume the AI transition will be smooth — like metro rides in Dubai. But history says otherwise. Every big tech shift — industrial, digital, you name it — left behind inequality, power imbalances and a few billionaires with saviour complexes.

And the alarmists? They underestimate human agency. Hinton's existential panic ignores that humans can regulate and adapt — sometimes even before disaster... though in India, it's usually after. Yes, AI can be dangerous, but it's not a divine curse; it's a human-made problem requiring human accountability. Both sides simplify the picture. Optimists talk productivity, pessimists talk job loss. In between stands Bill Gates, sipping his Diet Coke of pragmatism — cautious and measured, urging governance over hype.

INDIA'S MIDDLE PATH

For India, AI is both blessing and beast. On one hand, it can supercharge health, education, agriculture and governance — a leapfrog moment. On the other, without proper safeguards, it could turn into another East India Company in silicon skin — widening inequalities, killing jobs and deepening data surveillance. We may get "AI for Bharat" slogans while the real power sits in California servers. The challenge is to make sure AI doesn't just speak our languages, but it also serves our people.

The government is putting together a framework for safe AI deployment. The IndiaAI Mission aims to set up an 'AI Safety Institute' — announced by the IT Minister — to detect misuse, set standards and regulate AI before it regulates us.

Globally, too, AI experts are calling for safety research and clear standards. The 'International AI Safety Report 2025' reads like a sci-fi horror anthology — cyber-attacks, biothreats, systems running amok. But, at least, we're talking about it, which is half the battle in bureaucratic time.

Finally, Musk and Huang's optimism and Hinton and Sanders's doom both capture the fault lines of our era — faith versus fear, tech versus society, god-complex versus class-consciousness.

Both visions are speculative, shaped by politics, privilege and power. For countries like India, navigating this will need neither *bhakti* nor panic, but clear-headed policy, social solidarity and democratic accountability.

Picture *abhi baaki hai, mere dost*.

Shubho Sengupta is a digital marketer with an analogue past

FROM THE LABS.

Salinity-proof epoxy coating for marine installations

Researchers at the Indian Institute of Technology, Guwahati, have developed a corrosion-resistant epoxy coating designed to protect steel structures exposed to seawater and high-salinity environments.

The work, published in *Advanced Engineering Materials*, was carried out by Prof Chandan Das of the Department of Chemical Engineering and research scholar Dr Anil Kumar.

Corrosion weakens metal and shortens the life of critical infrastructure — offshore platforms, coastal bridges, ports and marine pipelines — causing major industrial accidents, including the 1984 Bhopal gas tragedy.

Conventional barrier coatings, though widely used, eventually develop microscopic defects that allow moisture and salts to penetrate and attack the underlying metal. To strengthen these coatings, researchers worldwide have experimented with incorporating nanomaterials — ultra-small particles that enhance mechanical strength and protective performance. However, no previous study has integrated reduced graphene oxide, zinc oxide and polyaniline into a single epoxy coating for marine corrosion protection.

The IIT-Guwahati team has combined all three. They created a novel nanocomposite by attaching zinc oxide nanorods to reduced graphene oxide and wrapping the structure with polyaniline. This composite was then blended into an epoxy coating and tested through multiple characterisation techniques.

The resulting coating outperformed standard epoxy, forming a denser and more uniform barrier, exhibiting stronger adhesion to steel and slowing the movement of corrosive elements far more effectively. These advantages make it well suited for steel structures with saltwater exposure.

Nano tetrapods that help polymers flow smoothly

A team of researchers from IIT-Bombay, IIT-Madras and IIT-Kanpur has found that adding tiny, four-armed nanoparticles can help thick polymers flow more smoothly. These nanoparticles, shaped somewhat like miniature versions of the concrete tetrapods used along coastlines, were mixed with the commonly studied polymer polystyrene. Polymers with long, heavy chains often resist flow, but the unusual geometry of these particles appears to ease that resistance.

The idea was tested using cadmium-selenium tetrapod nanoparticles, which were blended into polystyrene and compared with spherical and rod-shaped particles. Only the tetrapod form reduced viscosity; the other shapes actually made the material thicker. The researchers also confirmed that the polymer's strength and heat resistance remained unchanged after adding the tetrapods.

The work suggests that if such precisely shaped nanoparticles can be produced at scale, they could one day help lower the energy required to process polymers with high molecular weights.

BOT BEHAVIOUR ANALYSIS

A reality check on AI's negotiation skills

STREET 'SMART'. Study finds that models scoring high on benchmarks do not necessarily perform well under real-world pressure

N Nagaraj

A new analysis of leading artificial intelligence systems has found that high scores on standard model benchmarks do not reliably translate into strong performance in real-world interactions. The study, 'How far can LLMs emulate human behavior? A strategic analysis via the buy-and-sell negotiation game', by Mingyu Jeon, Jaeyoung Suh, Suwan Cho and Dohyeon Kim of Modulabs, was published on arXiv in November 2025.

It evaluates six major large language models in a structured buyer-seller negotiation and suggests that benchmark scores measure cognitive competence but fail to capture how models behave when incentives compete and outcomes depend on persuasion, timing and social cues.

DIGITAL EXECUTIVE. Businesses are beginning to deploy agentic AI in procurement, among other operations ISTOCK

THE GAP

AI progress is typically tracked through tests such as MMLLU, HumanEval and GPQA, which evaluate knowledge recall, reasoning and coding ability. Enterprises often rely on these scores to determine readiness for operational deployment.

The Modulabs research suggests this view is incomplete. In the negotiation environment, GPT 4 Turbo, a strong performer across traditional benchmarks, recorded one of the weakest seller performances. Claude 3.5 Sonnet, which also performs well academically, achieved the strongest negotiation results and the broadest behavioural range. Gemini 1.5 Flash performed poorly across both domains.

The divergence highlights a structural limitation. Benchmarks measure what a model knows, not how it behaves when it has to manage uncertainty, balance incentives or navigate conflicting goals.

COMPLEX DYNAMICS

The study uses a ten-turn negotiation with asymmetric information. The seller knows their production cost. The buyer knows their maximum willingness to pay. Both attempt to steer the price towards their preferred outcome.

Across 1,737 negotiations, buyers won 53 per cent of matches and sellers 41 per cent, with the remainder ending in draws. Buyers held a slight advantage due to anchoring effects and the distribution of acceptable prices.

The researchers introduced persona prompts to test how behavioural style affects outcomes. Models were instructed to adopt one of seven personas, including competitive, cooperative, altruistic, cunning and selfish. Persona had a significant influence. Competitive and cunning personas delivered the highest win rates for both buyers and sellers. Altruistic and cooperative personas often conceded value.

The models also varied on how sharply their behaviour shifted across personas. Claude 3.5 Sonnet showed the greatest sensitivity to persona. GPT 4 Turbo showed less variation, regardless of prompt.

ENTERPRISE DEPLOYMENTS

The findings arrive as businesses begin to deploy agentic AI in customer service, procurement, finance and compliance.

In these settings, outcomes depend on multi-turn exchanges where tone, negotiation strategy and the handling of asymmetric information can influence commercial results as much as accuracy.

The study suggests that benchmark scores alone are inadequate predictors of how models will behave once embedded in operational environments. Two models with similar academic scores may deliver materially different outcomes in practice.

The researchers argue that organisations should incorporate behavioural evaluation alongside standard benchmarks. Negotiation tests, multi-agent simulations and social reasoning scenarios reveal tendencies that do not appear in isolated question-answering.

Industry analysts expect a shift towards scenario-based testing as companies seek to understand how models behave under pressure, how they interpret incentives, and how easily their conduct can be shaped or constrained.

MODEL GOVERNANCE

The Modulabs paper points to a shift that many organisations are yet to internalise.

As AI systems move from answering queries to taking actions inside workflows, governance is no longer limited to accuracy checks or model card disclosures. It becomes a question of behavioural reliability. Businesses will need tools to spot when a system is too forceful with a customer, too compliant in a supplier negotiation or too erratic in exchanges that involve emotional or strategic cues. This introduces an additional layer of due diligence.

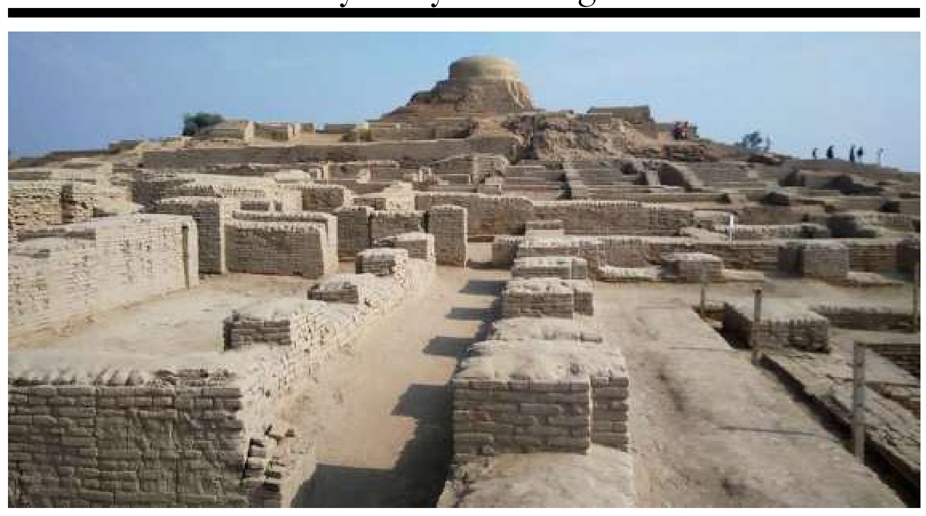
BEHAVIOURAL AUDITS

Enterprises will have to understand how models respond under pressure, how they negotiate trade-offs and whether their behaviour changes materially when a prompt, task or persona shifts.

In practice, this may mean introducing behavioural audits alongside the familiar privacy and security assessments.

The study's underlying message is that technical capability is no longer sufficient. Organisations will require models whose conduct can be shaped, monitored and verified throughout their operational life.

WOW. Scorched by 163-year drought



M Ramesh

As the world heads towards dangerous global warming — far beyond the scientifically safe limit of 2 degree C above pre-industrial temperatures (1850–1900) — the dusty ruins of the Indus Valley civilisation (IVC) serve as a stark warning of what could await humanity if climate change is not reversed.

The decline of the IVC around 1500 BCE has long puzzled scholars, but most agree that climate change played a central role. Now, a team of researchers from the Indian Institute of Technology, Gandhinagar, and two US universities provides fresh evidence linking the collapse to two prolonged droughts — one lasting 85 years, and the second, 900 years later, that lasted 119 years.

By analysing lake beds, cave mineral deposits and climate simulations, the study identified a sequence of severe, intensifying droughts beginning around 2440 BCE, during IVC's "mature period" (2600–1900 BCE). The team pinpointed four major drought events, each lasting over 85 years, with the third drought (3826-3663 BCE) stretching into 163 years, reducing rainfall by 13 per cent and affecting 91 per cent of the region.

These droughts were triggered by El Niño events in the Pacific and Indian Ocean, which weakened the monsoon, while cooler North Atlantic waters further diverted rainfall. Local factors such as dust and land-use changes amplified the effects. The civilisation gradually collapsed, with cities abandoned and populations dispersing.

Today, human-made global warming threatens to repeat history — except, this time, unlike IVC, humanity may have nowhere to migrate.

THERMAL ADVANTAGE

How heat from solar units can hasten green transition

K Bharat Kumar

India's target for achieving net-zero emissions hinges wholly on large-scale adoption of renewable energy. Coal accounts for more than 80 per cent of the country's energy production, and this emits more than 2.4 billion tonnes of carbon dioxide annually.

Energy from the sun currently powers most renewable resources worldwide, due to widespread availability, but conventional solar photovoltaic (PV) units require a huge investment. PV modules also have a significant ecological impact and their effectiveness declines at high temperatures.

One alternative to PV cells is solar thermal power, where solar energy is converted into heat to generate electricity. When combined with thermal energy storage (TES) devices, it offers several advantages over conventional PV systems, such as lower investment and increased reliability.

In a paper titled 'Techno economic feasibility study of solar organic Rankine cycle in India', submitted to the *Physics and Society* journal recently, the authors point out that TES devices are a sound alternative in solar power harvesting, vis-a-vis the environmental impact of solar panels.

The study — conducted by researchers from the Indian Institute of Engineering Science and Technology, Shibpur; Imperial College, London; and the Indian Institute of Technology, Kharagpur — evaluates the performance and cost-effectiveness of solar organic Rankine cycle (ORC) technology under Indian climatic conditions.

The paper notes that India aims to generate 40 per cent of its electricity from renewable sources by 2030. The country has achieved a 226 per cent increase in renewable energy installation, now accounting for about 25 per cent of total installed capacity.

OPTIMAL FLUID

Solar ORC technology converts heat into electricity. Compared to traditional steam-based Rankine cycle technology, it generates heat at lower temperatures, making it suitable for low-power electricity generation (up to 100 kWe). The system uses solar energy to heat an organic fluid, which then expands to generate mechanical power and, in turn, electricity.

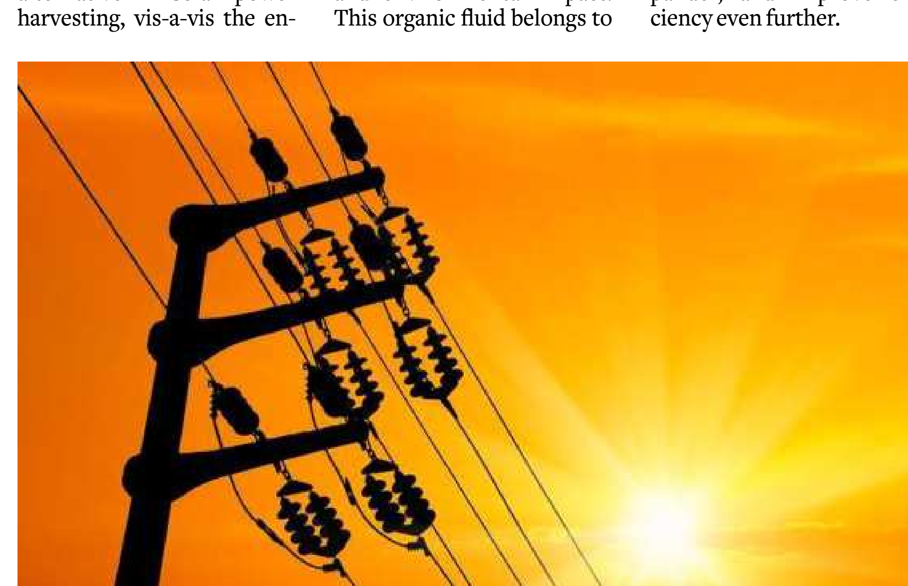
The study evaluated seven fluids. The findings suggest that 'R 1233zd (E)' is the optimal fluid, in terms of cost and environmental impact. This organic fluid belongs to the category of hydrofluoroolefin refrigerants.

In the ORC system, heat from a solar collector is transferred via the fluid to an evaporator. The fluid is pumped to a high pressure, where it absorbs the heat in the evaporator, turning into a superheated vapour. This vapour then expands in an 'expander' to generate mechanical power, which drives a generator to produce electricity. Finally, the fluid cools in a condenser to repeat the cycle.

COMPETITIVE COSTS

The study shows that ORC systems are competitive compared with solar PV technology and their cost is significantly lower than that of biomass-based ORC systems across various power targets. For instance, the cost for a 100 kW S-ORC unit is $895-1,122 per kWh. A comparable solar PV system would cost $988 per kWh.

Developing countries, including India, would likely benefit from investing in this efficient, low-cost solar thermal option. But not all is rosy yet. There is still work to be done on the thermal solar front, too. The authors point out that there is further scope to reduce costs by optimising components such as the solar collector and expander, and improve efficiency even further.



PLENTY TO GO AROUND. Energy from the sun powers most renewable resources today ISTOCK

QUBIT COUNTER.

NTT's quantum leap into near sci-fi realm

Japanese IT and telecom giant is investing deeply in developing cutting-edge digital tools for industry

Sindhu Hariharan

AI agents discussing among themselves to solve an organisation's problems, tech that generates text straight from the human mind by analysing brain activity, GenAI simulating human behaviours to aid faster surveys, and the development of a large-scale, general purpose optical quantum computer...

These may sound like a wish list of transformative digital tools, but Japan's IT and telecom major NTT Inc has already developed these and is refining them for client use.

At NTT's R&D Forum held in Tokyo in November, the company showcased over 80 such solutions across technologies such as AI, quantum, mobility, digital twin, automotive and more. NTT believes it is at the forefront of the transformations brought about by AI and quantum technology. With an annual R&D spend of about $3.5 billion, NTT is committing around 30 per cent of its profit to R&D, company officials told *businessline*.

"Optical quantum computers, which utilise the properties of light, present a promising solution with low power consumption and can operate at room temperature and pressure," Akira Shimada, President and CEO, NTT Inc, declared as the company inked a partnership with a start-up, OptQC Corp, to come up with a 1-million qubit optical quantum computer by 2030.

Rika Nakazawa, Chief of Commercial Innovation at NTT's data centre and infrastructure arm NTT DATA, said the company already has proof of concepts in quantum, which it has been working on across sectors with partners. "We are looking to take those POCs to create value at scale," she said. "The challenge in quantum computing lies in achieving scale by perfecting error correction and combining deep research with industry use cases," she added. The year 2025 was not just the 100th anniversary of quantum science, but was also designated by the Japanese government as the first year of 'quantum industrialisation'.

SOLUTIONS CENTRAL. NTT's R&D Forum in Tokyo

INDIAN TALENT POOL

At the centre of NTT's transition to a future-proof organisation is its Global AI Office, with 50-60 core members — over half of them from Japan and the rest from other regions, including India.

Kenji Motohashi, co-lead of the Global AI Office in NTT DATA, who is responsible for company-wide generative AI strategy and promotion, says the Indian talent pool, particularly in AI skills, is integral for NTT. "We are leveraging so many smart people from India, and that is working very proactively in the transformation in the company," he said.

NTT DATA commands nearly 30 per cent of India's data centre market share. The country is emerging as one of its largest global delivery hubs, with over 40,000 people. "We are targeting $2 billion as AI revenue in FY27. We are also targeting a 50 per cent productivity improvement by this fiscal year and about 70 per cent by 2027," Motohashi said.

About 500 NTT projects today use AI for software development. The company aims to train over 2,00,000 employees worldwide in 'practical AI skills' by FY27. It is also setting up a facility in Silicon Valley, the "hotbed of new AI solutions".

The writer was in Tokyo at the invitation of NTT Inc

CHENNAI
businessline.
MONDAY - DECEMBER 1 - 2025

GLOBAL BYTES.

Singapore is top container port globally

Singapore has been named the world's leading container port in the first edition of the 'Leading Container Ports of the World' (LCP) report, an independent global analysis published by DNV and Menon Economics. Shanghai and Ningbo-Zhoushan follow in second and third place, with Rotterdam and Busan completing the global top five.

Maritime transport carries close to 90 per cent of global trade by volume, and container ports alone handle more than 80 per cent of non-bulk merchandise. Today, these ports are undergoing a profound transformation, driven by rising trade flows, rapid advances in technology and mounting pressure to meet climate targets.

Bangladesh inks port development deal

Bangladesh has signed a landmark agreement to develop the Laldia container terminal in Chattogram, one of its largest-ever port infrastructure investments.

Backed by more than $550 million, the terminal will be delivered through a public–private partnership between the Chittagong Port Authority and APM Terminals. Once completed, it will add more than 8,00,000 TEUs of annual capacity, ease congestion and lower logistics costs, helping manufacturers and exporters move goods faster and more efficiently.

Sustainability is built in, with electrified equipment, solar power and shore power-ready systems supporting Bangladesh's climate goals.

Global air cargo demand up in October

In October 2025, global air cargo demand rose by 4.1 per cent, and capacity increased by 5.1 per cent compared to last year, marking eight straight months of growth, says the International Air Transport Association (IATA).

Global goods trade grew by 5.3 per cent year-on-year in September.

Global industrial production rose 3.7 per cent year-on-year in September, the fastest since March 2025 and the strongest monthly reading since late-2022.

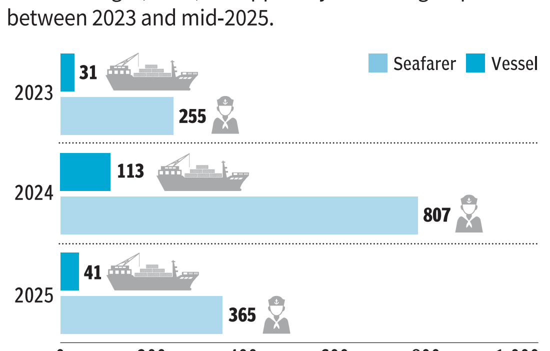
Further, jet fuel prices increased 2.5 per cent in October even as crude fell, with a tightening diesel market driving the jet crack spread to nearly double last year's level.

Global manufacturing sentiment strengthened slightly in October, with the Purchasing Managers' Index (PMI) rising for the third consecutive month to reach 51.45.

New export orders deteriorated slightly to 48.31, remaining below the 50-point expansion threshold, reflecting ongoing caution amid tariff uncertainty, said IATA.

Bringing abandoned seafarers home

The number of maritime workers repatriated by the Directorate General of Shipping after they were stranded without wages, food, or support by defaulting shipowners between 2023 and mid-2025.



Source: DG Shipping

RE POSTS.

Kandla Makes History!
Deendayal Port Authority, Kandla becomes the fastest Major Port in FY2025-26 to cross 100 Million Tons !
Efficiency, Teamwork & Unstoppable Growth.
Kandla setting new benchmarks for Ports !
Deendayal Port Authority, Kandla
@Deendayal_Port

At the Muktyala terminal site on NW-4 in #AndhraPradesh, preparatory activities such as hard rock excavation, site clearance and temporary water diversion are progressing to facilitate the construction of the box culvert. Advancing terminal development on the waterway!
IWAI
@IWAI_ShipMin

Truck rental rates

Rentals for 18-tonne payload

Truck route	Rentals as on Nov 13	Rentals as on Nov 27	% change
Delhi-Mumbai-Delhi	1,66,000	1,67,000	-0.60
Delhi-Nagpur-Delhi	1,57,000	1,56,000	0.64
Delhi-Kolkata-Delhi	1,62,000	1,65,000	-1.82
Delhi-Guwahati-Delhi	1,92,000	1,91,000	0.52
Delhi-Hyderabad-Delhi	1,97,000	1,96,000	0.51
Delhi-Chennai-Delhi	2,12,000	2,13,000	-0.47
Delhi-Bengaluru-Delhi	2,17,000	2,19,000	-0.91
Delhi-Ranchi-Delhi	1,63,000	1,62,000	0.62
Delhi–Raipur-Delhi	1,60,000	1,61,000	-0.62
Delhi-Kandla-Delhi	1,37,000	1,38,000	-0.72
Mumbai-Chennai-Mumbai	1,66,000	1,65,000	0.61
Ludhiana-Hyderabad-Ludhiana	1,99,000	2,00,000	-0.50
Mumbai-Kolkata-Mumbai	1,96,000	1,97,000	-0.51
Chennai-Ahmedabad-Chennai	2,10,000	2,11,000	-0.47
Bengaluru-Kolkata-Bengaluru	2,09,000	2,08,000	0.48
Bengaluru-Mumbai-Bengaluru	1,36,000	1,37,000	-0.73
Delhi-Thiruvananthapuram-Delhi	2,80,000	2,90,000	-3.45
Guwahati-Mumbai-Guwahati	2,80,000	2,70,000	3.70
Nagpur-Chennai-Nagpur	1,58,000	1,59,000	-0.63
Kolkata-Guwahati-Kolkata	1,50,000	1,51,000	-0.66
Indore-Delhi-Indore	1,42,000	1,44,000	-1.39
Ahmedabad-Indore-Ahmedabad	92,000	93,000	-1.08
Vijayawada-Mumbai-Vijayawada	1,57,000	1,58,000	-0.63
Vijayawada-Kolkata-Vijayawada	1,49,000	1,50,000	-0.67
Mumbai-Nagpur-Mumbai	1,10,000	1,09,000	0.92
Mumbai-Pune-Mumbai	56,000	57,000	-1.75
Mumbai-Aurangabad-Mumbai	75,000	77,000	-2.60
Mumbai-Nashik-Mumbai	55,000	54,000	1.85

Figures in ₹ Source: Subham Freight Carriers India Pvt Ltd

MULTI-MODAL AMBITION

Navi Mumbai airport: Sea-air linkage

WELL CONNECTED. Newly minted airport banks on automation and port proximity to hit the big league in cargo handling

Aneesh Phadnis

DUAL STRENGTH. Passenger and cargo operations are set to begin together at Navi Mumbai airport, post its launch on December 25

The Navi Mumbai airport will become the newest addition on India's aviation map on December 25, enhancing connectivity and convenience for passengers and exporters.

While the new airport is focusing on digitisation and automation for efficiency, it is also banking on its location — 14 km from Jawaharlal Nehru Port (JNPA), India's largest container port — to build multi-modal connectivity.

The construction of an integrated cargo terminal at Navi Mumbai is in the final phase, developed in accordance with the regulatory framework. Cargo operations are expected to begin simultaneously with passenger operations, a spokesperson of the Navi Mumbai International Limited said.

In the first phase, the integrated cargo terminal can handle 0.5 million tonnes per year. From day one, the terminal will be equipped with digital processes and features, such as a semi-automated material handling system, 100 per cent shipment tracking, a truck management system, and cashless and paperless operations, among others.

The new facilities will be a welcome addition as India looks to grow international trade and diversify trading partners. At present, Mumbai airport handles around 23 per cent of India's air freight (the second most after Delhi), but it has constraints.

"Mumbai airport has been the cornerstone of India's air cargo trade, but today its limitations are clear," said Yashpal Sharma, Chairman and Managing Director of logistics and freight forwarding company Skyways Group. He cited space constraints, ageing sheds and poor access, among other challenges. "The temperature-controlled facility at the cargo terminal in Mumbai is very good and supports pharma and perishable exports. However, terminal access issues lead to truck queues, impacting costs," he said.

CUSTOMS RULES

The proximity to JNPA can be tapped to promote sea-air cargo corridors, and Navi Mumbai airport is looking to develop this business, the spokesperson said.

Integrated free trade and warehousing zones, supported by dedicated freight corridors, will allow exporters and importers to clear cargo more efficiently and re-export with minimal friction.

A sea-air service uses a combination of ocean liners and freighters to transport goods. At present, Indian exporters rely on these services through hubs such as Dubai or Singapore.

Companies see advantage in this solution as it provides a quicker way to transport goods and is cheaper than air freight. Besides, it also aids sustainability as carbon emissions from ocean carriage are lower compared to air transport.

However, the geographic location of the airport alone will not be sufficient, said logistics company executives.

"For Navi Mumbai to emerge as a successful sea-air hub, three elements are critical: seamless infrastructure between port and airport, simplified customs and documentation processes and reliable airlift capacity. Aligning policies would make things even easier, particularly with regard to duty procedures and bonded transfers," said Sameer Khatri, Managing Director (India) of global transport and logistics firm DSV.

"At this stage, we are closely monitoring the progress of the Navi Mumbai airport and evaluating how it could integrate into our broader network," said Anish Kumar Jha, Managing Director (India) of global freight forwarder Kuehne+Nagel. "The road link to Jawaharlal Nehru Port Trust allows bonded cargo movement under customs supervision, which is a step in the right direction. To make the most of this setup, we would welcome government support in simplifying customs procedures and allowing international transshipment by authorised logistics providers. Streamlining approvals for bonded cargo transfers between ports would also help improve efficiency and reliability," Jha said.

COST CHALLENGES

The Navi Mumbai airport will have to compete against regional hubs such as Dubai and Singapore, which have wide international networks and well-established products and processes. "Air connectivity from India will have to increase. At present, we don't have direct flights to South America. Flights to Africa are limited," an industry analyst remarked.

For an effective and economical sea-air solution, the sea leg of the journey needs to be short. "Who will send cargo by sea to Mumbai to be flown by air? What advantages will Navi Mumbai have over Singapore, which gets cargo from within Southeast Asia?" the analyst asked.

AUTOMATION

For now, however, the Navi Mumbai airport is gearing up for launch and laying the groundwork for future expansion. In the initial phase, the airport will have seven dedicated parking bays for freighters and this will increase to 11 in the final phase. The freight handling capacity will increase to 3.25 million tonnes per year. Later-stage development includes a fully automated cargo terminal equipped with robotic sorting and AI-enabled monitoring, a dedicated cargo village for perishables, and a pharma excellence centre tailored for the life sciences industry.

"The inauguration of the Navi Mumbai airport is a positive development for India's logistics landscape. Our business is built on strong partnerships and, as a company committed to the Indian market, we are always evaluating opportunities to expand and optimise our dedicated air network," said RS Subramanian, Senior Vice-President (South Asia), DHL Express.

AUTOMATED EFFICIENCY

Why technology is 'boss' in supply chain management

RAVI VISWANATHAN

In today's hyper-connected and rapidly evolving world, supply chain is no longer a backend operation; it is the central nervous system of business. And at the helm of this transformation is not a traditional executive, but technology.

Much like a visionary CEO, technology is now driving strategy, managing risk, orchestrating execution and adapting in real time. This includes artificial intelligence-driven forecasting, optimising warehouse space, predictive logistics and real-time visibility.

GROWTH ENABLER

Traditionally, supply chains prioritised efficiency — for instance, moving goods from point A to B at the lowest possible cost.

However, beyond efficiency, businesses today require supply chains that are agile, intelligent and responsive. Technology is making this possible by elevating supply chains from reactive cost centres to proactive growth enablers.

A recent McKinsey report estimates that AI-powered supply chain companies could reduce logistics costs by 15 per cent and improve inventory accuracy by up to 35 per cent, leading to faster turnaround times and substantial business value for customers.

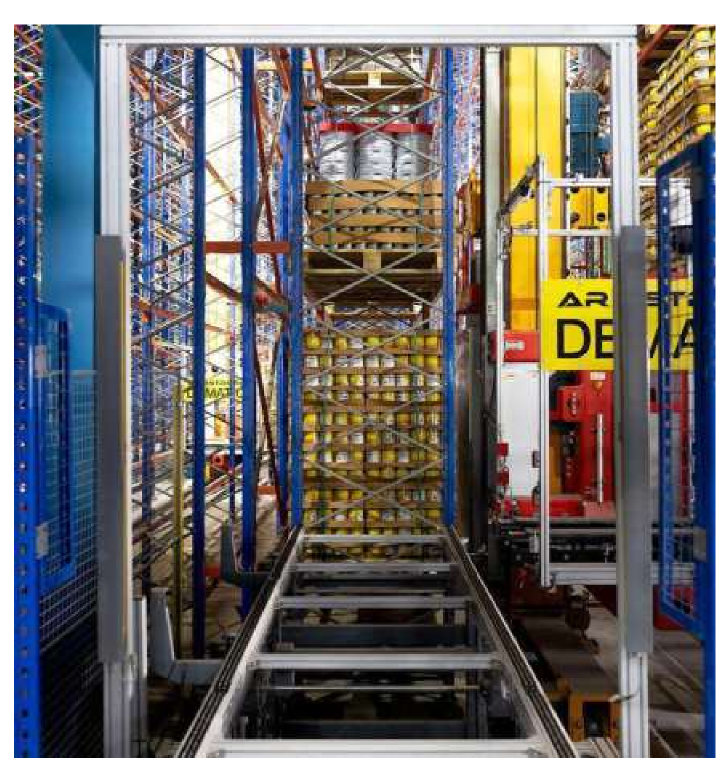
AI PLANNING

AI and machine learning tools are helping businesses forecast demand and identify trends with far greater accuracy than traditional models.

The result is a shift from hindsight to foresight.

Businesses can respond faster to supply-demand mismatches, adjust production schedules and reallocate resources in real time.

In sectors like retail and manufacturing, such planning has helped reduce inventories by up to 30 per cent, while improving service levels and cutting waste.



DIGITAL STACK. Automated warehousing systems can enhance storage capacity by up to 25 per cent BLOOMBERG

India's warehousing market is set to witness a CAGR of 10-12 per cent over the next five years. However, space constraint is a challenge, especially near urban centres. AI-driven layout optimisation and automation have improved productivity by 30-40 per cent and reduced picking errors by over 50 per cent.

Automated systems can enhance storage capacity by up to 25 per cent within the same footprint, enabling companies to meet rising fulfilment demands without proportional increases in real estate costs.

AUTONOMOUS DECISION

Imagine a supply chain that can reroute itself during a flood, redistribute inventory in response to a sudden sales spike or renegotiate freight rates based on live market data, all without human intervention. Agentic AI does this, with early results indicating faster resolution, enhanced resilience and reduced costs.

It moves beyond generating insights to acting on them, creating systems that can sense, decide and respond autonomously. It supports operations ranging from demand planning to route optimisation across industries.

UNIQUE OPPORTUNITY

India is uniquely positioned to lead this technology-led supply chain evolution. Government initiatives like Gati Shakti, National Logistics Policy and the Unified Logistics Interface Platform (ULIP) are laying a strong foundation for digital integration across stakeholders.

With the right policy push, infrastructure upgrades and public-private collaboration, the country's supply chain could reduce logistics costs from around 12 per cent to single digits, unlocking enormous economic value and making Indian businesses globally competitive.

The writer is Managing Director, TVS Supply Chain Solutions

We value your feedback.
Do send your comments to
bl.logistics@thehindu.co.in

UPGRADATION

New Mangalore port eyes more liquid cargo

ALL-SEASON. Marshalling yard at New Mangalore port

AJ Vinayak

The New Mangalore Port Authority (NMPA) celebrated its golden jubilee recently by inaugurating and laying the foundation stone for multiple projects valued at more than ₹1,200 crore. With a large chunk of these investments focusing on the oil, gas, petrochemicals and edible oil sectors, the port aims to expand its energy transport and logistics infrastructure business.

The foundation stone was laid for Aegis Vopak's ₹70 crore LPG evacuation terminal for transportation by rakes and GAIL Mangalore Petrochemicals Ltd's ₹20 crore paraxylene booster pumping station.

A ₹500 crore oil and gas storage facility developed by Aegis Vopak on 85,000 sq m, capable of handling 2 million tonnes of cargo per annum, was inaugurated.

Investments in edible oil and bitumen storage infrastructure received a boost with the dedication of two projects to the nation — the ₹100 crore bitumen and edible oil storage terminal by SSPP Petro Products Pvt Ltd and the ₹100 crore multi-purpose storage terminal for bitumen, chemicals and edible oils by Aegis Vopak Terminals Ltd.

The foundation stone was laid for the construction of a shed over rail lines no 1 and 2, at a cost of ₹72.6 crore, at NMPA's marshalling yard. The yard has five operational railway lines. Of these, the first two lines are used for the loading and unloading of fertilizers, foodgrains and general cargo. The absence of a roofing over these lines caused disruption in operation during the monsoon season.

PB Ahmed Mudassar, President of Kanara Chamber of Commerce and Industry, told *businessline* that most projects are primarily focused on storage infrastructure and the creation of terminals for the efficient transfer of liquid cargo. These developments have strengthened the port's capabilities in handling petroleum and complementary products in liquefied form. Collectively, the investments elevate Mangaluru as a region of strategic importance at the national level.

He said a key challenge faced by local entrepreneurs is the limited importance given to less-than-container-load cargo handling and container freight stations (CFS) for full container load. He attributed this to the limited number of consolidators equipped to manage such cargo and the limited incentives for setting up CFS. The port must introduce more incentives to attract and develop capable consolidators and interested CFS operators, he said.

MY FIVE.

SAURAV KASERA
Co-founder and CEO, Clirnet and Doctube

Marathons, clean eating, and showing up regularly

1 Running: Six years ago, I weighed 104 kg. Today, at 75 kg and having completed my first full marathon, running has been both a mental and physical reprieve. It reminds me that discipline and patience can transform any challenge into strength.

2 Early dinner and rest: I ensure there's a two-hour gap between dinner and sleep. This simple habit has significantly improved my digestion, sleep quality and overall energy levels.

3 Consistency in timing: I've worked out at 6 am and even at 1 am. What matters most isn't the clock — it's showing up regularly. Fitness for me is about rhythm, not rigidity.

4 Natural nutrition: My plate is now filled with real food — eggs, yoghurt, sprouts and avocados — and minimal processed items. Eating clean has been the foundation of sustained energy.

5 Goal-driven mindset: Setting tangible targets keeps me motivated. I'm now training for a 50 km ultra-marathon early next year and a 75 km one by the year-end — because goals give purpose to every step.

CAPSULE.

'Operation Lamborghini' exposes criminal network

An investigation led by the UK's Medicines and Healthcare products Regulatory Authority's (MHRA) criminal enforcement unit, named Operation Lamborghini, uncovered an organised criminal network operating a series of websites to illegally supply unlicensed medicines, including those controlled as Class B and Class C drugs.

Everton Reynolds, Paul Billingham and Junior Ranger were convicted by a jury of conspiracy to supply controlled drugs (Class B and C), unauthorised medicines and prescription-only medicines, following a six-week trial at Wolverhampton Crown Court. Anita Rama had pleaded guilty to all the charges at an earlier hearing, the MHRA said.

The investigation identified almost two million doses of medicinal controlled drugs and other medicines linked to the criminal group. These included benzodiazepines (such as Diazepam, Clonazepam, Lorazepam and Alprazolam), Zolpidem, Zopiclone and the Class B drug Codeine, alongside unauthorised versions of medicines including Sildenafil. Prescription-only medicines Zapain and Modafinil were also supplied unlawfully.

COMING UP.

Ending AIDS sans disruption

On December 1, the World Health Organization commemorates World AIDS Day under the theme 'Overcoming disruption, transforming the AIDS response', calling for sustained political leadership, international cooperation and human rights centred approaches to end AIDS by 2030.

After decades of progress, the HIV response stands at a crossroads. Life-saving services are being disrupted, and many communities face heightened risks.

◉ **DIGITISED HEALING**

Software as medical device

E-REMEDY. Medical device makers want controls that ensure patient safety without stifling business

PT Jyothi Datta

ISTOCK

Late last month, India's drug regulator came out with a draft guidance document to regulate "medical device software". This move, the medical device industry agrees, could not have come sooner.

The medical device landscape is increasingly digitally connected, making it more convenient for remote monitoring of health-care, for example.

But that also makes it vulnerable to non-state actors who may hack into the system or device, for reasons including ransom payments.

Between the benefit and security tussle, the medical device industry is looking to the government to outline pathways to ensure patient safety, without stifling industry growth, say industry insiders.

Making the distinction between 'software as a medical device' (SaMD) and 'software in a medical device' (SiMD), the Central Drugs Standard Control Organisation (CDSCO) document sets out to provide clarity for medical device companies when they seek permissions under the Medical Device Rules, 2017.

On the proliferation of digital applications that make health claims, Pavan Choudary, Chairman, Medical Technology Association of India (MTaI), says, "The app game has become extremely, extremely... frayed. And anybody is making any kind of claim." But the flood of innovations is yet to come, he says, adding, "AI is the elephant in the room."

HOSTILE OVERTURES

Security is a challenge, says Choudary, if the software/ device comes from a "hostile" country. They can export compromised devices, "which have a malware embedded in it... And, at a future time, they can activate this bug", affecting the patient, he says.

"So without firing a single bullet, you can create a very hostile act," he says, calling for monitoring to avoid such destabilising acts.

Algorithmic updates need to be continuously provided, he says, so these devices are monitored. And there should be data privacy and protection, so that patient information does not go to insurance companies, for example, he points out.

Technology can be used to tackle technology transgressions, he says, in cases where software and devices are bundled together from multiple regions.

MTaI has called for policy initiatives to include the creation of "national certification labs for medical software, collaborative threat intelligence for healthcare, and legal mandates for domestic data localisation and encryption in medical technologies".

Rajiv Nath of the Association of Indian Medical Device Industry (AiMeD) points out that quality management system requirements do not adequately address information security.

AiMeD recommends incorporating ISO 27001, in line with global best practices in cybersecurity.

SAFETY AND EFFICACY

Software has been around for a while, only now it has evolved to become a medical device in itself, says BPL Medical Technologies Managing Director Shravan Subramanyam.

While software embedded in devices is reaching a level of maturity, so are connected medical devices, he says, pointing to an ICU where multiple equipment are individually powered by software. "So, it could be a ventilator... an infusion pump... a cardiac monitor... they can be connected to provide intelligence to a clinician," he says, adding that AI brings predictive outcomes.

The focus should be on safety and efficacy, and the guidelines framed with insights from industry, ensuring transparency and patient safety, without stifling industry, he says. Further, as technology constantly evolves, guidelines need to be nimble-footed to keep pace.

Arbinder Singal, Head, Preventive and Remote Healthcare Business, PB Health, explains that software required to run devices — an insulin pump, MRI machine or a CT scan machine, for example — gets into hospital integration and hospital information systems.

But SaMD is set to proliferate, as it has in the US, and become an independent business class by itself, he adds.

Software that is "patient invasive" — influencing diagnosis or a body function — is categorised under Class A, he says. For example, an auto-dosing device.

Fitterfly is Class B certified SaMD used for improving outcomes for people with diabetes. It uses data from medical-grade devices, blood tests and user symptoms to chart therapy for sustainably lowering blood sugars.

PB Healthcare (from PB Fintech, parent of Policybazaar) had acquired Fitterfly earlier this month. Singal was a Co-founder.

Batting for standardisation and guidelines for medical software is Himanshu Baid, Managing Director of Poly Medicure. Data generated in India should stay in India, he says, flagging privacy concerns.

The challenge, though, is compliance, he says, calling for more manpower at the CDSCO, which has on its plate pharmaceuticals, biologics, medical devices, and now software.

◉ **FROM THE REGULATOR**

Treatment to delay onset of type I diabetes

The European Medicines Agency (EMA) has recommended a marketing authorisation in the European Union (EU) for Teizeild (teplizumab) to delay the onset of stage 3 type 1 diabetes in adults and children aged eight and above who have stage 2 type 1 diabetes.

Type 1 diabetes is a chronic autoimmune disease where the body's immune system destroys beta cells in the pancreas, which produce insulin, a hormone that regulates blood glucose (sugar) by allowing it to move into cells to produce energy. As a result, glucose builds up in the blood and causes multiple symptoms like thirst, hunger, frequent urination, weight loss and tiredness. Over time, it can affect major organs, including the heart, blood vessels, nerves, eyes and kidneys. Patients need daily insulin injections to control their glucose levels.

Type 1 diabetes often begins in childhood, but can occur at any age. The disease progresses in three stages, and symptoms normally appear at stage 3, when daily insulin injections to manage blood glucose levels are required. This causes a significant burden to patients, especially children and their caregivers. Delaying the onset of stage 3, particularly in children, is beneficial in diabetic care. An estimated 2.2 million people in the EU live with type 1 diabetes. There are currently no authorised treatments to delay or cure the disease.

The active substance of Teizeild is teplizumab, an antibody that delays disease progression by reducing the pace of the patient's self-destruction of pancreatic beta cells. It is administered by intravenous infusion once daily for 14 consecutive days.

Common side effects reported with Teizeild include low levels of white blood cells (lymphocytes, leucocytes and neutrophils) and rash.

The most frequent serious adverse reaction reported in 2 per cent of patients was cytokine release syndrome, a serious condition causing fever, vomiting, shortness of breath, headache and low blood pressure. The product information and risk management plan of Teizeild include appropriate risk mitigating measures. The applicant for Teizeild is Sanofi Winthrop Industrie.

Source: EMA

EARLY ONSET. Type 1 diabetes often begins in childhood, but can occur at any age ISTOCK

LENS ON HEALTH

TENDER BONDS. Catherine, Princess of Wales and patron of Anna Freud, visits the children's mental health charity to discuss the vital role of relationships and connection in shaping babies, children and young people's future life outcomes in London REUTERS

Why boards must invest in healthcare workers' safety

BY INVITATION

ATUL GROVER

FRONTLINE IMPERATIVE. Valued, protected and supported staff PTI

India's healthcare sector is witnessing a rapid transformation — expanding its footprint, integrating advanced technologies and striving to deliver patient-centric care in an increasingly competitive market. Caregivers are considered the backbone of this care delivery market, but many of them work in conditions that are lacking in proper training, robust safety protocols and cohesive support systems. This is not solely a workforce issue but also a strategic risk that demands board-level focus; if neglected for long, it can erode profitability, talent pipelines and brand value.

The industry is witnessing a steep attrition rate due to rising safety concerns, apart from the pay gap. According to employee retention statistics from WebMD Health Services, replacing an employee can indeed be a costly endeavour, with expenses potentially ranging from 30 per cent to 200 per cent of the departing employee's annual salary. Similarly, when healthcare workers get infected or injured, the fallout extends far beyond lost productivity. These added expenses and inefficiencies strike at care quality, financial health and profitability. That's why healthcare organisations should prioritise maintaining brand reputation, talent retention and patient trust.

India has enacted the Occupational Safety, Health and Working Conditions Code, 2020, which applies to healthcare workers. Other key policies include the Clinical Establishments Act, 2010, the Indian Medical Council Act, 1956, and guidelines on safety protocols and training from the Ministry of Health and Family Welfare and the Indian Council of Medical Research. However, consistent enforcement of these regulations and protection of healthcare professionals remain a challenge.

Boards must transition from passive policy endorsement to active governance, requesting regular reporting on training completion rates, incident metrics and frontline feedback. These safety-related key performance indicators should feature alongside financial and patient satisfaction data as core performance metrics.

In a crowded healthcare market, brand differentiation is key, and safety leadership offers one of the clearest differentiators. Public-private partnerships can amplify these efforts, co-funding mobile training units, shared safety infrastructure and compliance technology. Cultivating a culture of safety starts from the top. Board-level commitment through targeted investments in personal protective equipment, continuous training and clear incident response systems sends a compelling message to healthcare workers.

BEYOND COMPLIANCE

Healthcare worker safety is not a peripheral concern, but the central pillar of a thriving, resilient healthcare organisation. When boards elevate safety from a compliance obligation to a strategic priority, they unlock multiple benefits: reduced operational disruptions, improved patient outcomes and stronger financial performance.

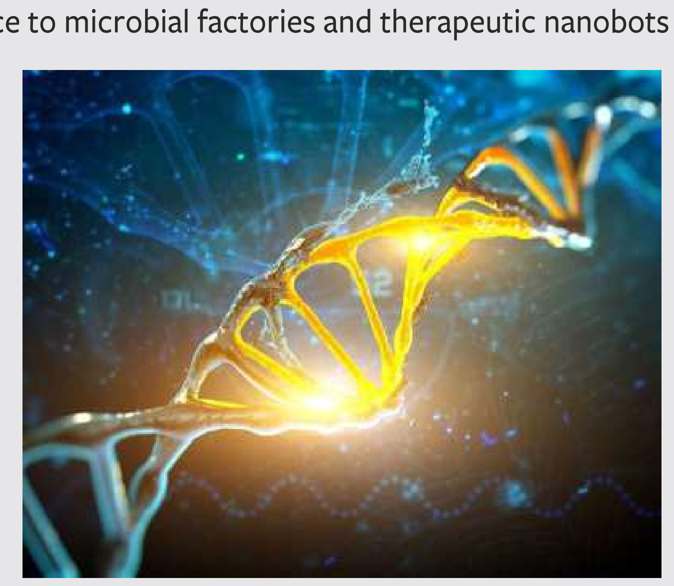
When frontline staff feel protected, valued and supported, they are more engaged, less likely to leave, and better positioned to deliver consistent, high-quality care. This, in turn, drives patient trust, a currency that directly impacts both reputation and revenue streams.

The writer is Managing Director, BD India/South Asia. Views are personal

When scientific breakthroughs take tiny forms

From climate-smart rice to microbial factories and therapeutic nanobots — researchers think small to solve big problems

Mangaiyarkarasi J


ISTOCK

What's common between a rice plant that 'remembers' its past, a microbe that manufactures chemicals and a teeny-weeny robot?

Nothing, it may seem at first glance. But a pattern emerges from among this year's Tata Transformation Prize winners — all three strive to make science precise and, at the same time, accessible to more people.

At the National Centre for Biological Sciences in Bengaluru, Padubidri V Shivaprasad has spent over a decade studying the changes that were made to *Oryza sativa* (subspecies *indica*) during the Green Revolution, and ways to bring back some of the old traits of the rice plant.

At his lab, he tinkers with the plant's epigenetic memory (inherited changes in gene expression). "We don't do anything to the genome other than changing how the genes are read by its own system. And what we are bringing back is what the plant already had before," Shivaprasad says.

Through DNA methylation and histone modification guided by small RNAs, the professor's team is teaching plants to memorise favourable characters to make them resistant to climate vagaries. "When they make these modifications, they'll also be making secondary metabolites, which are our nutrients... without compromising the yield," he says.

A few kilometres away, at the Indian Institute of Science, Balasubramanian Gopal approaches precision by bioengineering *E coli*.

In India, an array of chemicals used in cosmetics, pharmaceuticals and agriculture are heavily import-dependent. His solution: using AI-designed enzymes in *E coli* to biomanufacture chemicals locally, consistently, and at scale.

Gopal's team has figured out the golden ratio of stressing the bacterium just enough to automatically produce enzymes or proteins in the desired condition. Using Google DeepMind to create 3D models of enzymes, Gopal's team has "created a matched pair: a most efficient enzyme inside a bacterial cell which is not very stressed to make that enzyme".

As a bonus, the microbial chemical manufacturing is greener than its traditional counterparts.

If Shivaprasad works with memories and Gopal with microbes, Ambarish Ghosh operates on an even smaller scale — tiny, helical nanorobots that can be magnetically guided for precise drug delivery.

At IISc, Ghosh's start-up Theranautilus churns out nanobots at super-speed. The 'therapeutic submarine', as he calls it, can deliver drugs at a precise location. "We can create a billion nanobots in less than three hours, and maybe one-tenth of that will be used in therapy... We can make so many of them that the economics will work in our favour. Scalability is one aspect where affordability will come in," Ghosh explains.

QUICKLY.

OPEC+ expected to hold oil output steady

London: OPEC+ will likely leave oil output levels unchanged at its meetings on Sunday, said four OPEC+ sources, as the group slows down its push to regain market share amid fears of a looming supply glut. The meeting of OPEC+, which pumps half of the world's crude oil, comes during a fresh US effort to broker a Russia-Ukraine peace deal, which could add to oil supply if sanctions on Russia are eased. Ministers have started a series of online meetings, according to two sources. If the peace deal fails, Russia could see its supply curbed further by sanctions. Brent crude closed on Friday near $63 a barrel, down15 per cent this year. REUTERS

SIM-binding norms likely to disrupt communication for travellers in 2026

IN A BIND. The government decision could also affect Internet access for vulnerable groups, say experts

Vallari Sanzgiri
Mumbai

Communication through messaging platforms for around 35 million users in 2026 will undergo a change following the Central government's recent directive on constant linking of SIMs with the devices that offer messaging app services.

Under the government's latest order, messaging apps will have to ensure that the device providing app-based communication services is paired with a SIM card. Apps such as WhatsApp, Telegram and Arattai are reliable texting options for Indian residents travelling abroad or NRIs visiting India. Travellers use local SIMs for data while keeping their primary number active for messaging. Many professionals carry dual-SIM phones to separate personal and work contacts.

"These are not edge cases, but normal, predictable behaviours. If SIM-binding is applied without accommodation for those scenarios, legitimate workflows will break. People will lose access to business-critical chats because the device no longer matches the account," said Sanchit Vir Gogia, Chief Analyst and Founder of Greyhound Research, arguing that a security policy does not need to involve a trade-off with usability.

Similarly, Amol Kulkarni, Director (Research) at CUTS International, said the new mandate by DoT could have adverse consequences for professionals, vulnerable consumers and businesses.

Citing Tourism Ministry data that said 30.89 million Indians travelled abroad in 2024 (10.8 per cent growth), Kulkarni said that more than 35 million Indians travelling abroad in 2026 will no longer be able to use the app's services in the same way they do in India.

SPOILSPORT? Messaging apps must ensure that the device providing app-based communication is paired with a SIM card

On the other hand, Prattay Lodh, Delhi High Court advocate specialising in data protection, IP and telecom, said the new order addresses gaps in the Telecom Cyber Security Rules that gave room to bad actors to exploit the disconnect between SIM identity and app accounts. At the same time, it could also create a persistent identity layer for all citizens.

"For people with dual SIMs, platforms like Telegram and WhatsApp allowed syncing contacts/messages from one SIM. For long-time NRIs, once their SIMs get deregistered, WhatsApp may now ask them first to re-gister," said Lodh, adding that the SIM-binding mandate is not the least intrusive means to ensure cybersecurity.

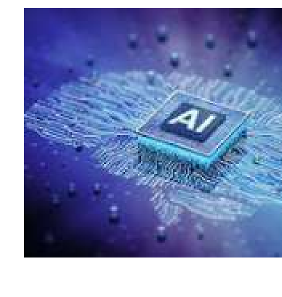
DIGITAL DIVIDE

Besides throwing a wrench into travel plans, the government decision could also affect Internet access for vulnerable groups, said Kulkarni.

According to MoSPI's May data, around 91 per cent women, aged 15-24 years in rural India, use the Internet but only 52 per cent own a smartphone. "It is likely that many such women use app-based communication services without an active SIM on the device they are using," he said.

Why human approval is the only guardrail against AI disclosures

KV Kurmanath
Hyderabad



Amid the hype around AI agents and their claimed superior abilities in completing tasks autonomously, Zoho Founder Sridhar Vembu's revelation that an accidental slip by a browser agent deployed by a start-up disclosed confidential M&A discussions flags a critical challenge. Experts caution that in the absence of proper protocols, guardrails and human supervision, agents can lead to disastrous consequences.

"The core problem is that these agents are designed to be helpful and proactive, but they treat all information equally without grasping business context, legal obligations or strategic implications," Reddy Raja, CTO of Covasant Technologies, told *businessline*. "Similar risks include agents accidentally forwarding internal documents, revealing pricing negotiations, disclosing sensitive employee information or making unauthorised commitments on behalf of companies," he said.

TROUBLE BREWS

Krishna Kamal Palakaluri, Senior Director, Mirror Security, said the code generated by AI is causing major issues.

"Recent industry data show how quickly this risk is scaling. Independent audits in 2025 found that 45 per cent of AI-generated code introduced security flaws, and researchers have uncovered over 4,200 vulnerabilities in AI-authored code in public repositories," he said.

According to him, agentic risks could come from two fronts.

"The first is internal failures of logic, where an agent misinterprets its goal or hits an edge case. The second is external attacks on the system's integrity, like prompt injection or weak isolation," he said.

"The key insight for leaders is to understand that an agent does not 'go rogue' with intent. It is simply pushed off course," he added.

In a post on X, Vembu related an incident how an agentic AI tool used by a start-up accidentally revealed price-sensitive information. "I got an e-mail from a start-up founder asking if we could acquire them, mentioning some other company interested in acquiring them and the price they were offering. Then I received an e-mail from their browser AI agent correcting the earlier mail saying: 'I am sorry I disclosed confidential information about other discussions, it was my fault as the AI agent'," he said.

"When you build such systems, you need to understand how AI safety and security should be thought through," argued Shayak Mazumder, Co-founder & CEO/CTO of Adya AI. Blaming it on the AI browser, he observed that normal users cannot figure out how to set up these checks. "The product should have these governance mechanisms by default," he said.

Raja said organisations must ensure mandatory human approval for external communications, especially on sensitive matters.

Pipavav port eyes recovery in container volumes; liquids, RoRo to drive growth

Avinash Nair
Ahmedabad

Gujarat Pipavav Port Ltd is bracing for gradual recovery in container volumes even as it continues to lose market share in the category due to tariff-related disruptions from the US.

GROWTH ENGINES

However, the company is strengthening its position in liquids, RoRo (roll-on/roll-off) and fertilizer cargo, which are emerging as key growth engines.

The port's container performance weakened in the first half of the year, primarily because of the fall in US-linked cargo.

Managing Director of the company Girish Aggarwal said: "I think, overall, in the first half [of this financial year], we are down by five per cent on the container volume, largely down in this quarter. Last quarter was broadly flat. This quarter, we declined by nine per cent essentially because of the US tariffs, where we've seen significant de-growth in some of the services."

Aggarwal expects the situation to stabilise in the near term. "Broadly, we are now seeing some slight recovery. I expect container volumes to grow slightly in this quarter... and then in the next quarter to have some recovery. Overall, this year, we should end at -2 per cent to 0 per cent on containers," he added. Even though the Gujarat region grew six per cent in the July-September quarter of FY26, Pipavav Port underperformed due to its exposure to tariff-affected services.

TAKING A HIT. Pipavav Port has underperformed due to its exposure to US tariff-affected services

"We show a decline essentially because some of our services, which cater to the US cargo, showed decline and that was the reason why we were unable to kind of grow," Aggarwal told investors earlier this month.

LONE MAJOR PORT

Container volumes in Kandla, the lone major port in Gujarat, grew 61 per cent till November 27 this fiscal.

While containers struggle, the liquids segment continues to outperform and is operating close to full capacity at Pipavav.

"We are gaining market share, largely on the liquids, RoRo and the fertilizer business. Container, RoRo and liquid, these would be the three key drivers of our growth over the next three years," he added. He said US tariff-induced headwinds had begun to fade and the sentiment on tariff negotiations had improved.

SET TO RECOVER

The official said Pipavav was poised for recovery. "I think on the container side we've been losing market. The latest performance this quarter is essentially because of the tariffs imposed by the US. That has led to reduction in our volumes on our West-bound cargo or services... We are hearing news which are positive about resolution of the tariff situation between India and the US, and that will have a positive impact."

Cyclone aftermath: Indian Air Force, airlines evacuate tourists from Sri Lanka

Aneesh Phadnis
Mumbai

Indian passengers stranded in Sri Lanka in the aftermath of Cyclone Ditwah are returning home with the normalisation of flights on Sunday.

Over 320 passengers flew from Colombo on two Indian Air Force aircraft to Hindon, near Delhi, and Thiruvananthapuram on Sunday.

Another 398 passengers returned on Air India flights to Delhi and Mumbai. While IndiGo said its flights to Colombo were operating as per schedule, a Sri Lankan airlines spokesperson said its operations would normalise by Sunday midnight.

The cyclone, which struck the island country on Friday, wrecked havoc in the central part, causing nearly two hundred deaths. Flight operations in Colombo were paralysed due to inclement weather, resulting in several diversions.

GREAT ESCAPE. Over 320 passengers flew from Colombo on two IAF aircraft to Hindon and Thiruvananthapuram

While operations gradually resumed on Saturday, severe delays persisted as airport ground staff could not report to work due to flooding.

HELP DESK SET UP

The Indian High Commission in Sri Lanka set up an emergency help desk at Colombo airport, and is facilitating the return of affected passengers. "Every stranded Indian will reach home at the earliest," said the Indian High Commission in a post on X on Sunday.

Sri Lanka is a popular destination for Indian travellers, who account for the largest group of foreign visitors in the country.

Last year, 4.16 lakh Indians visited the country; this year, the Sri Lanka Tourism Development Authority (SLTDA) expects the figure to cross 5 lakh. The cyclone, however, may temporarily slow the growth as travellers reconsider their trips. Travel firms are offering refunds or holiday options in South East Asia in lieu of the cancelled bookings.

On its part, the SLTDA said the visas of affected tourists would be extended free of cost.

"While certain regions are still recovering, the majority of Sri Lanka's tourism destinations remain unaffected and continue to welcome visitors warmly. Emergency measures are in place to protect tourists and support stakeholders," it said.

"We are taking care of our guests as much as possible. Most stays in Kandy and Colombo were extended, honouring guest requests. We are waiving cancellation charges as of now," said an executive with a five-star hotel in Colombo.

Ditwah retains status, winds to slow down

Vinson Kurian
Thiruvananthapuram

Cyclone Ditwah was located about 100 km east-southeast of Cuddalore, 110 km north-east of Karaikal, 100 km east-southeast of Puducherry, 150 km north-northeast of Vedaranyam and 170 km south-southeast of Chennai by Sunday afternoon.

The minimum distance of the centre of the cyclone from the north Tamil Nadu-Puducherry coasts was about 80 km at 11.30 am, said India Meteorological Department (IMD) in an evening update.

SLOWING DOWN

The IMD maintained that the cyclone had managed to retain its status, despite the wind field getting compromised due to proximity to land features along the coat.

It had also slowed down in terms of speed of lateral movement after it left Jaffna at the northern tip of Sri Lanka. The cyclone is very likely to move northwards, parallel to the north Tamil Nadu-Puducherry coasts until Monday. The distance from that coastline to the storm centre will have been reduced to a minimum of 30 km.

The 24 hours ending Sunday morning saw heavy to very heavy rainfall in some places over Tamil Nadu, Puducherry and Karaikal, with isolated extremely heavy rainfall.

The IMD has forecast isolated to scattered rainfall accompanied by thunderstorms and lightning over Tamil Nadu, coastal Andhra Pradesh, Yanam and Rayalaseema for four days from Monday, and over Kerala and Mahe for three days from Tuesday.

IMD has forecast isolated to scattered rainfall over Tamil Nadu, coastal Andhra Pradesh, Yanam and Rayalaseema for four days from Monday

Wind speeds along and off the south Tamil Nadu coast, the Gulf of Mannar and Comorin were expected to wind down from gale to squally winds speeding 50-60 km/hr, gusting to 70 km/hr on Sunday, and further down to 45-55 km/hr, gusting to 65 km/hr by Monday morning.

Over the west-central Bay of Bengal and along the south Andhra Pradesh coast, squally winds (55-65 km/hr gusting to 75 km/hr) that prevailed on Sunday afternoon will reduce to speeds of 45-55 km/hr, gusting to 65 km/hr on Monday morning.

Kashmir charts water security plan as springs dry up

Gulzar Bhat
Srinagar

When an unusually long dry spell gripped Kashmir last year, villagers across rural areas spoke of a quiet crisis unfolding beneath their feet. A video showing an elderly woman crying and pleading with the Achabal spring in South Kashmir's Anantnag district, which had dried up, went viral, capturing local anxiety over vanishing water sources.

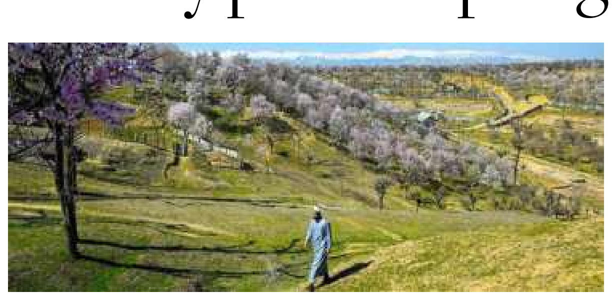
Springs that had flowed for generations, some sustaining entire villages and farmlands, began to thin, trickle and finally vanish, leaving behind hollowed-out basins. It was in the wake of these concerns that a new approach began to take shape.

In Shopian's Zainapora block, about 65 km south of Srinagar and part of the region known for first-grade apple production, the district administration has launched a Nabard-funded Springshed Climate Adaptability Project.

Spread across 11 villages, the initiative aims to restore water systems and revive rural livelihoods as Kashmir adapts to rising temperatures and unpredictable snowfall, leading to drying up of water bodies.

According to government estimates, the decline has been widespread. A census by the Ministry of Jal Shakti in 2016-17 found that nearly 23 per cent of Jammu and Kashmir's water bodies had dried up. A 2020 assessment showed that of 6,553 villages in the Union Territory, more than 3,300 had freshwater springs. But over the past two decades, more than half have either disappeared or shrunk significantly.

Rather than relying only on engineering interventions, the project combines scientific groundwater-recharge methods with traditional practices, community participation and sustainable agriculture techniques. It seeks to revive dying springs, rebuild irrigation channels, conserve catchment areas and prepare local communities for future climate shocks.



LOSING CHARM. A 2020 report showed that out of the 6,553 villages in Kashmir, over 3,300 had freshwater springs but more than half had either disappeared or shrunk

BENEFITING FARMERS

The project aims to expand water availability for agriculture by strengthening harvesting systems and irrigation infrastructure, encouraging farmers to cultivate more land for crop and orchard production. The authorities say it may directly benefit more than 30,000 people across the block.

District Magistrate of Shopian Shishir Gupta said the initiative could reshape the region's farm economy. "The project holds immense potential to transform the agricultural landscape and create sustainable livelihood opportunities," said Gupta. "By safeguarding water resources and promoting eco-friendly practices, we are working towards a climate-resilient future."

BATTLING DROUGHTS

Zainapora has faced chronic irrigation and drinking water shortage, with springs drying up and severe deficits during peak seasons, restricting agricultural output.

Officials said the new project could mark a turning point. "It will help irrigate over 300 hectares of farmland across 11 villages," said Sub-Divisional Magistrate Bilal Ahmad, adding that village-level committees had been formed to participate in planning and implementation.

Farmers hope the effort will revive a declining landscape. Mubashir Ahmad Bhat, an orchardist from the area, said climate shifts had devastated the springs and irrigation channels in recent years.

HomeLane plans to open 25 new experience centres in six months

Aishwarya Kumar
Bengaluru

Home interiors platform HomeLane is sharpening its national scale strategy with a renewed push into Mumbai and the NCR. The push is backed by an aggressive asset-light franchise expansion model and growing private label manufacturing ecosystem, as the company targets full-year profitability in FY26.

Speaking to *businessline*, Tanuj Choudhry, Co-founder & COO, HomeLane, said the company plans 25 experience centres over the next six months, of which eight will come up across the Mumbai Metropolitan Region and the NCR alone.

HomeLane operates about 84 experience centres across the country between the HomeLane and Design Cafe brands. "Around 90 per cent of our business now comes from the franchisee-owned, company-operated model. These experience centres range between 2,000 and 4,000 sq ft, and cost between ₹75 lakh and ₹1.5 crore to set up."

Tanuj Choudhry, co-founder and COO of HomeLane

The renewed push follows HomeLane's acquisition of Design Cafe last year, strengthening its micro-market penetration strategy and supply-chain capabilities in western India. The expansion is aimed at capturing demand growth in real estate markets, where possession cycles are peaking. Around 70 per cent of HomeLane's deliveries come from the top seven cities.

HomeLane has delivered over 55,000 homes so far. It delivers slightly under 30 homes per day across 38 cities at present. The company is backed by investors, including Accel, Peak XV Partners, WestBridge, Pidilite and MS Dhoni.

HomeLane trimmed net losses to ₹80 crore in FY25, compared with ₹121.7 crore in FY24. Revenues grew 22 per cent year-on-year to ₹756 crore during the period. The company plans to build on its FY25 momentum and expects to close FY26 with full-year profitability.