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on Budget 2022

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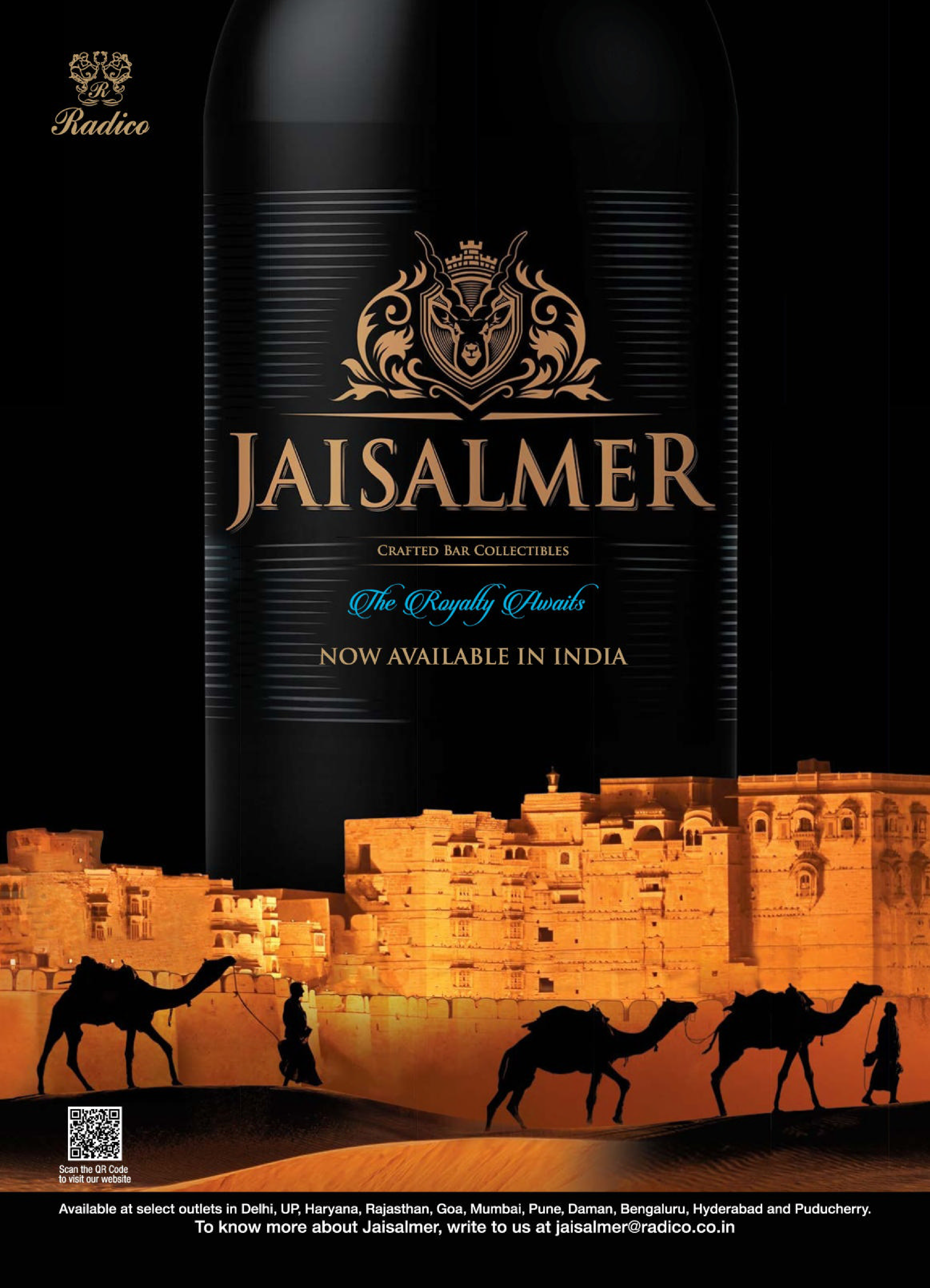
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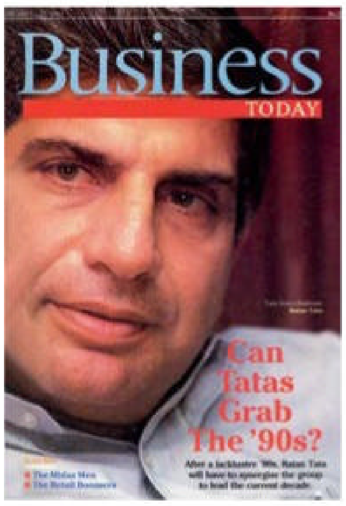
Powering Tomorrow's India

In the first of our 30th Anniversary specials in August last year, we focussed on the theme "The Next India Opportunity". Several of India's biggest names wrote how the country's time had come and how it could rightfully claim its place as the toast of the world. As we bring you this second, and final, volume of our 30th Anniversary special issues, we have chosen to take a close look at 15 of the top trends which would help power India to the global centre stage. The latest Economic Survey projects India's GDP growth to stand at 9.2 per cent for FY22, and between 8 per cent and 8.5 per cent in FY23. The International Monetary Fund's latest World Economic Outlook pegs India's growth at 9 per cent in FY22 and FY23, and at 7.1 per cent in FY24. "This projects India as the fastest-growing major economy in the world in all these three years," the Economic Survey says. All this suggests that, despite the pandemic and its impact, there will be enough firepower in the Indian economy for it to be a major global force.

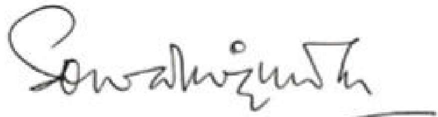
As India turns 75, in this special issue, *Business Today*'s reporters bring you the 15 trends we think will help power the new India, the India of tomorrow. From the major changes taking place in Industry 4.0 and beyond which will transform manufacturing; rewiring supply chains and becoming increasingly self-reliant; using augmented reality to transform the business landscape; empowering MSMEs; pushing electric mobility and realising its climate change ambitions, these trends are what we believe will play a central role in defining the India of the future, an India which the world looks to with admiration.



***Business Today*'s first cover (in 1992) featured Ratan Tata**

An important part of these changes is the way we use technology, and the metaverse—the fascinating new world of immersive user experiences—will also be a game changer. A big evangelist of the metaverse is the new-look Facebook, which has been renamed to Meta to underscore that ambition. Meta's iconic COO Sheryl Sandberg talks to us in detail about the company's new direction and how important India will be in its plans. Meanwhile, with Finance Minister Nirmala Sitharaman's Budget 2022 announcing a massive hike in public spending to push growth and jobs, the hope is that this expenditure push will create major multiplier effects across the economy. How this strategy plays out will be interesting to follow.

Finally, I would urge you to take a look at our selection of some of the best *Business Today* covers of the past 30 years. It is an unmissable journey down memory lane and one which will give you a snapshot of how far Indian business has travelled over the years. **BT**



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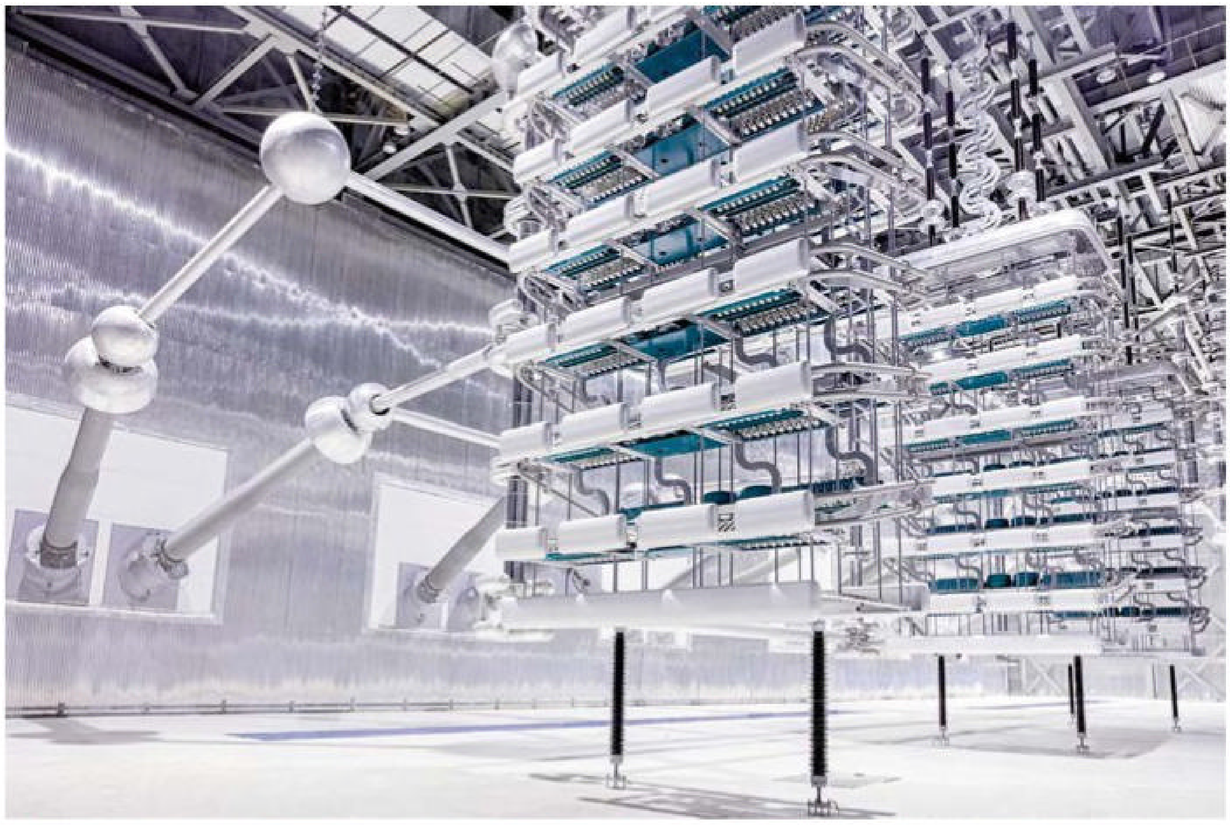

'POWERING' INDIA TO A GREENER FUTURE

"Electricity is already emerging as the backbone of the entire energy system. The demand for electricity will continue to grow more than double by 2050. In Hitachi's vision towards carbon-neutral energy infrastructure, we are taking three incremental steps. One, accelerating the shift from fossil-based to renewable power generation; two, growing electrification of transportation, industry, and buildings sectors; and three, creating sustainable energy carriers, complementary to direct electrification. We are initiating a future that is lean, clean, and green."

**Mr. Bharat Kaushal,
Managing Director, Hitachi India**

Aspiring to be the third-largest economy in less than a decade, India has made undeterred commitments on how it intends to arrive on the world stage. The world lauds India's two pioneering global initiatives which are the International Solar Alliance and Coalition for Disaster Resilient Infrastructure. Equally commendable is India's conviction to ecological sustainability, with the government targeting 175 gigawatts of renewable capacity by the year 2022, and 450 gigawatts by 2030.

SWITCHED ON FOR PROGRESS

India's power sector, one of the most diversified in the world, is already switched on for progress. Electrifying and grid-connecting the lengths and breadths of the land, industrializing, and transforming mobility with city metros and electric vehicles are some of the key areas in this journey in which Hitachi Energy, a global power technology pioneer, has been a collaborative partner.

As a key stakeholder in nation-building, Hitachi Energy has been successfully serving utility, industry, and infrastructure customers across the value chain and in emerging areas like sustainable mobility, smart cities, energy storage and data centers. With a proven track record, global footprint, and unparalleled installed base, it has also balanced the social, environmental, and economic values of the country. Overall, Hitachi Energy is contributing towards creating a lower-carbon society and a cleaner environment for a sustainable future for all citizens.

MASS ELECTRICITY, EFFICIENT METHODS

Collectively, Hitachi and its group companies are committed to reduce their environmental impact in a way that best suits their industry, while reducing their own carbon footprints. Similarly, in India's national power transmission network, Hitachi Energy's smart power system technology is helping to meet the need for reliable power distribution in a sustainable manner. As part of a national electrification drive, **Hitachi Energy has collaborated with India's government-owned mega power utility company to deliver a transmission link, connecting Raigarh in Central India to Pugalur in Tamil Nadu. It has the capacity to transfer reliable electricity to more than 80 million people. Hitachi Energy has also energized the North East-Agra power 'superhighway', the world's first multi-terminal ultra-high-voltage direct current (UHVDC) transmission link, capable of supplying clean power to 90 million people**. The operational link supplies clean hydropower from north-eastern India to demand centers in Agra and across north India.

Meanwhile, in providing the country with a backbone of power, Hitachi Energy is increasing the reliability and efficiency of the power used by industry. Recent projects include strengthening mission-critical power infrastructure for public sector oil companies, and steel major, to meet the nation's demands without any supply disruption. On the other hand, Hitachi Energy's digital substation is enhancing the reliability, efficiency, and safety of power generation for one of India's largest IT park, thereby propelling the Smart Grid Mission and Smart City vision. At the same time, it has deployed its disconnectors with ice-breaking capacity at Leh, Khalsti, Drass and Kargil substations, bringing electricity to far corners of the country and advancing the government's "24x7 power-for-all" initiative.

ENRICHING MOBILITY

To realize a low-carbon society, resource-efficient society, and a society harmonized with nature, Hitachi has committed itself to achieve long-term environmental targets, under which mobility is a key area. In India, Hitachi Energy is helping citizens rediscover rail as a sustainable and energy-efficient lifeline capable of reducing congestion within cities, as well as cut greenhouse gas emissions. It is supplying its state-of-the-art converters and transformers for electric locomotives, helping to bring more reliable trains to passengers, while increasing sustainable transport in the country. Hitachi Energy's traction technology is assisting a public sector electric locomotive manufacturer to advance the government's target of 100 percent railway electrification and a low carbon footprint.

Hitachi Energy is laying the foundation for a future of smarter, reliable, and emission-free mobility, accessible by everyone, everywhere. It has committed to deploy infrastructure that meets the needs of the next generation of smarter mobility. The metro systems, for example, in some of India's largest cities are utilizing Hitachi technology to help transport millions of passengers around the urban areas every day. Nine out of ten metro systems in India use Hitachi Energy's SCADA solutions to manage and balance the required high-power loads. From tracks to roads, Hitachi Energy is partnering with a large private sector enterprise to pilot the eco-system for efficient and greener electric bus transportation systems in India. The two are piloting an electric bus system based on Hitachi Energy's innovative flash-charge technology which tops up the battery in seconds while passengers get on and off the bus.

PROPELLING INDIA TO CLEAN ENERGY

Hitachi Energy's technology is used to integrate and balance intermittent solar power, including from a massive 648-megawatt private sector solar project in Tamil Nadu, propelling the country's renewable energy vision and push for green power. It has also partnered with a premier engineering institute to create a smart campus that can serve as one of the pilot projects for the government's Smart Cities Mission and influence consumer behaviour to maximize clean energy usage. All these initiatives complement the government's efforts to make India an energy surplus country with universal access.

"To ensure a sustainable future while meeting the aspirations of its people, India must delink energy from environment footprint. We have to reduce greenhouse gas emissions rapidly by building a resilient infrastructure and leveraging government targets in clean energy (450 GW by 2030), electric vehicles, data centers and so on. We at Hitachi Energy are committed to managing this energy transition on ground. As power gets decentralised, there is a greater need for intelligent technology to ensure the predictability of renewable resources and manage grid complexity. Digitalisation will be equally important to provide greater transparency across the value chain, and ultimately address society's social and environmental needs."

N Venu, Managing Director and CEO, Hitachi Energy India Limited

FUELLING A GREEN FUTURE

Hitachi is harnessing its green energy solutions to augment India's clean energy capabilities and, in the process, playing an integral role in strengthening the country from ground-up. Both Hitachi and India share a common vision, where the environment and energy that shape the country's future generations go hand-in-hand. Hitachi Energy, therefore, is committed to drive smart electric grid technology and build sustainable solutions. The future is bright and green.

Source Link

1-https://www.cnbc.com/2020/03/03/india-has-some-huge-renewable-energy-goals-but-can-they-be-achieved.html

2-https://www.pmindia.gov.in/en/news_updates/pms-message-at-climate-ambition-summit/

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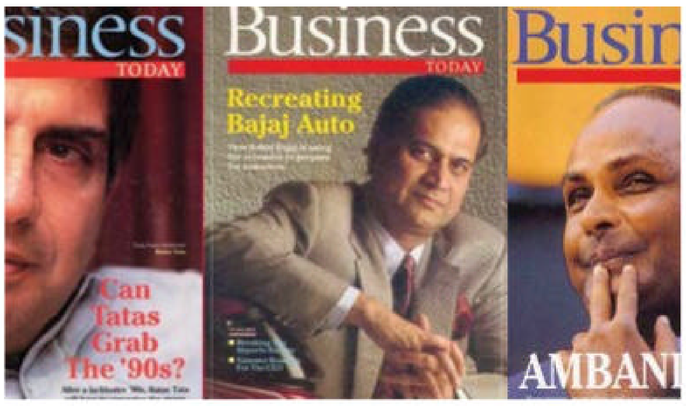

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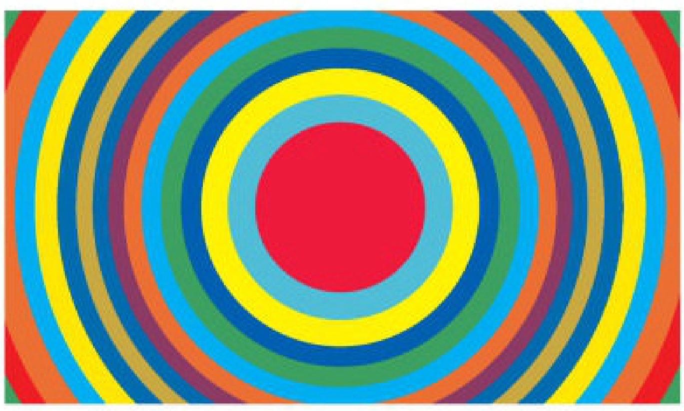

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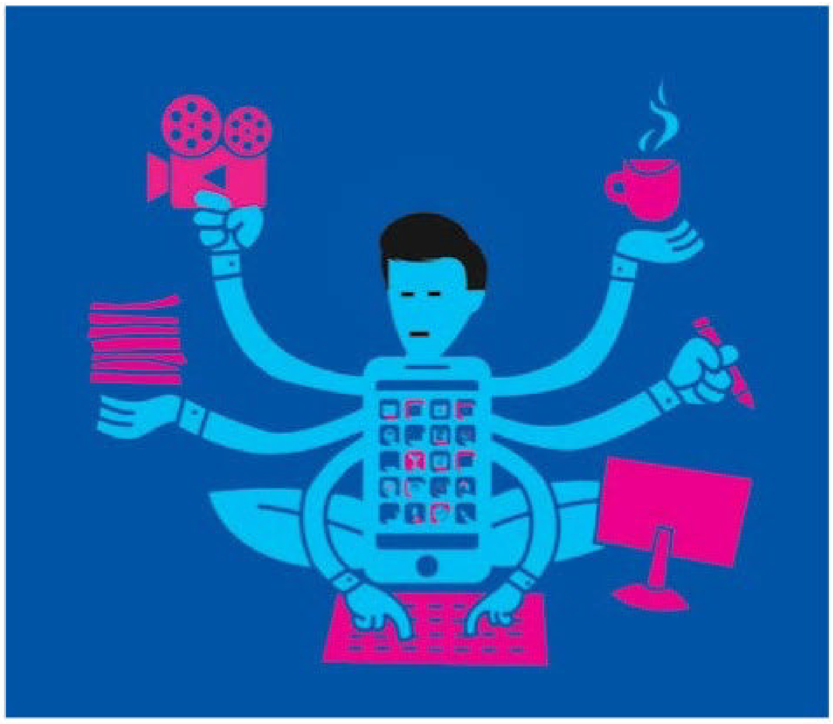

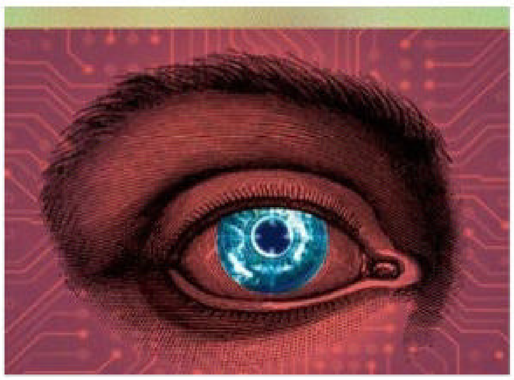

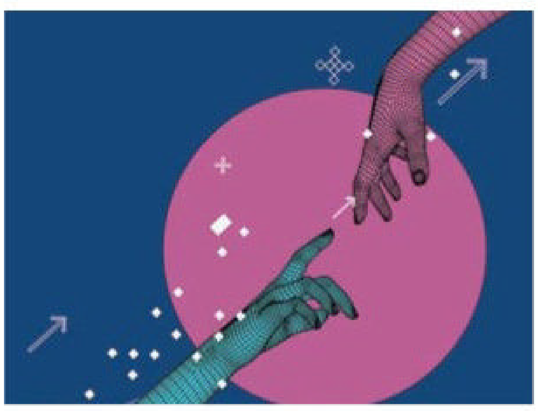


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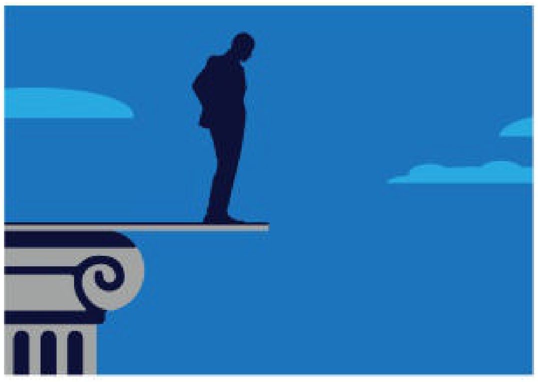


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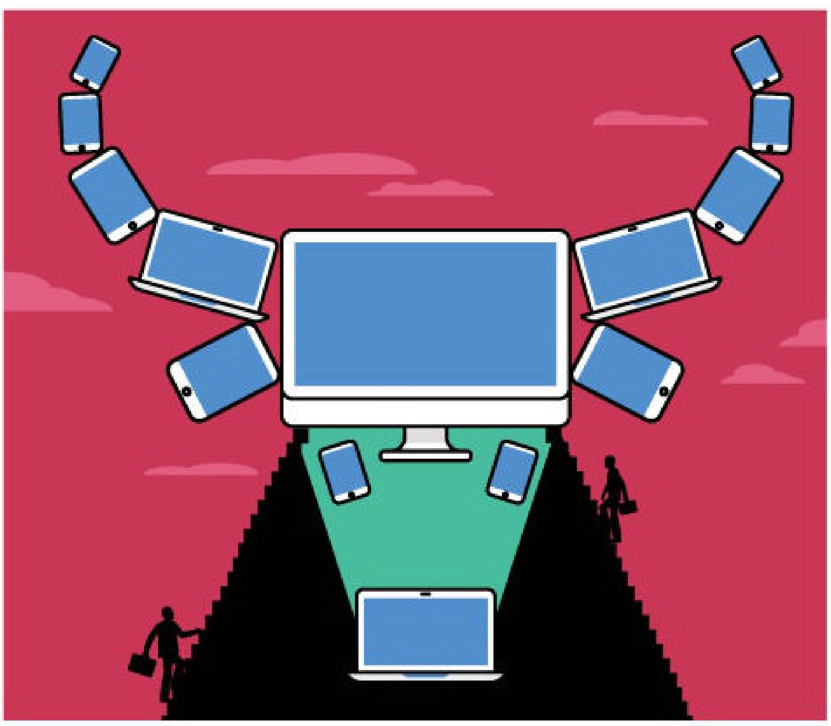

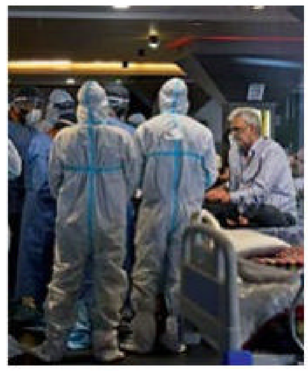


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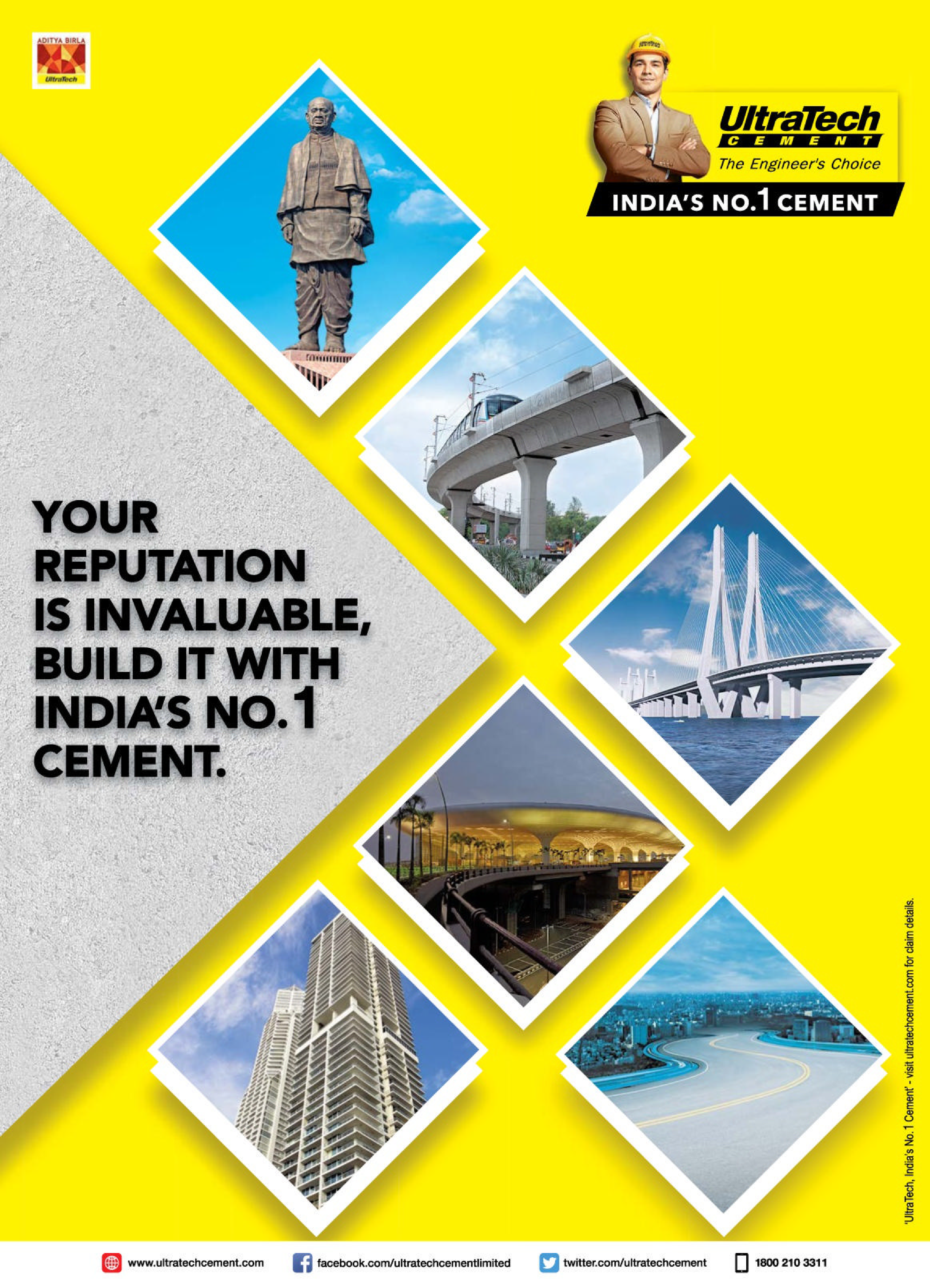
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THE BUZZ

PHOTOGRAPHIK

Photograph by **CHINA NEWS SERVICE / GETTY IMAGES**
Text by **RAHUL OBEROI**

Source: Media reports

AN OLYMPIAN TRAGEDY?

THE WINTER OLYMPICS IS BEING HELD IN CHINA FROM FEBRUARY 4-20. BUT TICKET SALES HAVE BEEN CANCELLED DUE TO OMICRON

$3.9
BILLION
Amount China has invested in Olympics infrastructure

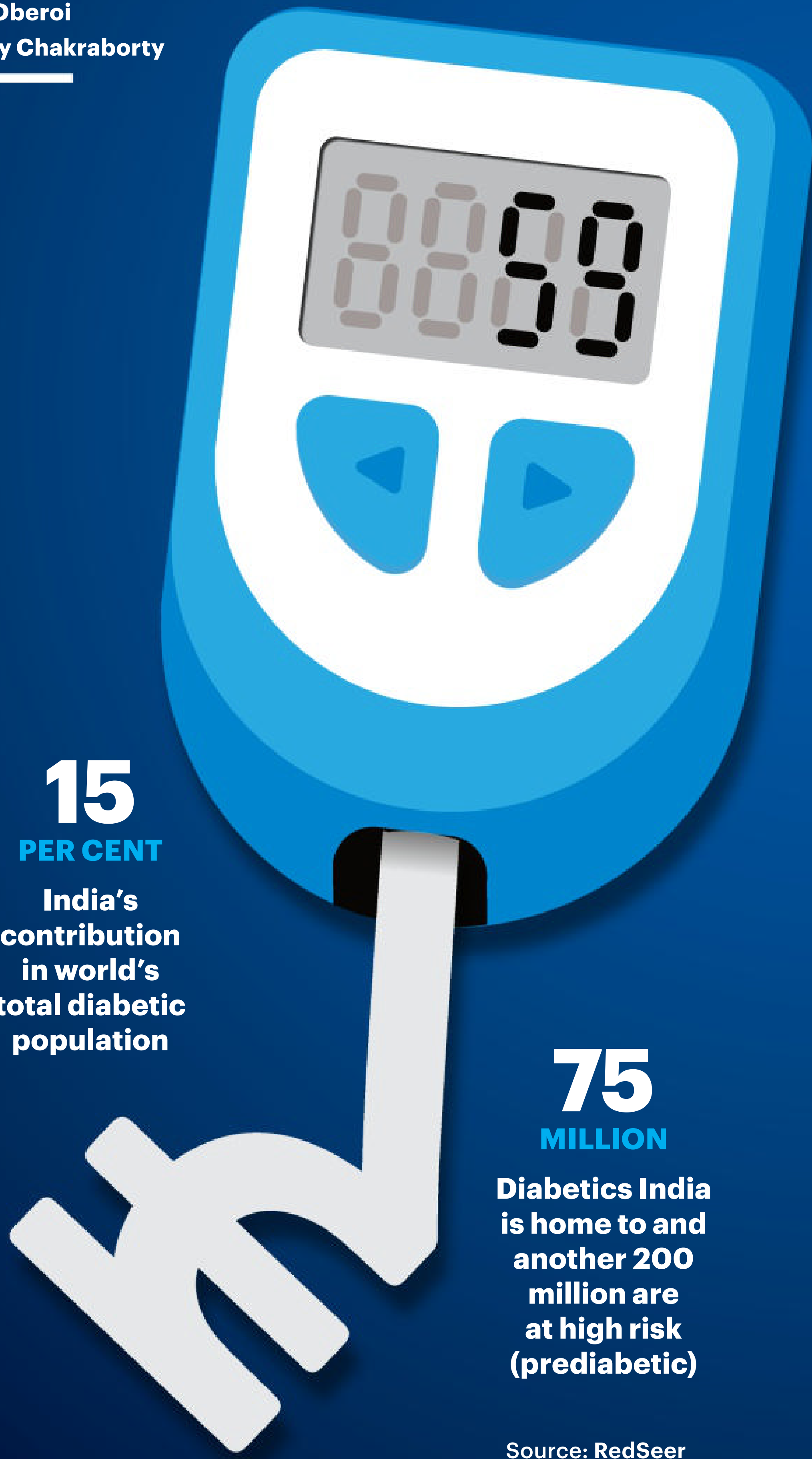
3,000
ATHLETES
will compete in 109 different events at the Winter Olympics

26
VENUES
at the Beijing Winter Games will be powered by green energy

THE BUSINESS OF DIABETES

Doctors say Covid-19 has accelerated the rate of increase of diabetes by raising stress and anxiety. According to RedSeer, with around 15 per cent of the world's diabetic population here in India, the country has the second highest number of diabetics in the world, after China. Diabetes is not curable and needs life-long 'management', which costs money. Here is the economics of the disease in India.

By **Rahul Oberoi**
Graphic By **Tanmoy Chakraborty**



DIABETES 101

THE DISEASE

Diabetes is a chronic (long-lasting) health condition that affects how your body turns food into energy

THE SYMPTOMS

Thirst, urination, hunger

THE TREATMENT

Self-monitoring of blood glucose, medication, insulin, healthy diet and exercise

BALLOONING MARKET

Diabetes care market in India to grow over 3X by FY31

$17
Billion
FY21

$59
Billion
FY31*

*Projection

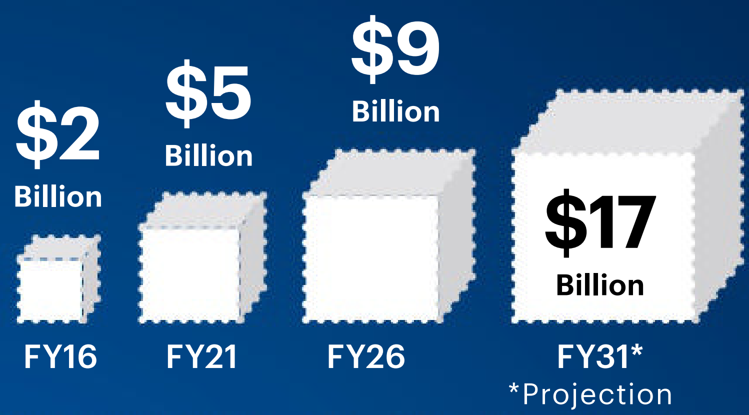
15
PER CENT
India's contribution in world's total diabetic population

75
MILLION
Diabetics India is home to and another 200 million are at high risk (prediabetic)

Source: RedSeer

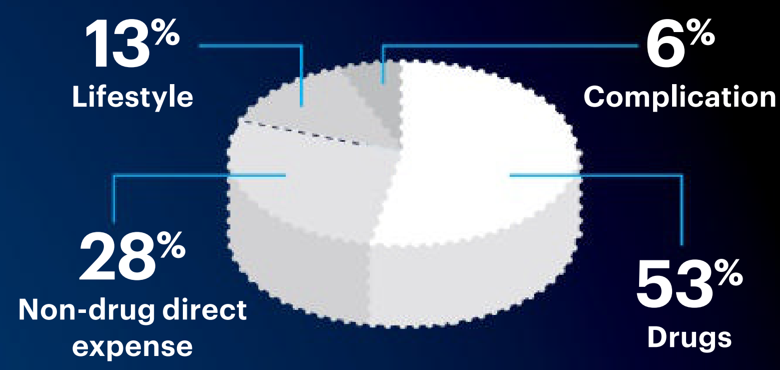
DIABETES LIFESTYLE EXPENSES

Dietary modification spends due to diabetes account for 70% share of this expense



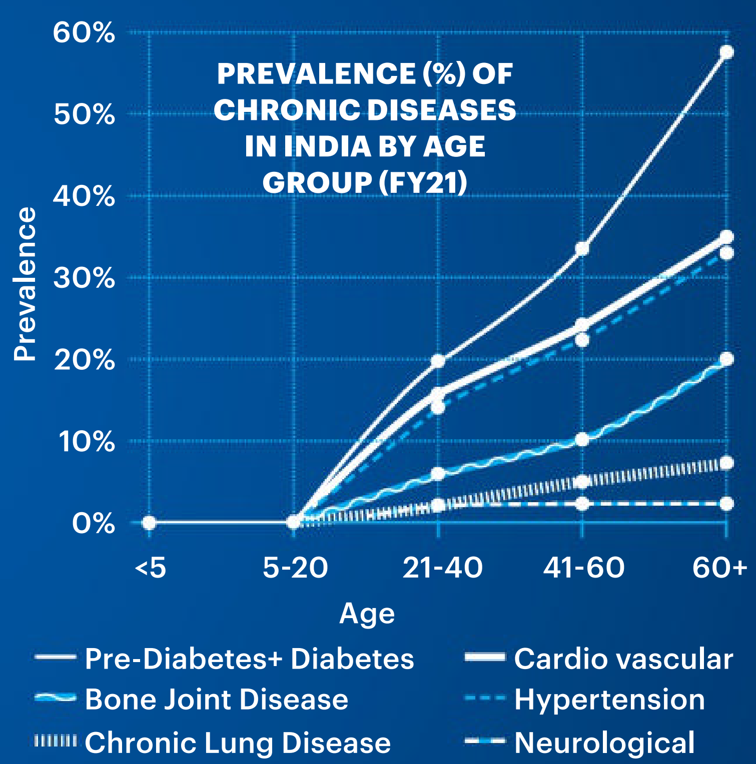
SPENDS ON DIABETES

An average diabetic spends ₹11,000 per annum on diabetes care



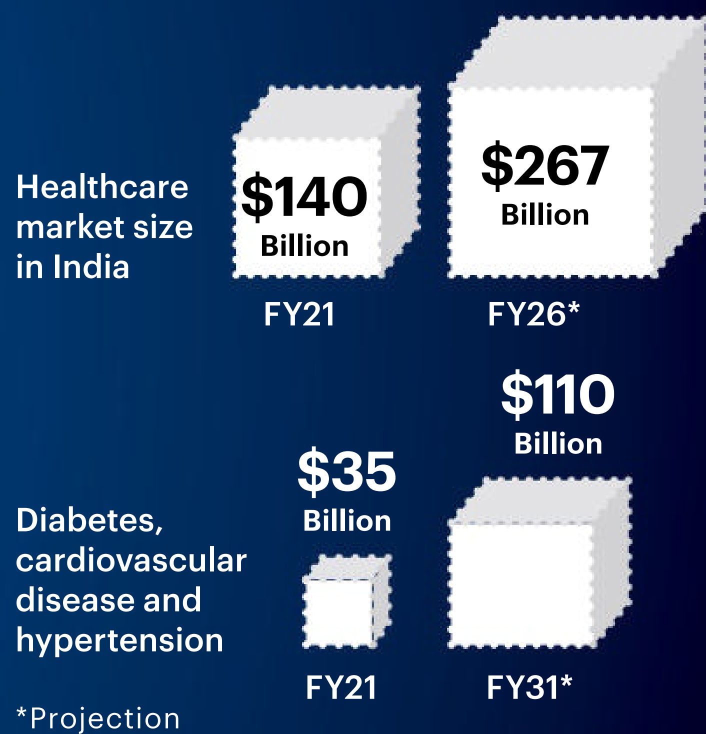
DIABETES MOST PREVALENT

Diabetes is the most common chronic ailment as the population ages



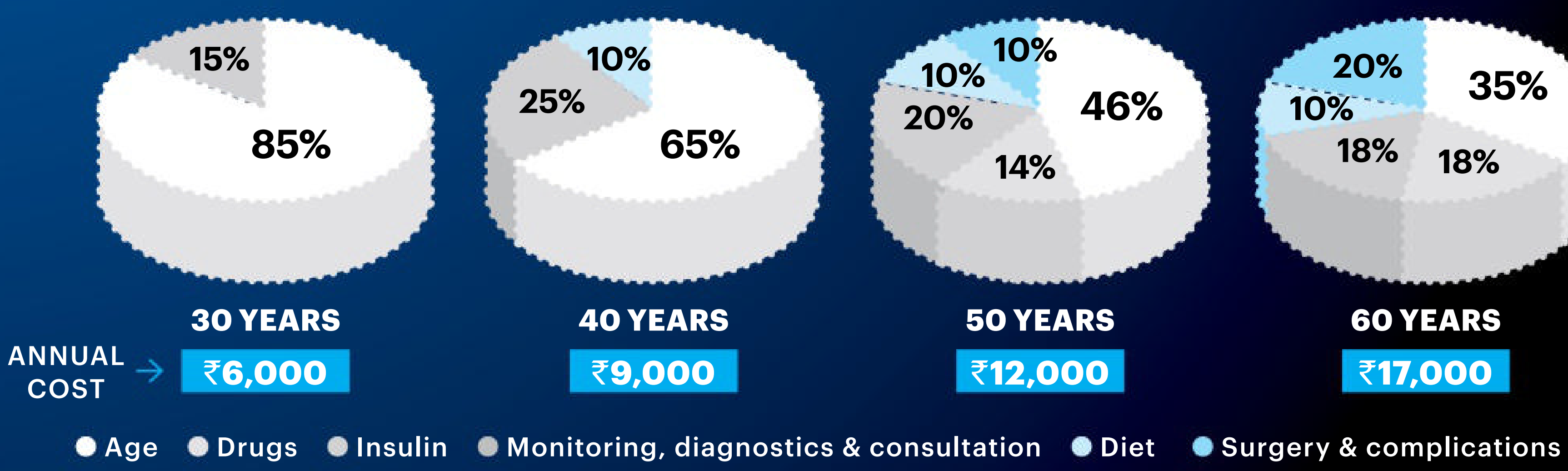
HEALTHCARE MARKET

Market size of top three chronic diseases is expected to grow around 3 times in the next 10 years



ANNUAL SPEND ON TYPE 2 DIABETES

About 90 per cent of diabetics suffer from Type 2 diabetes. The disease is generally detected in the late 30s. There is no dependence on insulin in the initial stages. But if proper care isn't taken, patients might need to take insulin injection in later years



ELECTRONICS NATION

To transform India into a $300-billion electronics manufacturing powerhouse, the Ministry of Electronics and Information Technology has identified key focus segments—mobile phones, IT hardware, consumer electronics, industrial electronics, auto electronics, electronic components, LED Lighting, strategic electronics, PCBA, wearables and hearables, and telecom equipment. The plan is to boost electronics exports from $10.1 billion in FY21, to $105-130 billion by FY26.

—NIDHI SINGAL

200 UNICORNS BY 2025!

The Indian start-up ecosystem's growth has quickened over the past one year, thanks to a combination of domestic and international factors. So, earlier projections are being reworked upwards. An annual start-up report by Nasscom and Zinnov estimates that India is set to have 180-200 unicorns by 2025, significantly upping its last year's estimates of 95-105 for the same timeframe. The report predicts that by 2025, India will have 36,000-37,000 start-ups with a cumulative valuation of $600-700 billion, up from $320-330 billion at present.

—BINU PAUL

Rural Setback

AFTER CARRYING THE growth momentum for over a year, the country's rural market has left India's fast moving consumer goods (FMCG) makers high and dry. From growing at around 6-8 per cent by volume since mid-2020, the market, which houses over 65 per cent of the consumers and contributes 25-40 per cent towards FMCG majors' top line, has shrunk for the first time in years in the October-December quarter, data from market research firm Nielsen shows. While the subdued urban growth rate had been cause for worry already, steady fall in rural demand is set to cost consumer goods players dearly.

—ARNAB DUTTA

TAXING TIMES

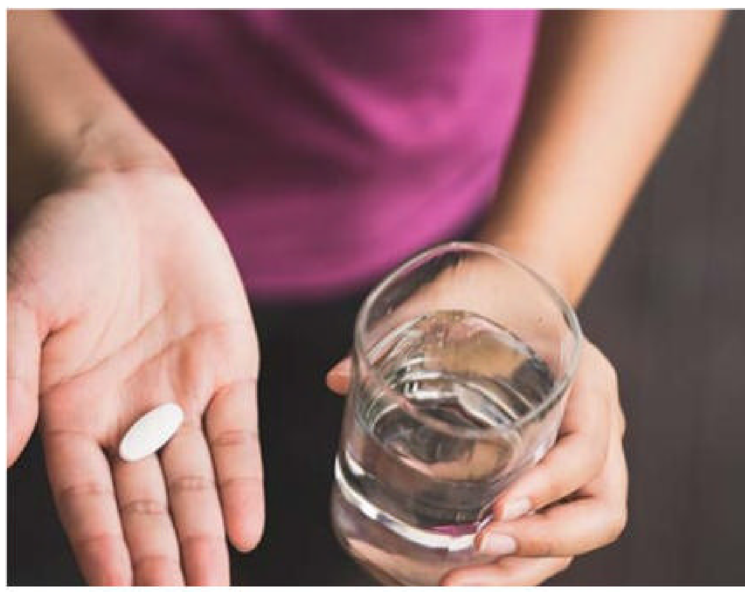
Cryptocurrencies are going through tough times. Bitcoin has fallen more than 40 per cent to $38,572 after touching its record high of $69,000 in November. The primary reason for this is the expected increase in interest rates by the US Fed and fears of a Russian attack on Ukraine. Add to that the Union Budget's 30 per cent tax on digital assets (along with 1 per cent tax deducted at source) and it seems like tough times for the crypto market for now.

—TEENA JAIN KAUSHAL

GIVE ME DOLO

The routine anti-fever medicine Dolo 650 has gained huge popularity amidst the Covid-19 pandemic—starting with the second wave and continuing well into the third wave. So much so that data from IQVIA, a healthcare data science and analytics company, shows Dolo 650 now is the second most sold antipyretic tablet in India after Calpol manufactured by GSK with a difference of just ₹3 crore in sales. The tablet, manufactured by Bengaluru-based Micro Labs, has recorded sales of ₹567 crore since March 2020, with over 3.5 billion pills and 75 million strips sold so far, according to IQVIA.

—NEETU CHANDRA SHARMA



TELECOM-AVIATION DOGFIGHT

ROLLOUT OF 5G for broadband cellular networks in the US led to flight cancellations over warnings that frequencies could hamper navigation equipment. This led many to raise concerns around India's 5G plans. But telecom experts say Indian telcos would only be allotted spectrum in the mid-band of 3.3-3.6 GHz. Countries like Japan have deployed 5G without any issues. Japan, in fact, assigned spectrum through a beauty contest in 2019! Hope DoT is taking note.

—MANISH PANT

BOTTOM LINE MAGIC

RELIANCE INDUSTRIES delivered its highest ever quarterly consolidated net profit of ₹18,549 crore for the October-December quarter, registering a growth of 41.58 per cent on a year-on-year basis on account of a rise in top line and one-time gains (₹2,872 crore) due to divesting shale gas assets in North America. CMD Mukesh Ambani said, "Retail and digital services have recorded the highest ever revenues and EBITDA."

—RAHUL OBEROI

LISTING RACE

Brace for a race against time. Even as the tenure of LIC Chairman M.R. Kumar (*pictured below*) was extended by a year, FM Nirmala Sitharaman announced in her Budget speech that LIC's IPO is "expected shortly". At the post-budget briefing, the DIPAM secretary said the draft document will be filed in two weeks. Now, it takes the regulator typically well over a month to clear the draft document. So, can LIC's IPO hit the bourses in FY22? It's touch and go.

—ASHISH RUKHAIYAR

FIXING GOVERNANCE

There is serious drama playing out at PTC India Financial Services. It started with three independent directors stepping down after expressing concerns over lapses in corporate governance and compliance. The firm has now been pulled up by SEBI with no permission given to hold a board meeting until the important issues are addressed; the regulator has also asked for a report. It does seem like there's no let-up in governance issues in India Inc.

—KRISHNA GOPALAN

SECURE THE GATES

Advances in digitalisation and work from home have led to a sudden uptick in the number of cyber attacks that are costly and damaging. Over the past year, education and research emerged as the most targeted sector as per Check Point Software's 'Cyber Attack Trends: 2022 Security Report'. Organisations in the education and research sector faced on average 1,605 weekly attacks, a 75 per cent increase over last year. The government/military followed this with 1,136 weekly attacks with a 47 per cent increase. The report also highlighted cyber attacks against organisations worldwide increased by an average of 50 per cent in 2021, compared to 2020.

—NIDHI SINGAL

Intelligent Theme

THEMES ARE IN. Recently, Nippon India Mutual Fund (MF) filed a document to file a first-of-its-kind scheme for Indian investors that would invest in the A.I. theme. The fund will be benchmarked to MSCI All Country World Index, which tracks nearly 3,000 stocks across 48 countries, and a market cap of $70 trillion. The recent past has seen Indian MF houses file draft documents to launch funds based on themes such as semiconductors, electric vehicles and blockchain, among others. Clearly, MF investors are spoilt for choice when it comes to thematic investing.

—ASHISH RUKHAIYAR

HOW'S THE JOSH?

After the hype, the fall. Data shows that shares of recently-listed One97 Communications, which operates Paytm, have eroded over half of the investors' wealth against the issue price of ₹2,150. Likewise, Cartrade Technologies and PB Fintech have also lost 55 per cent and 24 per cent, respectively, till January 24 against their respective issue prices. Will the trend reverse?

—RAHUL OBEROI

NETFLIX'S 'FRUSTRATION'

NETFLIX CO-CEO Reed Hastings has called the firm's lack of success in India "frustrating". It has slashed prices twice. Still, its cheapest mobile-only plan of ₹149 a month is one of the costliest amongst its peers. It's struggling to add to its 5 million subscriber base. Looks like it is facing a conundrum. It can stray from global strategy and tweak content to suit a lower-denominator regional viewership, which would put at risk existing premium viewership. Or, it could stay put and stagnate.

—VIDYA S.

INDIA'S CHIEF ECONOMIST

V. ANANTHA NAGESWARAN, dean of Chennai-based IFMR Graduate School of Business, is the new chief economic advisor (CEA) in the finance ministry. He succeeds Krishnamurthy V. Subramanian, who returned to academia at the end of his term. The new CEA, an IIM Ahmedabad alumnus, was appointed just days before the Economic Survey and Union Budget. With the Budget's focus on expenditure, the government will need all the advice the new CEA can provide.

—RAJAT MISHRA

EXPORTS, YES, BUT IMPORTS?

Commerce and Industry Minister Piyush Goyal says $650 billion of exports for both goods and services within the current financial year is possible to achieve. While that would be a remarkable achievement, the fact is that imports are growing faster than exports. So, despite higher and higher exports, the trade deficit is widening. Last December, exports were at a record $37.81 billion, but imports were also at a record $59.48 billion. Kotak Securities expects India's trade deficit to widen to $190 billion in 2021-22 and to $200 billion in 2022-23. Comparatively, the deficit was $102 billion deficit in 2020-21.

—RAJAT MISHRA

While Minister Piyush Goyal is hopeful of record export numbers in FY22, imports are growing at a faster clip and this could lead to the widening of India's trade deficit

CHANDRA'S AI ODYSSEY

FOR N. CHANDRASEKARAN, the buyout of Air India must rank as one of the high points in his tenure as Tata Sons' Chairman. Buying government-owned firms is not new for the group. But Air India is special since it was owned by the Tatas before the government took charge nearly 70 years ago. The task on hand is to turn around an airline that is deep in the red. For Chandrasekaran, this will be his sternest test to date.

—KRISHNA GOPALAN

More Bad News

THERE SEEMS to be no end to **Vijay Mallya's** woes. Once India's liquor baron, a foray into aviation landed him in a mountain of debt. At each step, he has let go of assets. With Mallya now defaulting on a £20.4-million loan to UBS, his home in London overlooking Regent's Park might go out of his grasp. Good news seems to be eluding the erstwhile king of good times.

—KRISHNA GOPALAN

APPLE'S BIG BITE

Apple CEO Tim Cook is pleased as punch: "We set all-time records for both developed and emerging markets and saw revenue growth across all of our product categories except for iPad, which we said would be supply constrained," he said during an earnings call. Emerging markets include India, where the iPhone 13 was launched. Despite logistics constraints and supply shortages, Apple recorded revenue of $123.9 billion, 11 per cent up YoY in the October-December quarter of 2021. CMR estimates iPhone's potential market share in CY 2021 to be about 4.4 per cent, up from 2.4 per cent in CY 2020.

—NIDHI SINGAL

HASTINGS PHOTOGRAPH BY KWAKU ALSTON/NETFLIX; **PIYUSH GOYAL** PHOTOGRAPH BY BANDEEP SINGH; **VIJAY MALLYA & V. ANANTHA NAGESWARAN** PHOTOGRAPHS BY ANI; **N. CHANDRASEKARAN** PHOTOGRAPH BY YASIR IQBAL

Changing Lanes

The Budget tries to break free from the cage of relief packages of the past two years and look at a period of sustainable economic growth. It's a bold, but risky, move

BY **UDAYAN MUKHERJEE**

THE GOVERNMENT HAS OFFICIALLY SOUNDED THE BUGLE on the retreat of the pandemic. Hemmed into a cage of relief packages and income support over the past two years, it is now trying to break free and train its sights on the bigger goal of sustainable economic growth through investments in infrastructure. In doing this, it seems happy to live with a modestly loose fiscal setup and not give in to clamours of more welfare spending, even in an important election year. Bold, yes, but not without risks.

The first hint of such risks was flagged by the bond market on the day of the Budget, as yields rose in response to the government's larger than expected borrowing calendar. An expansionary Budget in a rising inflation scenario when the country's central bank is plotting an exit from a long spell of accommodative monetary policy, could be tricky. The RBI, though it may not admit so, must have watched the Budget with growing concern.

Some easing of the heightened relief measures of the year gone by was expected but a complete eschewing of demand-side measures is a bit surprising, particularly as it is quite apparent that the scarring at the bottom end of the economic pyramid remains persistent and painful. The informal sector, services and MSMEs are still reeling but looking at the Budget, one may be led to believe that those problems are already behind us. Far from it. Thus, a supply plus demand side Budget may have been more appropriate than this either-or trade off. But that leads us back to the tricky question of fiscal space, and it is here that the Budget betrays some timidity.

Tax revenues in the current year have been bountiful, way beyond what was budgeted at the start of the year. This, then, was the opportunity for the Finance Minister to push for the double-barrelled approach—tax revenues plus strong capital receipts from asset sales and privatisation. One takes care of the capex thrust, the other the problem

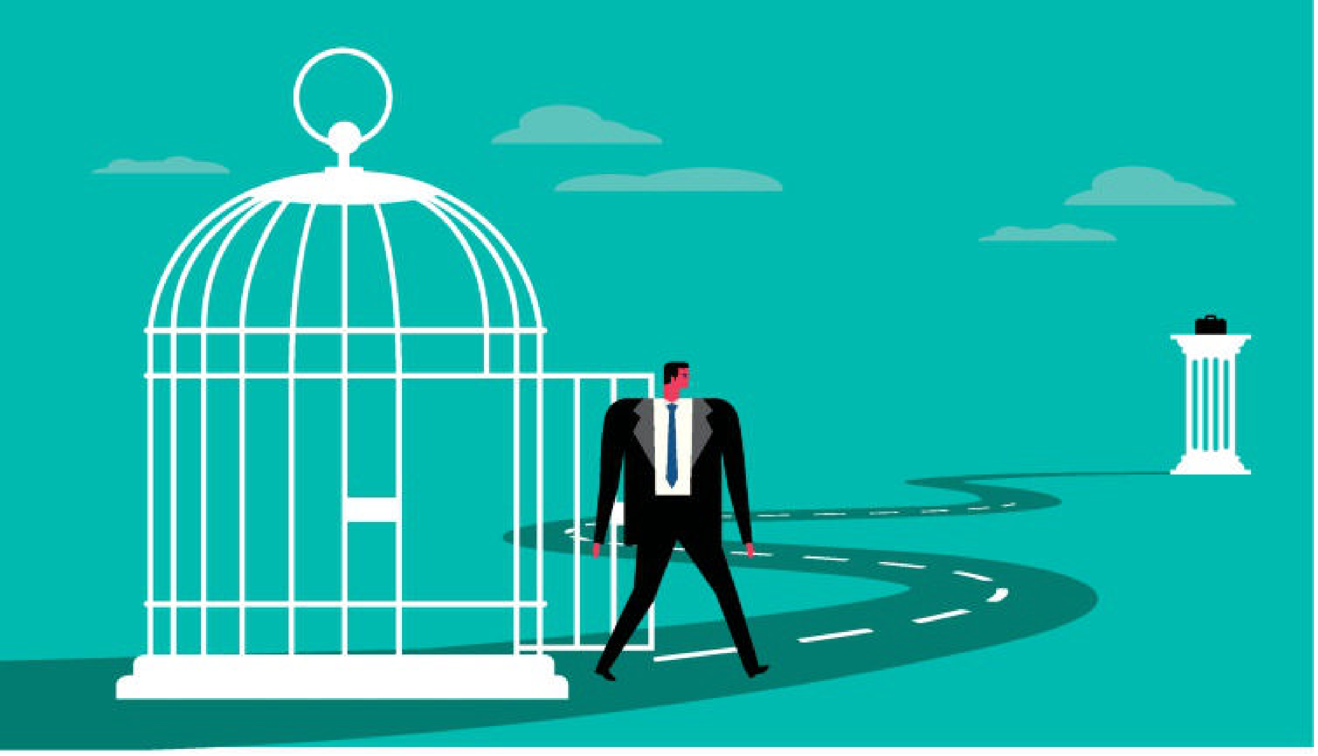


ILLUSTRATION BY **RAJ VERMA**

of low incomes and joblessness. Sadly, the second plank is missing and, therefore, we are left with this medium-term growth plan in the hope that it will eventually generate jobs and address the income problem. This too would have been a fair wager, were it not for the government's spotty record on execution, particularly the states, where more often than not, outlays don't necessarily translate into outcomes. This issue becomes even more germane on realising that at least half of the additional spend on capex this year is through loans to states, where execution is already a problem.

The government's grand ₹6 lakh crore asset monetisation plan didn't even find mention in the Budget and the disinvestment target for the coming year was set at a paltry ₹65,000 crore. Clearly, there are issues with the valuation of the LIC IPO and question marks over whether there are enough takers for BPCL and the two public sector banks. This is disappointing as these non-tax revenues would have come in so handy in extending income support to the affected informal sector, further boosting the capex growth push or if nothing, to cool bond yields by expediting the journey to a 4.5 per cent fiscal deficit. The government's body language on privatisation is worrying. One can only hope that it is on account of its poor track record over the past three years and not an admission of defeat in the face of forces fundamentally opposed to the very idea. That would be unfortunate.

THE GOOD NEWS IS THAT ALL OF THIS, once the excitement of the day has faded, affects India's prospects only on the margin. Looking at the fine print of this 'enhanced' capex spending, it appears unlikely it will crowd in the private sector into a virtuous capex cycle. Nice thought, but reality is somewhat different. Private sector capex, far more important than government infrastructure spending, has its own triggers—higher capacity utilisation, confidence in a durable profit cycle, and enabling factors such as low tax rates and cleaned-up balance sheets, already in place. Slowly, but surely, and no special thanks to this Budget, we will get there. On the margin, the government's efforts are welcome. No more, no less. Where it could, and probably should, have played a more meaningful role was to address the pain in the informal sector, which the private sector, or market forces, will not address. India's big problems in the near term, not necessarily in that order, are unemployment, inflation and inequality. On the first, the Budget may have done something to help through its infrastructure thrust, while on the second it may have made it worse. It is on the last aspect where it comes a cropper, as the gap continues to grow, ever higher.

The government's body language on privatisation is worrying. One can only hope that it is on account of its poor track record over the past three years and not an admission of defeat in the face of forces fundamentally opposed to the very idea

Coming as it does, bang in the middle of election season, this Budget probably reflects one of two convictions held by the Prime Minister. Either a firm belief that handouts don't buy votes any longer, it is the more persistent and frustrating issue of joblessness that needs to be addressed to prevent alienation of the young electorate. Or that he needs to return to his original plan of a rightward slant to economic policy, sacrificing the distinctly leftist undertones of recent years, in the hope that other, non-economic factors will prevent any erosion of his voter base at the bottom of the pyramid. In that he may be right, though he did shed some young crypto traders from his fan base this Budget day. BT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THE AMRIT KAL BUDGET: Finance Minister Nirmala Sitharaman has presented a framework for long-term growth. How much of the proposals get implemented would be known only by March next year

IN 91 MINUTES—her shortest Budget speech delivered since assuming charge in 2019—the country's first full-time woman finance minister, Nirmala Sitharaman, outlined her government's path for solving major economic challenges. The address was business-like and bereft of the usual long quotes. In the end, the proposals enunciated by Sitharaman reiterated the central government's Barbell strategy and Agile framework amid the uncertainty induced by the Covid-19 pandemic since early 2020. Amply elaborated in the Economic Survey released on January 31, the Barbell part comprises deregulation, reforms and addressing of legacy issues to encourage flexibility and innovation. The second or the Agile framework involves strategies like Atmanirbhar Bharat, productivity-linked incentive (PLI) schemes and investments in renewable energy to build resilience.

By keeping the fiscal deficit target for the next fiscal at 6.4 per cent, the government has tried to pull the capex lever hard to boost growth through an upward revision by a staggering 35.4 per cent, from ₹5.54 lakh crore to ₹7.50 lakh crore. Along with grants to states, the actual amount spent would be about ₹10.25 lakh crore or 4.1 per cent of GDP. Although economists and experts were expecting the fiscal deficit for FY22 to be below 6.8 per cent, a tad higher defi-

THE BOOSTER BUDGET

Despite being tabled just days before assembly elections in five states, the Union Budget of 2022-23 was shorn of big-bang, populist announcements, focussing instead on creating a framework for long-term growth. It is not about doling out largesse, but developing a robust roadmap to deliver on economic growth, demand creation and jobs

BY **MANISH PANT** AND **RAJAT MISHRA**
PHOTOGRAPH BY **YASIR IQBAL**

cit at 6.9 per cent shows that the government is utilising the tax buoyancy to revive the economy. The deficit target is reflective of the government's laser-focussed approach to grab growth without bothering much about inflation and fiscal consolidation. "We appreciate the government for not being hemmed in by the neoclassical trap of fiscal conservatism and providing a very clear glide path for fiscal consolidation that is in sync with the economic realities," says Sanjiv Mehta, President of the industry chamber FICCI and CMD of FMCG major Hindustan Unilever. Pressing the accelerator on public capex, the government will spend ₹39.45 lakh crore in FY23, which is an increase of 4.6 per cent from the revised spending target of ₹37.7 lakh crore in the current fiscal.

However, to finance the deficit, the government announced a borrowing of ₹14.95 lakh crore on a gross basis from the bond market, with the rest financed through proceeds from small savings and loans from multilateral agencies. "The focus on capex will have a high multiplier impact and I am optimistic that elevated government spending will spur private sector investments," believes Zarin Daruwala, Cluster CEO, India and South Asia markets, Standard Chartered Bank.

Thus, the Budget 2022-23 document tabled just weeks ahead of elections in five

KEY HIGHLIGHTS: BUDGET 2022

- Capital expenditure stepped up by 35.4% to ₹7.50 lakh crore in FY23
- Fiscal deficit in FY22 stood at 6.9% as against 6.8% in Budget estimate
- The National Highways Network to increase by 25,000 km in FY23 under PM Gati Shakti master plan
- ECLGS scheme with an added cover for ₹50,000 crore for MSMEs extended to March 2023
- Any income from transfer of any virtual digital asset to be taxed at 30%
- RBI-led digital rupee using blockchain to be launched in FY23
- Required spectrum auctions will be conducted in 2022, to facilitate roll-out of 5G mobile services by private telecom players
- Taxpayers can file an updated return within two years of the filed IT return of an assessment
- Alternate minimum tax for co-operative societies down from 18.5% to 15%
- Tax deduction limit for state government employees to NPS raised from 10% to 14%

states is a bold statement. It is not about handouts but developing a robust structure that delivers on economic growth, demand creation and jobs. This is sought to be achieved by focussing on growth and inclusion, promotion of technology-enabled development, energy transition and climate action, and a virtuous cycle initiated by private investment and supported through public investment. The strategy, as announced by Sitharaman, rests on the four pillars of PM Gati Shakti; inclusive development, productivity enhancement and investment; sunrise opportunities, energy transition and climate action; and financing of investments.

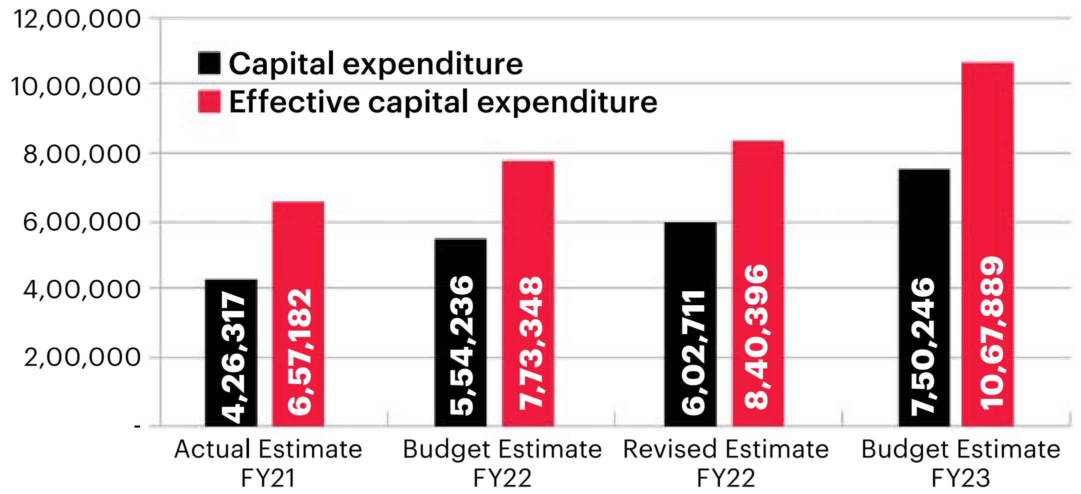
FOCUS ON INFRASTRUCTURE

One of the important targets in the Budget is the completion of 25,000 km of national highways, with allocation enhanced to ₹1.99 lakh crore from ₹1.18 lakh crore in 2021-22. In addition, ₹20,000 crore will be mobilised through innovative financing to complement the public resources. Four multimodal logistics parks will be awarded in the public-private partnership (PPP) mode. "The Gati Shakti initiative features at the centre stage of the Budget, highlighting the importance of quality multimodal transport in achieving overall cost competitiveness. With global studies pegging India's average logistics costs at around 14 per cent of GDP as against 8-9 per cent for advanced economies, this is a factor that needs to be addressed for attracting quality anchor investors across sectors," observes Arindam Guha, Partner & Leader, Government & Public Services, Deloitte India.

Adds Kshitish Nadgauda, Senior Vice President and Managing Director at Louis Berger International for Asia: "The Budget is clearly in favour of increased private investment and

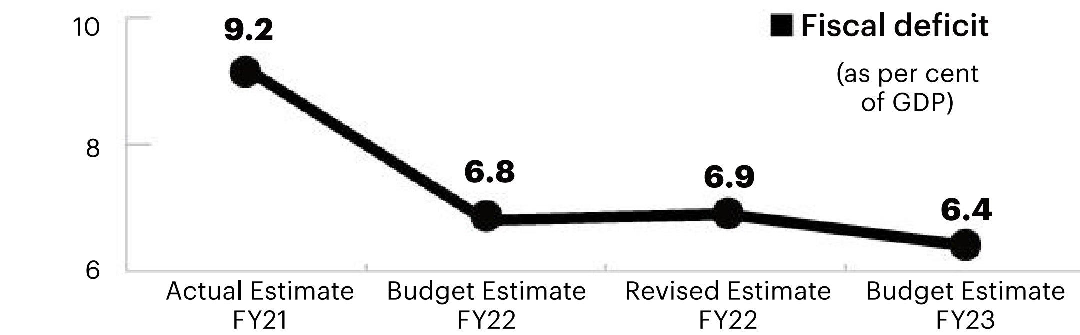
ON THE RISE

Effective capital expenditure is estimated to cross more than ₹10 lakh crore in FY22-23



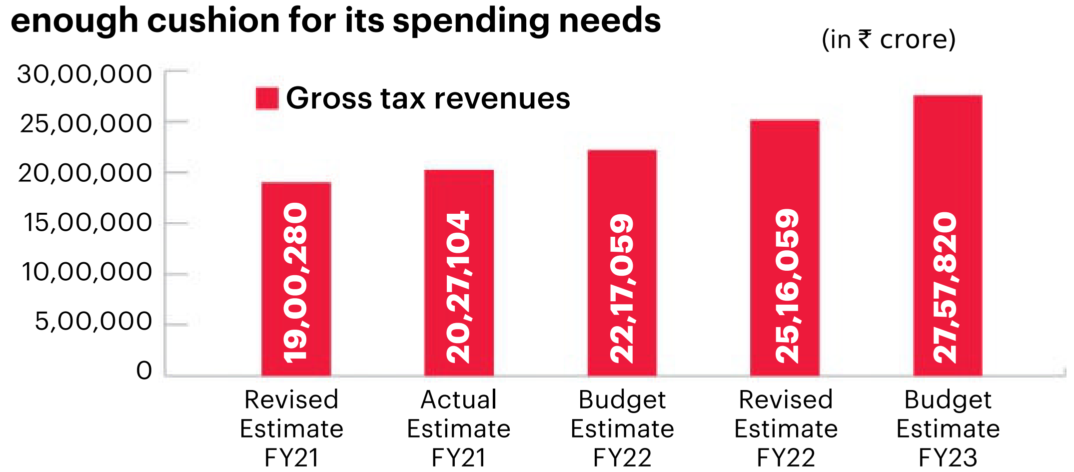
EYE ON THE DEFICIT

Fiscal deficit has been largely on expected lines, and estimated to stand at 6.4% in FY22-23



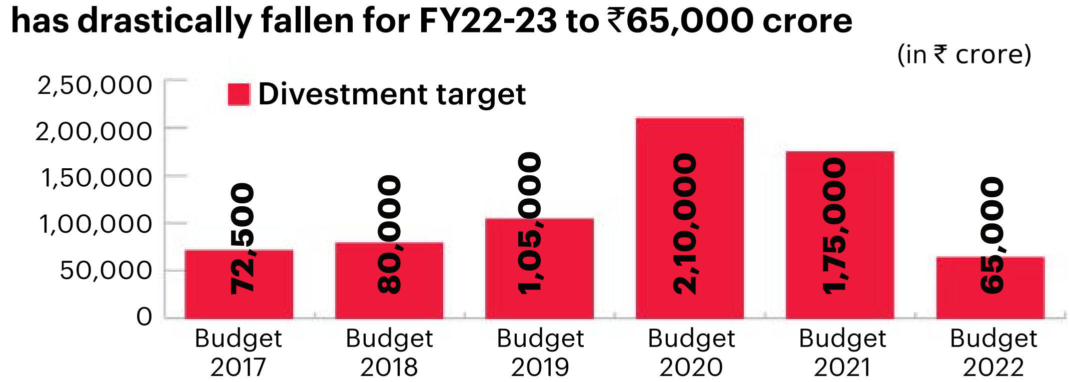
REVENUES BUOYANT

Tax revenues have been rising, giving the government enough cushion for its spending needs



LOWER TARGET

With Air India's sale out of the way, the divestment target has drastically fallen for FY22-23 to ₹65,000 crore



Source: Budget documents

PPPs. For citizens, it promises safe, convenient, and cost-effective multimodal transportation not only in Tier I but also in Tier II cities and towns. The ambitious expansion of national highways, and announcement of intended investment in light rail and metro lite in Tier II cities and towns, and as feeder networks in Tier I cities, will rightly increase the share of public transport in urban areas."

The postal services and railway network will be integrated to provide comprehensive logistics and 400 new generation Vande Bharat trains will be launched. Delivery of high-tech services to farmers in PPP mode, use of drones to aid farmers and launch of a fund with blended capital to finance agriculture startups have also been proposed.

The proposal for green bonds for climate change and environment-focussed products was welcomed by many. "Sustainability has steadfastly become an urgent priority and the proposal to issue sovereign green bonds for building green infrastructure will go a long way in creating a low carbon future and reducing the carbon intensity of the economy. This is in line with the government's commitment on climate action at COP26," says Anil Chaudhry, Managing Director & CEO, Schneider Electric India.

A DIGITAL-REVOLUTION BUDGET

The allocation for the education sector, which grappled with a major disruption owing to the pandemic, has also been raised to ₹1.04 lakh crore from ₹93,224 crore (Budget Estimate). To bridge the digital divide and universalise quality digital education, the Budget proposes establishing virtual labs and a digital university. "This is a digital revolution Budget. We welcome the government's emphasis on creating new digital touch points to empower multiple aspects of our society and supercharge the start-up ecosystem," says Kunal Bahl, Co-founder & CEO, Snapdeal, on the proposals to use enlarged technological interventions to drive synergies. "New initiatives across currency, banking, education, skilling, health, passports, and logistics will enable a large part of the country to benefit from India's growing digital revolution."

The health sector was, however,

left disappointed. "The budgetary estimate of ₹86,200 crore is just an increase of ₹200 crore over ₹86,000 crore (Revised Estimate) in FY21-22. When adjusted for inflation, GDP growth and population growth, the allocation is less than the allocation made last year," says Dr Chandrakanta Lahariya, trained epidemiologist and health systems specialist.

With an eye on welfarism and an intent to boost consumption indirectly, the Budget with an allocation of ₹60,000 crore proposes to cover 38 million households under the Har Ghar, Nal Se Jal programme to provide tapped water.

In addition to this scheme, Sitharaman announced eight million new houses for the identified eligible beneficiaries of PM Awas Yojana in rural and urban areas, with an allocation of ₹48,000 crore.

A series of relief measures for the distressed micro, small and medium enterprises (MSME) sector was also proposed. These include interlinking of various portals, expansion of the Emergency Credit Line Guarantee Scheme (ECLGS) to ₹5 lakh crore, revamp of Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE), and the rollout of Raising and Accelerating MSME Performance (RAMP) programme. "It is a good move to revamp the CGTMSE and provide an extension for ECLGS until March 2023. However, whether this will promptly enable financial inclusion will depend on the execution of these schemes and if the funds are readily made available to last-mile lending organisations," opines Hardika Shah, Founder & CEO, Kinara Capital.

To further promote the ease of doing business, central and state-level systems will be integrated using technology, while other measures include an animation, visual effects, gaming and comics promotion (AVGC) task force, support of ₹4,000 crore to build a strong 5G ecosystem under the PLI scheme, and opening up defence R&D to industry, start-ups and academia.

Another notable announcement was about the Reserve Bank of India (RBI) introducing the digital rupee. "India would be one of the first countries in introducing digital currency. The digital currency using blockchain is expected to systematically bring down the circulation of black money and help rotate currency faster, resulting in growth," remarks Deven R. Choksey, Managing Director, KRChoksey Holdings. On the other hand, in some bad news for investors in virtual assets like cryptocurrencies, income from their transfer will be taxed at 30 per cent.

The Budget has also tried to provide greater fiscal legroom to states by enhancing the Scheme for Financial Assistance to States for Capital Investment to allow them a fiscal deficit of 4 per cent of GSDP, with 0.5 per cent tied to power sector reforms.

NO REVISION IN INCOME TAX SLABS

The country's 600 million-strong middle class was left disappointed with the finance minister again belying expectations of a revision in the income tax slabs. "On the consumption front, there is a bit of disappointment as there is no direct stimulus to spur growth and no major announcement on privatisation, and the overall divestment targets are underwhelming. Finally, from a taxation perspective, no news is good news," says Ashish Gumashta, CEO, Julius Baer India. A finance ministry insider defended the decision by suggesting that pumping money into the economy at this stage could lead to the kind of inflationary environment that is currently being witnessed in the US and Eurozone.

The Budget also mentions replacing the Special Economic Zones (SEZ) Act, 2005 with new legislation, to make states stakeholders in their development. "This will enable states to become partners in the development of enterprises and service hubs, and this would include all large existing and new industrial hubs to implement optimal utilisation of the available infrastructure and increase the competitiveness of their exports. This will help in an increase in foreign investment," says Mrinal Kumar, Partner, Shardul Amarchand Mangaldas & Co.

Meanwhile, rising inflation in advanced economies may cause a global liquidity squeeze, resulting in capital outflows to exert downward pressure on the Indian rupee. "India must brace for higher inflation with a strong possibility of pent-up demand exceeding supply, and geopolitical tensions resulting in higher commodity prices. Disruptions in the global supply chain will further add to the challenge," Rumki Majumdar, Economist at Deloitte India, cautions. Thus, high oil prices, shortage of critical raw materials such as semiconductors, and a decline in exports may lead to economic growth projected at 8-8.5 per cent for FY2022-23, moderating.

How much of the Budget proposals get implemented would be known only by March next year. But what was interesting was that other than stray attempts at heckling, the finance minister's speech largely went off smoothly, with opposition benches listening to her in rapt attention.

Was that a one-off or a sign of things to come, where the Modi government goes ahead full steam with its reforms agenda? **BT**

@manishpant22,
@RajatMishra9518

AI, IIoT, Robotics with Automation are Front Runners in Combatting Covid Challenges: Manish Walia

Manish Walia
Head, Industrial Automation, Delta Electronics India

Sometim Sometime in 2020, cities that never sleep, fell silent and people who were always on the go, locked themselves inside their homes. The only thing that travelled with abandon was a virus, naked to the human eye, but so big that it seemed to dictate life on planet Earth. There was a shift in every sphere of life as safety warranted distance and positivity took on a whole new meaning. Covid -19 struck and life has been irrevocably changed.

Safety concerns have been of utmost concern during this changing period and mandating social distancing as a requirement, leading to the labour force reduced or stuck at home. Meanwhile, the presence of automation began to silently rise. Industry 4.0, once a future upgrade, is now being implemented on war footing. At the end of the day, programmable machines and robots bring the sort of certainty that has become increasingly rare in this world.

Delta, a global automation giant, is one of the biggest global brands to emerge from Taiwan. The company has been at the forefront of smarter, greener solutions to foster collaborations that serve the planet. Delta which has been an inspiration in the business for over 50 years, embraces innovation and has growth for last year in billions of dollars. This deep impact has also been felt in the Indian market where Delta has a head office in Gurgaon, multiple manufacturing units and an R&D center. The growth in India has galloped since the onset of the pandemic. Business Today caught up with Manish Walia, Head Automation, Delta Electronics India to know how automation technology is helping tide over the pandemic situation.

Q How do you see the gloom of the Covid period lifting over industry?

A The pandemic took the whole world by surprise. Experiencing stumbles in such situations is but natural. It has been an evolving situation that does throw up new challenges continuously. Yet, it has forced us all to recalibrate. The pandemic has taught us the importance of maintaining the well-being of our community. Companies have become flexible with targets and focus more on the well-being of their employees. The fact that we are all in this together has fostered bonds in the workplace like never before, creating a deeper sense of community. Even at home, spending time with children has improved a sense of being for office workers, as work and family time are no longer in conflict.

The change was followed by immense growth for companies which included reassessing what is important. Flexibility to adapt to change has also been followed by ingenuity of making the situation work for us and not against us. As the situation is unique, it has brought focus on not just doing things but also how we do them, and the impact of what we do. We see businesses aligning more deeply with the values they were built on.

Q How much of the adaptation to this situation do we owe to technology?

A Technology has been the backbone of this change; be it communicating, accessing information, services and products, functioning through remote work or production. Technology has helped the world function despite reduced outdoor human intervention so children could continue receiving education, essential items could reach homes and businesses could continue functioning. I remember just before the first lockdown, we had finished installing a machine for a customer and were still to commission it when the lockdown was enforced. Our engineer could no longer travel to do this onsite. Thankfully, we could bring the machine online and commission it despite the restrictions. Even on the factory floor social distancing has been effectively enforced through smart machines which covered up for a dwindled work force. AI, IIoT and Robotics with automation have been the frontrunners in combating these challenges. According to reports by Technavio, the market growth of Industrial Automation segment will grow by approximately $ 2 billion. Ofcourse, all this has to be backed by trust. After the pandemic hit, there was a scramble across sectors to automate their production lines. Unlike the usual in person meetings and customer visits, all business was conducted on phone and online. It was the trust in the Delta brand which had been delivering global standard automation technology for over 50 years that helped our customers choose us to transform their production.

Q Yet, the growth of technology has also been cited by many as the reason for widespread job losses, how do you reconcile with that?

A Technology competes with human beings only in cinematic fantasies, in real life it is a collaborative force with human beings operating or directing. Manual unskilled labour once entailed extremely hazardous jobs which were in direct conflict with the physical well-being of the people who carried them out. Technology took away this hazard and shifted such work to machines and robots. This has reduced the need for unskilled labour doing monotonous jobs. With reduced hazard, the possibilities of using these processes have increased greatly. This bolsters more people to create enterprises. Ofcourse, the difference is that the labour is now upskilled through training and they get options for further growth. This has been a big win for safety in the workplace and at Delta, we are proud to be part of making this possible.

Q Which sector has been the most adaptive to technology in this period?

A Historically, it has been the automotive sector that has been the fastest to adapt however, since 2020, the medical and pharmaceutical sectors have taken quite a lead. Both these sectors are essential and their workforce has performed with the zeal of soldiers serving the nation. From a business perspective, they had the unenviable job of rapidly expanding their output with a reduced workforce. Through our collaborations we helped them meet the unprecedented rise in demand by incorporating smart machines and robots in their process lines and automated the entire process lines wherever possible to enhance productivity further. These changes have been vital to mass produce products with precision every single time. Infact, 3D technology has helped produce medicines with more accurate and higher concentrations which inturn has helped reduce the production workload.

Q What can Indian Industry look forward to and how does automation aid these opportunities?

A It's time to pull up our sleeves and get to work as India is gearing up to be the manufacturing hub of the world and aiming at becoming self-sufficient through the Atmanirbhar initiative. At Delta we are really excited to be at the center of this exciting scenario. Automation will help Indian manufacturers maintain international standards in production with smart machines and robots to produce consistently with precision. Automated process lines are key to scaling up production and therefore expanding business. One of the biggest requests we receive is for our software that links the shop floor to the top floor as a middle layer to make the process line collaborative and communicate with the main server. The software collects data and produces reports that analyse the assembly process and help fix lags, enhance productivity and spot any inconsistencies before they grow into bigger problems. In the future, these reports will be powered into AI for decision making and create a high-level process optimization. All these solutions are also energy-efficient. All in all, automation is not just about making an upgrade, it is the efficient way to long-term success.

COVER STORY

facebook 2.0

THE NEWLY REBRANDED META HAS MADE A BILLION DOLLARS IN INDIA ON AN INCREASING SHIFT TO DIGITAL ADVERTISING. AS IT ADOPTS A NEW IDENTITY AND TAKES A COSTLY LEAP INTO THE METAVERSE, WILL PAST BAGGAGE AND CHALLENGES WEIGH HEAVY?

BY VIDYA S. & ABHIK SEN
PHOTOGRAPH BY RAJWANT RAWAT

HERE'S A QUICK QUESTION: What comes to your mind when you think of Facebook? Let's see now. You, a common man: "FB? I get to watch fun posts and videos, stay in touch with friends and colleagues, stay connected with distant cousins and relatives, and also make new friends." You, an enterprise manager: "A platform to advertise my products and services." You, a small business: "I can create an FB 'page' and promote, even sell, my products and services." You, a wannabe businessman: "I can start a virtual business on FB, I don't need to take an office on rent." You, a youngster, teen, Gen Z, cool dude: "FB? Nah, it's too fuddy-duddy, it's for my parents; Insta is more my thing!" You, a politician or public administrator: "FB... WhatsApp...hmm... gotta keep an eye on these fellows; they can be a nuisance...."

Diverse perspectives, yes. But sadly for the company, in recent times, the last one has dwarfed much of the other aspects of the Facebook family of apps both in India and in many overseas markets including the US, Russia and the UK. (Facebook, Instagram and WhatsApp are now brought under an umbrella brand called Meta; in India the company is still known as Facebook India, but will be known as Meta in India going forward.) Meta's managers have time and again responded by making changes and engaging with governments and other stakeholders.

Managing an enterprise such as Meta, which evokes a

6 MILLION | INSTAGRAM REELS PRODUCED IN INDIA EVERY DAY, AND INDIA IS ONE OF THE LEADING COUNTRIES FOR IT

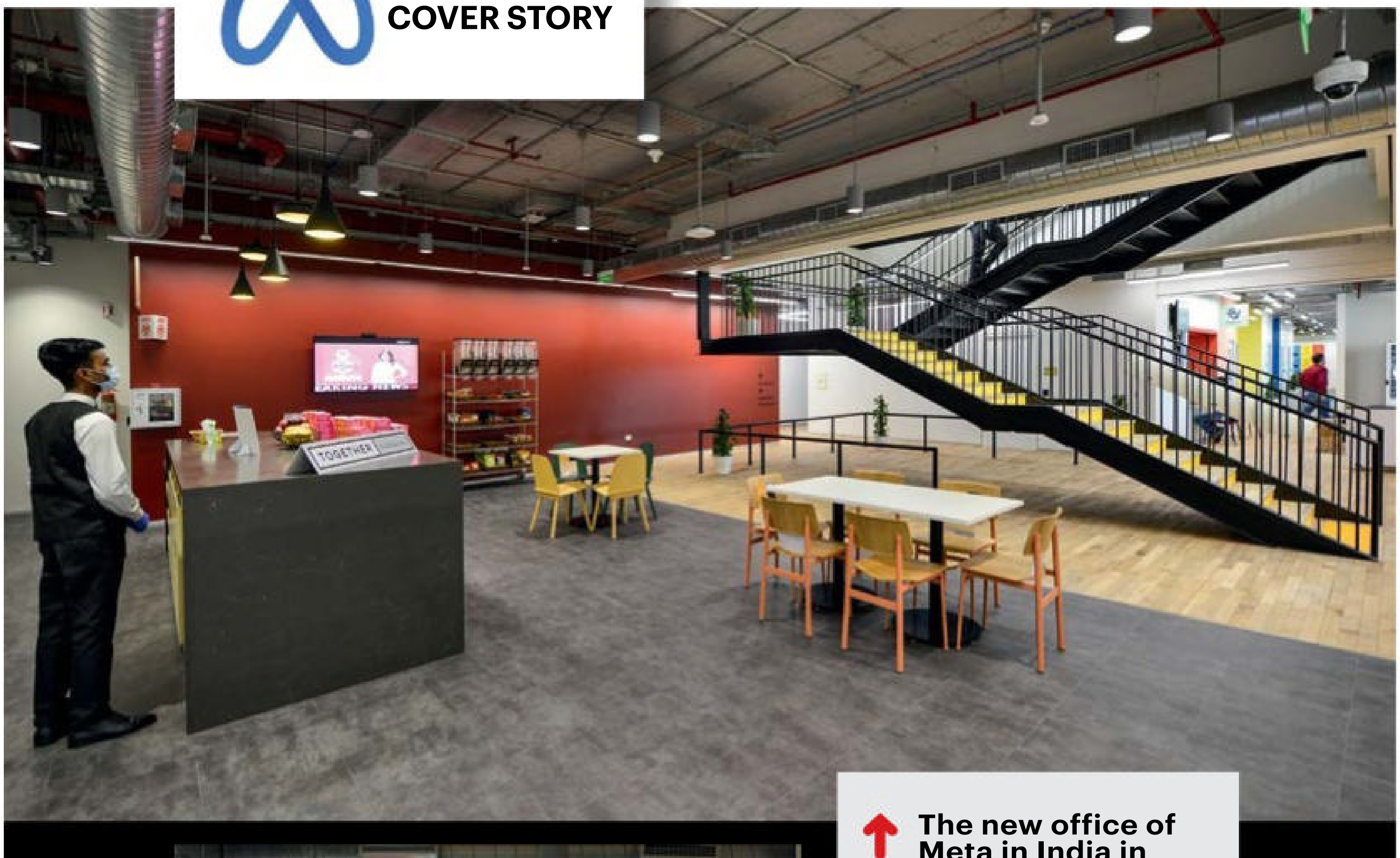
₹900 CRORE | SIZE OF INDIAN INFLUENCER MARKETING INDUSTRY, ACCORDING TO GROUPM INCA

4.8 HOURS | SPENT BY INDIAN SMARTPHONE USERS ON THEIR DEVICES DAILY, OF WHICH ONE HOUR IS SPENT ON VIDEOS, SAYS BAIN & CO.

15 MILLION | USERS OF WHATSAPP BUSINESS APP IN INDIA

↑ The India team of Meta, (*from left*): Manish Chopra, Head of Partnerships; Ajit Mohan, India VP and MD; Abhijit Bose, Head of India, WhatsApp; and Sandeep Bhushan, Head of GMS, India

PHOTOGRAPHS BY **RAJWANT RAWAT**



The new office of Meta in India in Gurugram boasts of large opens spaces like the cafeteria (top) and has provisions for the staff to relax with a pool table, and even a drum kit

wide range of reactions and even emotions, is no mean task. But the managers of Meta in India say they are clear about their key priority: grow the business, the right way. Ajit Mohan, VP and MD of Facebook India (Meta), says it is not in the company's economic interests to align with anything that is not right—advertisers don't like it, general people don't like it, nobody likes it. It is bad for image. Bad for business. Ergo, the focus is on getting the business to grow. And in that sphere, it's all sun and shine. The company reported gross advertising revenues—its principal source of income—of ₹9,326 crore (one and a quarter billion dollars) in FY21. That's a rise of, hold your breath, 314 per cent from two years ago (₹2,254 crore), and a more 'modest' rise of 41 per cent from 2019-20, as per data from its financial results filed with the Registrar of Companies (RoC).

What just happened? Well, the pandemic, for one, sent consumers and brands scurrying to social media (read: FB and its apps), setting the company's cash counters ringing. Some luck, for another (think of a certain TikTok getting banned, opening up the market for other short video apps including Instagram Reels). And some smart strategy, for a third. But even with such success there are challenges.

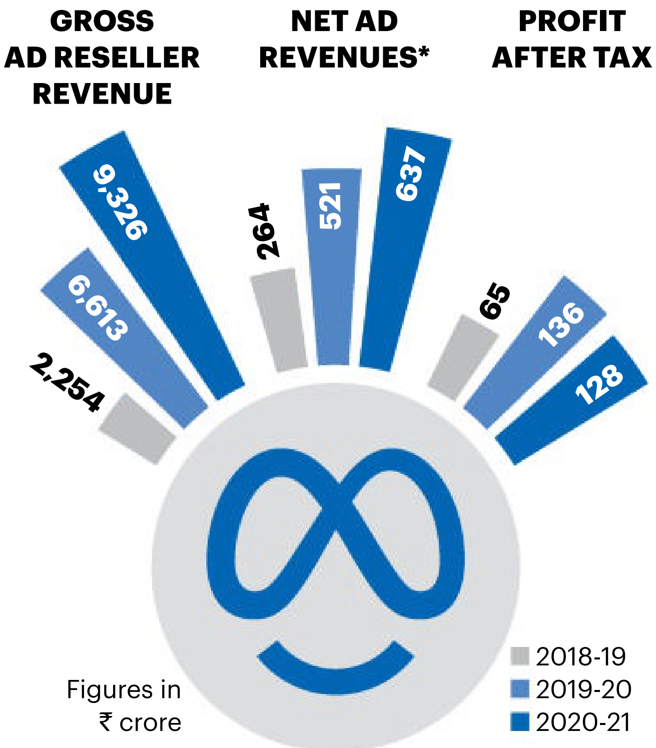
What most people are interested to find out about is brand Meta. What is it and how will it work? And what is the road ahead?

Interesting company. Interesting questions. Let us, then, start with the pandemic.

THAT INDIA produced a record 45-odd unicorns in 2021, ushering in a whopping $40 billion in private capital, is a matter of pride for the country. And Meta

MEGA GROWTH

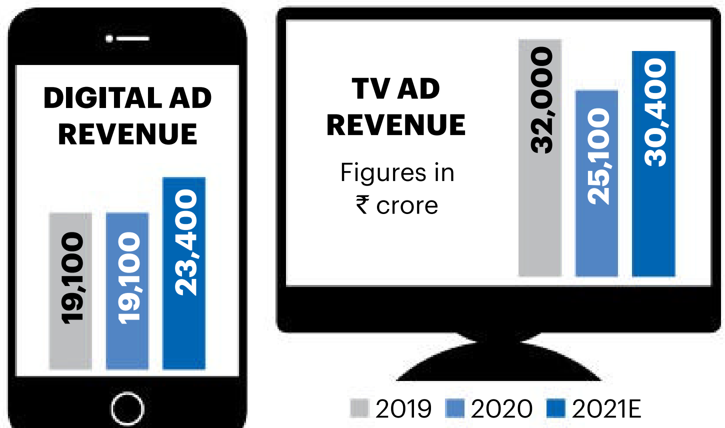
Meta in India's ad revenues are on the rise, though profits have dipped marginally in FY21



*As it operates on an ad reseller model, this is the sum from ads that the company bills to India. The rest is billed to its parent firm
Source: RoC filings

INDIA'S AD SPENDS

The lion's share of the digital ad revenue pie is cornered by Google and Meta



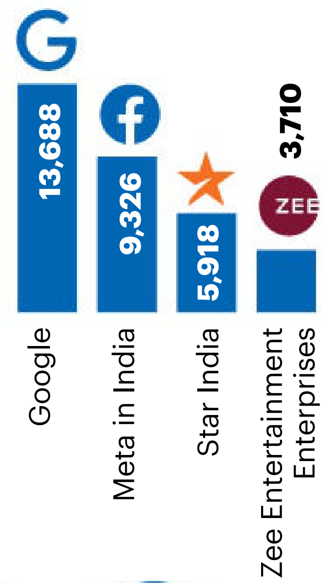
Source: FICCI-EY M&E report

GIANTS OF MEDIA

Meta in India is now among the top ad revenue earners, surpassing Star and Zee networks

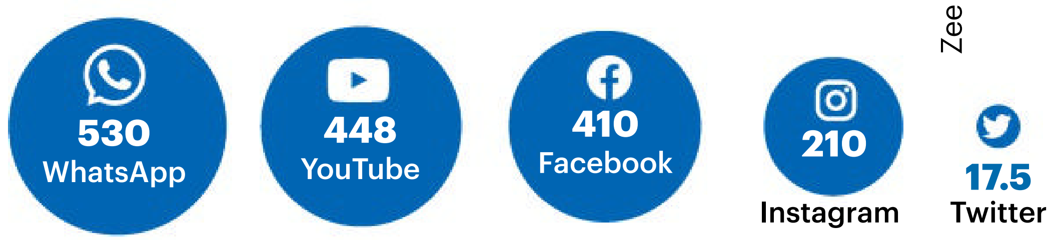
Source: Companies' financial reports, RoC

Figures in ₹ crore



SOCIAL MEDIA PECKING ORDER

Social media users in India across platforms



Figures in millions of subscribers; Source: IT Ministry, as of Feb 2021

Graphic by TANMOY CHAKRABORTY

in India is an ecstatic cheerleader. What's the connection? Well, the lure of half a billion users (India is Meta's largest market by number of users) means that these new-age start-ups, which are sitting on mounds of money and lofty growth targets, are significant advertisers on Facebook and Instagram. Naresh Gupta, Co-founder and Chief Strategy Officer of media communication company Bang In The Middle, says: "The mamaearths [a beauty start-up] of the world are all three-four-year-olds and have been built on the back of digital advertising because content aggregation happens on Facebook and Instagram."

Propelled by consumers flocking to the internet for buying and living during the lockdowns, these start-ups as well as other brands—big and small—have piled onto digital advertising. In fact, if you're not digital today, you are dead. Add to it the direct-to-consumer (D2C) boom where a class of mostly consumer product-focussed brands and start-ups are leveraging social media to connect directly with their consumers, bypassing traditional distribution models, and you know why sackfuls of money have been somersaulting at high speed into Meta in India's vaults.

So much so that Meta in India's ad revenues are now more than what television broadcasting giants make by airing advertisements on their channels. According to RoC filings and company annual reports, the country's largest TV network, Star India, raked in ad revenue of ₹5,918 crore for FY21, while Zee Entertainment Enterprises made ₹3,710 crore. Their growth rates—(-21.2) and (-17.2) per cent, respectively—compare very modestly with Meta in India's 41 per cent and Google India's 21.36

per cent, indicating an increasing preference among brands for digital advertising. While TV networks would most probably post better numbers post the pandemic (FY21 was a full pandemic year where TV hardly had any new content coming out and hence had few ads), the trend is likely to continue.

A FICCI-EY report on advertising spends estimates digital advertising in India to have grown 22.5 per cent to ₹23,400 crore in 2021. Industry insiders peg it higher at around ₹27,000 crore. At ₹9,326 crore, a significant slice of that pie belongs to Meta in India. Google India, of course, is the big gorilla here, with gross ad revenues of ₹13,668 crore in FY21. (To be clear, Meta, which is a reseller of ads, bills only a part of the ad revenue it makes here to the Indian arm. The rest is billed on its parent firm. So, the net ad revenue from India is ₹637 crore in FY21.)

Mohan tracks Meta in India's feat back to a conscious call taken around 2018-19 to focus more on India-centric innovations and features that can be taken to the rest of the world, such as digital payments on WhatsApp and short videos called 'Reels' on Instagram. "India had become consequential for Facebook as a company," says Mohan, adding that one of the factors they decided to place their bet on was the shift from offline to online commerce in the country—the other two being creators and small businesses. That's what is reaping benefits today, he reckons. His team's Head of Global Marketing Solutions, India, Sandeep Bhushan, adds: "People are not just going online, they are going online to interact with businesses," and points as proof to metrics that show the digital influence quotient in

"If we do a great job with the free offerings, we think some businesses will choose to pay for premium features like access to our WhatsApp Business Platform, a scaled solution for larger businesses such as airlines, e-commerce companies or banks"

WILL CATHCART
Head, WhatsApp

people's shopping decisions rising by 15-20 points across categories during the pandemic's second wave.

"In many ways, the discovery of new products and service categories is happening on Instagram and Facebook, and a lot of the engagement with businesses is happening on WhatsApp. We're enabling other e-commerce players to use all three of the platforms to grow their businesses," says Mohan. Now, Meta's apps are pegging themselves as the "home for businesses", from a conglomerate like ITC, which uses Facebook for a lot of outreach, to The Moms Co., which was born just a few years ago. Says Bhushan: "It does not matter whether small or large, traditional or new sector, the job for a businessman is the same—consumer awareness, consumer acquisition, consumer re-engagement, up-sell, cross sell and CRM. We have a slew of products that allow businesses, therefore, to interact with consumers."

ONE OF the tools he is referring to is influencer marketing, where brands leverage an influencer's social media following to advertise its products. It requires a solid content base because the more content people watch, the better it is for Meta as it can place more ads and grow revenues. Influencer marketing works for the young brigade, an area where Facebook, some say, is losing some sheen. Meta CEO Mark Zuckerberg admitted in the firm's third quarter earnings call that their focus will be on 18-29-year-olds at the cost of the older age groups. "We're retooling our tools to make young adults our north star," he had said.

Instagram, incidentally the smallest slice of its total user base pie, is its ground to grow among the target audience that would interest the new-age advertisers that the group claims is driving its revenues. Essentially, it is betting on videos to push its ads. India is a voracious consumer of videos, with a smartphone user spending an hour on average watching videos every day, according to a Bain & Company report titled *Online videos in India – The long and short of it*.

There are two types of videos at play (a) user-generated short- to mid-long videos, mostly on Instagram, and (b) longer videos on Facebook. For the longer videos, it is striking deals with the likes of ICC and Yash Raj Films for content on cricket, Bollywood and music—genres that Manish Chopra, Head of Partnerships, Facebook India (Meta), says are uniquely differ-

FROM FB TO META

SEPTEMBER 2006: Facebook forays into India

SEPTEMBER 2010: Opens first India office in Hyderabad

APRIL 2012: Buys photo-sharing app Instagram for $1 billion

FEB 2014: Buys messaging platform WhatsApp for $19 billion; buys VR firm Oculus the same year

JUNE 2019: Invests an undisclosed sum, estimated to be around $25 million, in Indian social commerce start-up Meesho

FEB 2020: Invests an undisclosed sum in edtech start-up Unacademy

APRIL 2020: Invests nearly $6 billion in Reliance's Jio Platforms for a 10% stake

OCTOBER 2021: Rebrands to Meta

DEC 2021: Opens new office in Gurugram

ent in India and do "phenomenally well". It is an effort towards "deeply localising" videos for India. "TV and movies are doing extremely well. That's a very large genre that has seen tremendous growth. With cricket, or sports, the thing is the main tournaments are sporadic, not consistent. But even with the kind of sports following that is there, there is a long, drawn-out effect of what happens in the tournament, and the content keeps getting consumed over time," he says, adding that gaming on Facebook is also gaining traction.

But Meta is keener on shorter videos, specifically user-generated videos of up to a minute long called Instagram Reels, an India-first product launched in 2020. "If you look at where the energy and action is, from a creator's point of view, from a user's point of view and, increasingly, from a marketer's point of view, that is on short form video, and that action is on Instagram Reels," says Mohan. That, and a certain social serendipity of discovering videos based on what your connections are watching, is what distinguishes it from its biggest competitors—that would be YouTube and the OTT platforms—according to him.

All these short video platforms—along with many other newbies such as Moj, ShareChat and Josh—benefitted from a stroke of luck in June 2020 when the 'original gangsta' of short videos in India, Chinese tech company ByteDance-backed TikTok, was rendered *hors de combat* after it was banned by the Indian government along with a bunch of other Chinese apps over security reasons. TikTok's 15-second video platform had unleashed the creativity of India, going deep into the hinterlands because of its support for 15 regional languages. The videos, capturing dance, comedy and lip-syncing, garnered millions of views and turned the video creators

"Reels will be a strong lever of growth for us in India. We will continue to introduce new features on it, work with creators and partners, ensure young people are being discovered, and work with brands to help them reach their audience"

JUSTIN OSOFSKY
COO, INSTAGRAM

into overnight 'TikTok stars'. At the peak of its popularity, TikTok was the most downloaded Android app in India. But once banned, Instagram lost no time in jumping in with its Reels feature in August 2020, and has possibly been the ban's biggest beneficiary. Data from app intelligence firm SensorTower shows that at the end of June 2020, when TikTok was banned, approximately 21 per cent of Instagram's downloads were from India. That share has increased to 39 per cent by December 2021.

At the core of Instagram's shorter format are content creators and influencers. Meta says six million Reels are produced every day in India. Today, the influencer economy is estimated at ₹900 crore. It includes the likes of 28-year-old Bhuvan Bam, a comedian and entertainer, who commands a 14-million followership on Instagram. Meaning, an ad placed in a piece of content by him is likely to be watched by, ahem, a lot of people. "Meta today is beautifully placed in terms of its ability to make the most of the creator economy and leverage the digital self-obsession that the new generation has," says Piyush Sharma, an industry observer, global CEO coach and C-Suite advisor. "And there's a whole bunch of new genres that are creator-led, be it food, fashion, travel, financial advice, mental health advice, etc." Plus, creators are also encouraged to release content around current events. For instance, content around cricket during ICC tournaments. "So, these work very well together," says Chopra of Meta in India.

In the past two years, Meta's team has built engines to work closely with creators to fuel both short-form (30-60 seconds) and mid- to long-form (2-7 minutes) videos. "The ecosystem is different for both," Chopra adds. Now with the introduction of advertisements into Reels, Mohan says: "We will try and discover new formats of personalised ads that add value for both marketers as well as the people on our platform."

Also, unlike YouTube, which pays the creator directly (and gets ad revenue from advertisers), Meta's content creators get paid directly by the advertisers (who also pay Meta, of course). In other Meta models, creators make videos sponsored by the brands, and users who like the content they see can also pay the creators directly using stars in their Facebook wallet. To tap more creators, Meta in India is running programmes like 'Born on Instagram', '25 Under 25 Instagrammers of India', and is also setting up a Centre for Fuelling New Economy at its new office in Gurugram where it has said it will train 250,000 creators (and 10 million small businesses) in three years.

IN THIS MONEY-MAKING recipe, WhatsApp is a puzzle. The free messaging app—which Facebook bought for $19 billion in 2014—is arguably the most widely used among Meta's three apps, but doesn't contribute a lot to its revenues. So, Meta is positioning WhatsApp as an engagement tool for hooking users. And that can be a good thing. Piyush Sharma points out that Google has more than 200-plus products but only Google Search and YouTube make money. The remaining keep users engaged and give the company user data. "It's the same in the case of Meta. WhatsApp does not have to make money. It exists to give them a very, very large consumer base."

WhatsApp earns revenues by offering its platform to large businesses such as airlines for ticket information services. "If we do a great job with the free offerings, we think some businesses will choose to pay for premium features like access to our WhatsApp Business Platform (WhatsApp Business API), a scaled solution for larger businesses such as airlines, e-commerce companies or banks, where people can receive customer support, and opt-in to receive useful information like a boarding pass or receipt," says Will Cathcart, Head, WhatsApp.

And there is potential for more. "The Click-to-WhatsApp ability to engage with customers from something that piques your interest is one of our revenue drivers. We haven't really pushed that yet and there's a huge opportunity there," says Abhijit Bose, Head of India, WhatsApp. He also outlines business use cases, such as the one they are trying out with JioMart for grocery delivery. "We are testing

"One of the reasons we're talking about the metaverse early is to talk about it with regulators and governments... to bring them along, so we all build these things together. In the current generation of products, some of them we didn't look far enough into the future"

VISHAL SHAH
VP, METAVERSE, META

out the return on investment (RoI) for different businesses. If we deliver RoI, they'll pay us. If we don't, they won't."

Meta, then Facebook, had invested nearly $6 billion in Jio Platforms in April 2020 for a 10 per cent stake. It is part of what Mohan says is their bet on partnerships in India.

Meanwhile, WhatsApp Payments has lagged rivals PhonePe and Google Pay. As per NPCI data, in December 2021, PhonePe topped the UPI chart with ₹3.94 lakh crore worth of transactions. Google Pay came second with ₹3.03 lakh crore transactions. WhatsApp Pay, which was one of the last players to enter the space, had transactions worth ₹188 crore. But since there are other revenue drivers within Meta in India, WhatsApp's focus in terms of the payments business is really on getting through to users, especially deeper in India, who don't have UPI, says Bose. "The same opportunity we saw in fundamentally expanding the growth opportunity for small businesses to use a platform like ours to expand in India and abroad, is the same opportunity that we see in payments as well," says Mohan.

Meta has competition, too, and not just from Google. For one, TV advertising is not dead. In fact, it is also projected to grow, although at a much slower pace. The FICCI-EY report estimates the 2021 TV advertising sum to be at ₹30,400 crore compared to digital ad spends of ₹23,400 crore. And it continues to be a powerful medium. Netflix's Co-CEO Reed Hastings has also blamed India's cheap cable TV penetration as the reason for the global streaming giant's inability to crack the India market thus far. "What traditional TV still offers in India is enormous reach, which OTT platforms or Facebook will take a long time to come to," says Gupta of Bang In The Middle. He points out that when the start-ups and new-age firms start to scale up and chase a reach number, they look at TV or outdoor or print advertising, which are all expensive propositions. "Take any big unicorn in India from BYJU'S to MakeMyTrip, they are all on TV." Why, even Facebook and WhatsApp go on TV to say they are a great connector of people or that they are committed to end-to-end encryption, Gupta says. "The whole argument that digital advertising will finish off mass media is not true. They are working hand-in-hand."

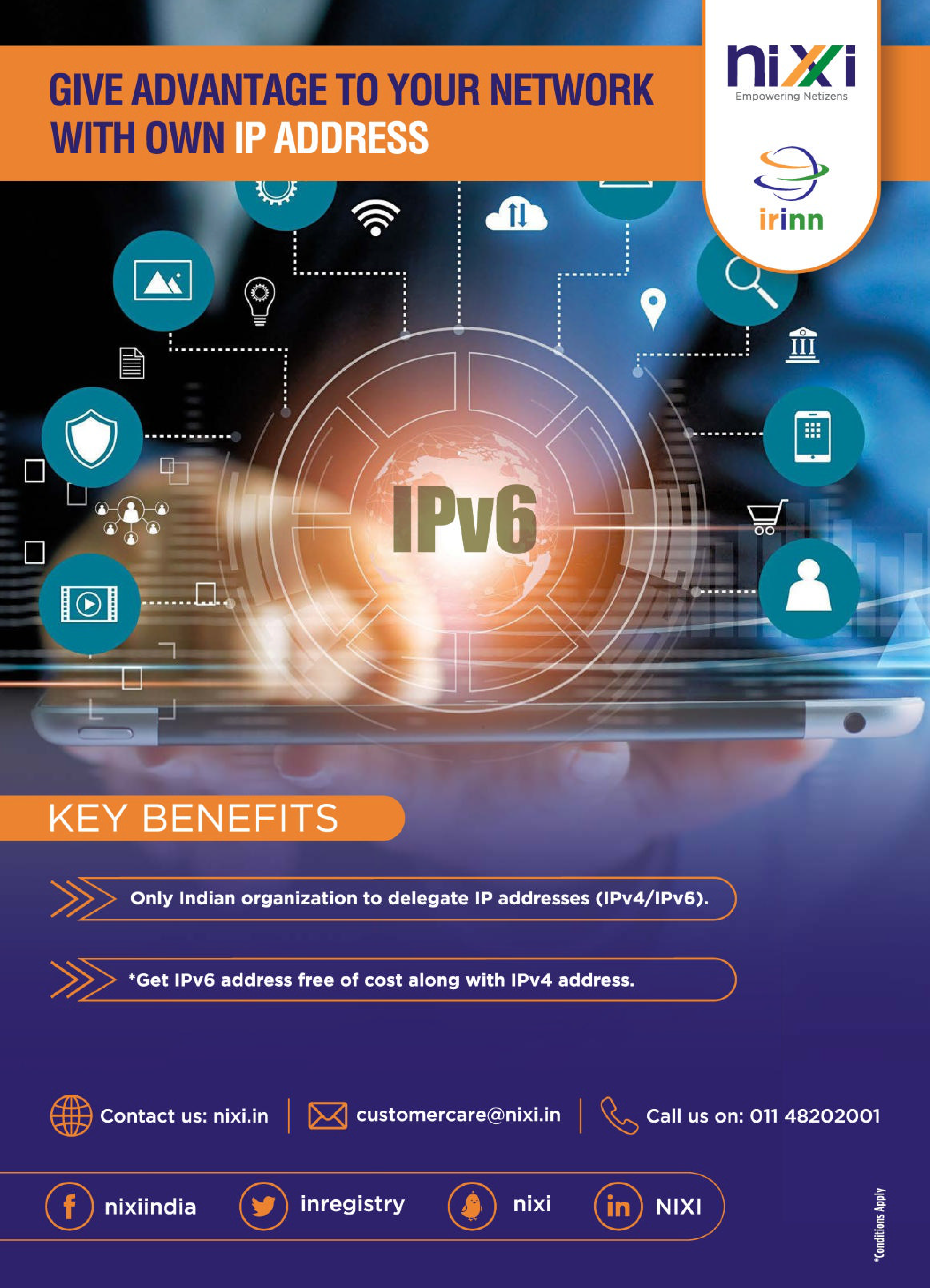
And to be fair, Meta's competition really is Alphabet (with its Google Search, display and YouTube functions) and the OTT players today. The digital advertising market, which Meta in India says it has expanded in India, is led by Google, and has grown 21.36 per cent in FY21 over FY20. Besides, Meta's bet on videos puts it more squarely in contest with YouTube. "If you are a D2C company, search is a big thing because it allows you to contextualise the advertising. That's a massive thing that works for Google," says Gupta.

Then, more than 40 OTT players are crowding up the video space, too. Most of them except Netflix and Amazon Prime Video offer an ad-supported version and are nibbling away at the digital ad pie. Industry insiders estimate the ad revenues of Disney+ Hotstar—the largest OTT player by subscriber base—to be upwards of ₹1,000 crore. "Every penny that goes to OTT as ads, doesn't go to Google or Facebook," says Gupta.

The challenges to its business strategy aside, Meta's biggest headache in India over the past three-four years has been of the non-business kind: fake news, misinformation and personal data leaks on its platforms.

Some of the incidents prompted the government to increase scrutiny and tighten the regulatory noose around social media platforms. It also led to measures like WhatsApp limiting forwards on its messaging platform, and Facebook working with fact-checkers. Today, it has 10 fact checkers in 11 languages. "We're on a par in terms of fact checkers with the US," points out Mohan. He says they are going to be a lot more local in their posture of compliance. "During the introduction of the new IT rules, we were the first company to signal that we were going to comply." Compliance reports, which social media intermediaries have to release under the new IT rules, show WhatsApp has banned nearly two million Indian accounts monthly since mid-May 2021, which is no doubt significant.

But not everyone is impressed. "When you look at some of the compliance reports, there are a lot of numbers which tend to hide more and speak less," says Supreme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Court advocate and cybersecurity expert Pavan Duggal, adding that there is a policy vacuum in India when it comes to these modern-day menaces.

While some have said the rebranding to Meta was a means to deflect attention, Mohan denies it. He explains that it is "a clear signal that as a company, we are going to pivot to focussing disproportionate effort and energy over the next 10 years on playing our role in building and shaping the metaverse." Agrees Piyush Sharma. "The whole thing needs to be acknowledged and understood as a focus area for them."

"In some ways, we have already been making an extraordinary amount of investments into AR and VR over the last six or seven years since the acquisition of Oculus [a VR company, in 2014]," says Mohan, explaining the timing. It was also the "conviction that now's the moment for us to put a stake in the ground and say, we're going to go all out at playing our role in shaping this opportunity."

That said, Mohan insists they are not running away from their past. "It's not in our interest not to do whatever we can to limit the harm caused by bad actors. There's no economic incentive for us, because advertisers don't like hate speech on our platform. People largely don't want to see it. So, our interests, not just in terms of what we believe as a company, but our economic interests are also aligned with the agenda of doing what is right." He lists Meta spending close to $5 billion globally in 2021 on preventive measures, a 40,000 people-strong team working on safety and security and a reduction in prevalence of hate speech on their platforms to 0.03 per cent as proof. This figure used to be 0.07-0.08 per cent in October-December 2020, which fell to 0.03 per cent in the July-September 2021 quarter, according to its Community Standards Report Q3 2021. That is, 3 views per 10,000 views of content. On Instagram, the number is at 0.02 per cent in the most recent quarter, their first time reporting this metric.

"We have played this massive enabling role very disproportionate to any other company in India that is enabling this shift from offline to online, which creates this virtuous cycle that is attracting a lot of new entrepreneurs and a lot of new capital into India"

AJIT MOHAN
VP & MD, FACEBOOK INDIA (META)

"The challenges around fake news and hate speech are fewer for them [Meta] in other countries because they have one or two languages at the most. But India has so many languages," says Amit Dubey, Chief Mentor, Root64 Foundation, a non-profit working on cybersecurity.

The security questions become louder as Meta launches into metaverse, a concept that big tech giants are touting as the next generation of mobile internet, and one where Zuckerberg has said experiences will be more "immersive and embodied". But Meta is being proactive. "One of the reasons we're talking about it [the metaverse] early is to not only talk about our vision from a consumer perspective, but also talk about it with regulators, talk about it with different governments around the world to kind of bring them along. So we all build these things together... we want to do them before they reach massive scale," says Vishal Shah, VP, Metaverse, Meta.

The metaverse ambition will take a decade to shape up and a $10-billion bite out of Meta's profits in 2021 alone, according to the company's own estimates. It's a project for which Meta plans to hire 10,000 engineers in Europe. No such plans have been announced for India, but Zuckerberg has said a large part of the metaverse will be built in India.

Shah explains the business model for the metaverse will be "more around digital goods, digital services and commerce as opposed to starting with just advertising." Mohan says Meta is excited about the role India can play in the development of the metaverse, "because we've made so much progress in the work around creators, because as a country we are in a unique place where we now have 800 million people online. We believe that we have the opportunity for India to play a role in shaping the metaverse in helping build many of the foundational blocks."

It's a no-brainer that Meta's financial success will continue in India. But as it takes a costly leap into the metaverse from India's digital advertising and talent springboard, will the challenges weigh heavy? Will India 'like' Facebook 2.0, in the form of Meta? Time will tell. BT

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'India is our largest and most important community'

Sheryl Sandberg, COO of Meta, talks about India's significance for the company, the Jio partnership and the importance of more women being in tech

ILLUSTRATION BY **LOVATTO**

Sheryl Sandberg knows India well. Arguably the most well-known female leader in the tech space, the Meta COO spent time in India—which happens to be one of Mark Zuckerberg-led Meta's largest markets—when she was with the World Bank early in her career. But Sandberg, 52, is much more than a global tech leader; she has talked about the need for more women leaders in tech and the importance of retaining women in the workforce. In an exclusive interaction with *Business Today*'s *Sourav Majumdar, Abhik Sen and Vidya S.,* she talks about the India story, the country's place in the Meta scheme of things, its partnership with Jio and gender diversity. Edited excerpts:

Q: What was the rationale behind rebranding Facebook Inc. to Meta? Why has the organisation undertaken it now?

A: Facebook was started as a company named Facebook that ran one app named Facebook. And then we started Messenger, we bought WhatsApp, we bought Instagram, we've started other things. And so, we've thought for a long time, it doesn't really make sense to have the company name be the same as the first product when you have multiple products. We needed to think about our name and have a name that was more representative of everything we were doing. So, what we really did was we were thinking about what we're doing and how we're thinking about the future. And we are making a major investment in what we think will be the next platform, which is the metaverse and bringing virtual reality. So those two things kind of came together and it made sense for us to rethink our name in a way that would be more appropriate to everything we're doing and more looking to the future. The app Facebook is still proudly called Facebook. You know the other apps have their names, but Meta we believe is more where we're going than where we've been. And that's pretty exciting.

Q: How do you think it will impact users and change the experience for them?

A: We're still investing in the apps we've always had. But look, I think what is the metaverse, what is the future will change a lot of things. I remember the first time I did a phone call on a mobile phone, and there was no cord. It was like, "Oh my God! There's no cord." I think things will happen in the future that we honestly can't even imagine right now. This will change, I don't know, a lot of things... everything.

Q: Do you think it's another milestone in not just what Facebook stands for but also the whole promise of the internet... taking it to the next level through the metaverse?

A: We think it's going to be as transformational. We've had a period of time where we've been able to connect in ways that we never could have before on camera. But what happens right now is, I am sitting in Menlo Park and you are halfway around the world. But what if we were having this meeting and it felt like we were in the same room? We think that is the next leapfrog the same way the last one was and we're super excited about it.

Q: Where does India now feature in the Meta scheme of things?

A: India is one of the largest communities on Facebook, WhatsApp and Instagram. We've got nearly half a billion people in India using Facebook every month. India is also going through a tremendous digital transformation. There are 700 million people on the internet and that's going to grow to a billion in the next few years. And one in two people own a smartphone. So, it is an unusual combination of one of the largest countries in the world going through a very strong tech transformation.

"This [the partnership with Reliance Jio] is probably the deepest partnership we've ever done and it's because of Jio's really special place in what is such an important market for us"

[India also has] very devoted users of our products which we're very, very grateful for. So, in many ways India is our largest and most important community. And we believe that will continue. When we think about India's flourishing ecosystem, one of the largest app developer bases, you've got unbelievably talented creators gaining popularity. Just the same way the population of India, [which] is so active in our current products, are going to be even more active, we think, in the metaverse. We are also a partnership company. We've had a great partnership with Jio, Meesho and Unacademy. We are deep in with local companies because we know it takes local expertise to build the products that people are going to most use.

Q: What are the special learnings, if any, from a market like India which is so diverse in every way?

A: The learnings are people using the products differently. For example, India is one of the places where we wound up doing a lighter version of Facebook many, many years ago because there were people who were connected to the internet but didn't have the same internet connectivity. India also has a very unique creator ecosystem. Your creators flourish, your app developers flourish. There's a lot we've learnt in India which we will be able to translate globally.

Q: How is Meta integrating its platforms and products worldwide? Are there any new revenue streams that you're looking at?

A: When we think about integration, our platforms and product rely on the same infrastructure. So, our teams are the same. When we recruit engineers, there's a lot of integration that happens kind of on the back end. But on the front end they're very specific products—you use Facebook, you use Instagram, you use WhatsApp, you use Messenger, you use some of our AR and VR products.

In terms of monetisation... our monetisation has really been through advertising. I really believe in our advertising model because it allows us to offer our products for free. Our business model needs to be better understood so that it's protected. We offer personalised advertising, which means that the ad you see is different than the ad I'm going to see. We do that completely protecting people's privacy... so we're going to continue to invest in that, and that is primarily how we monetise. For future monetisation, video is a very, very important part of our story and [Instagram] Reels is a huge opportunity and very, very big in India. It really is easy to monetise Reels because of ads. We already have video ads, people want video ads and they are very immersive.

Q: What is your expectation from the partnership with Jio? Globally, how many of these partnerships are you doing?

A: Jio was one of the most important and deepest


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Sheryl Sandberg with Meta CEO Mark Zuckerberg *(left)*

partnerships we've ever done... because Jio fuelled a really incredible digital transformation in this country [India]. There's two very different worlds when it comes to commerce in India—there's very digitally-savvy shoppers of online marketplaces, ride shares and food ordering. And there's people shopping in really small mom-and-pop shops who don't have access to sophisticated banking systems. We think this partnership gives us an opportunity to work together to bridge these two worlds and benefits the entire digital ecosystem of the country. Jio is really integrated into WhatsApp so that people can simply message with Jio on WhatsApp. Our goal is to enable new opportunities for businesses of all sizes, especially the nearly 16 million SMBs [small and midsize businesses] across India and democratise access. This is probably the deepest partnership we've ever done and it's because of Jio's really special place in what is such an important market for us.

Q: Who are your target groups? Which group is responsible for the biggest chunk of your revenue both globally and in India?

A: If you go back to the original founding of Facebook, when it was one app and it was Facebook, it was only college students, then it went to high school, then it trended young and over the years, more people joined the platform and the median age went up. We're a platform for everyone, from someone who's 13 who comes on the platform, all the way up to someone's great grandmother. We really want our teams to focus also on young adults. They are really important for us as we build our business. Another really key audience we serve are small businesses, and that's really worth thinking about. When you think about audiences it's not just age, it's who our clients are and who our customers are. We have over 200 million small businesses using our platforms to reach people, and we have 10 million advertisers. In India, we have 15 million WhatsApp for Business app users. Over 300 million people around the world have liked or are following a small business page on Facebook in India.

Q: Other than the metaverse, are there any big trends you're looking at globally that Facebook can really power in the future?

A: There was already a digital transformation happening before Covid-19. Businesses were getting online... What's happened during Covid-19 is an acceleration of that trend. Think about businesses that weren't digital that are your mom-and-pop shops selling locally. Then Covid-19 happened... That digital transformation helped small businesses shift. [Our survey in India] found that 53 per cent of small businesses and 47 per cent of micro businesses were using digital sales channels. That was 29 per cent before the pandemic. So that's a major shift. [And] 60 per cent of small business owners said pivoting online helped keep them afloat during Covid-19. And if you look at the state of small business report from September, in India, 52 per cent of operational SMBs using Facebook reported making at least 25 per cent of their sales digitally. So that digital transformation was happening and it's going to continue to happen and we think it creates a really exciting opportunity.

ON THE TECH TRANSFORMATION IN INDIA

There are 700 million people on the internet and that's going to grow to a billion... And one in two people own a smartphone. It is an unusual combination of one of the largest countries in the world going through a very strong tech transformation.

ON PERSONALISED ADs AND REELS

We offer personalised advertising... We do that completely protecting people's privacy. For future monetisation, video is a very, very important part of our story and [Instagram] Reels is a huge opportunity and very, very big in India.

ON BRINGING MORE WOMEN AND WOMEN LEADERS INTO TECH

We need more women to get technical degrees... What we also need to fix is how we promote and treat women and women leaders across the board and we're working hard at that.

Q: Your foundation, Lean In, has found that 25 per cent of American women are downshifting or leaving the workforce because of increasing workload and burnout. Facebook also registered a 0.3 percentage point dip in the diversity of its workforce. So how do you think a company should address this going further and what is Facebook in particular doing about this?

A: Diversity is really important to us at Facebook, and something we invest very heavily in and a lot of our diversity metrics are definitely going in the right direction. It's two things—you have to be able to hire and attract the right people. But you also have to be encouraged to be able to take advantage of that diversity once it's in the door. So, what a lot of companies do is they have targets and numbers—'we want X per cent of our employees to be diverse'—but then once they're in the company they expect everyone to say and act, the same. We don't want that. We want to harness diversity. We want diversity of thought which means if I show up today I need to show up not just as the Meta COO but I need to show up as a woman and a mother and an American. You know if someone shows up from India, they need to show up being able to say, 'hey it's different here'. If someone shows up who's Black, who grew up in a different part of this country, they need to show up from their culture and [say] what they want to say, and so we are working hard at all of that.

Covid-19 is a health crisis, Covid-19 is an economic crisis, Covid-19 is a crisis for small business. And Covid-19 is a gender equality crisis. Women are dropping out of the workforce in larger numbers than they have in decades and that's because before Covid-19 women worked a double shift. They worked out of the home and then inside the home they did the majority of childcare and house work. That's true everywhere in the world. Then Covid-19 happened, and now we have a double-double-shift. We have more women doing more work because you have to take care of children and take care of elders like there's just so much more to do. We're thinking about really making sure we invest and it's not just Facebook but also my foundation.

My foundation helps women start Lean In circles. It's interesting... our original goal when we started was we wanted 1,000 circles. Well, now we have 60,000 circles and almost 2,000 circles in India and what we saw during Covid-19, what we realised was how important women-to-women support was.

You know in India, almost all of our Lean In circle members have been really devastated by the first and second waves of Covid-19. Losing loved ones, infections. But now they're really supporting each other. There's a woman named Sphoorti [Kumar]. She's the network leader for Lean In in Bangalore. And she talks about how many women in her community have resigned during Covid-19. And so she led an initiative to bring women back to work. By reaching out—this is amazing—not just to the women but to their husbands and family members to help those husbands and family members do more at home, so the women could return to work.

Q: What has to be done to retain more women leaders in the tech industry to ensure diversity trickles down to the workforce?

A: The first thing about the tech industry is, we need more women to get technical degrees—women are getting 18 per cent of the computer science [CS] degrees in the US. India, because of the sheer numbers, is doing a great job educating female tech leaders. But fundamentally we're not going to have enough leaders in an industry if we're getting 18 per cent of the CS degrees. So that's something we really need to fix. What we also need to fix is how we promote and treat women and women leaders across the board and we're working hard at that. We have this great programme called Facebook University where we are trying to increase the number of women and underrepresented minorities. We're trying to increase the percentage of people getting tech degrees. So, what we did is we went [to] freshman year and we looked for interns who were not studying CS, but we thought could. They were studying math and showed an aptitude for it in another way, and we hire them for the summer. And we say, 'All we want you to do is experience technology and we're hoping we convince you to go back to school and become a CS major'. And it has worked in huge numbers. We only take women and underrepresented minorities. So, we are trying to change the pipeline and we've gotten hundreds of employees, who would never have had technical degrees, into it. BT

> **"We're a platform for everyone, from someone who's 13 who comes on the platform, all the way up to someone's great grandmother"**

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Founder Chancellor SRM Group of Institutions.

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The Institution functions from five campuses in the country, namely, at Kattankulathur in Chengalpattu district, Tamil Nadu, Ramapuram and Ramapuram Part (Vadapalani) in Chennai city, Modi Nagar, in NCR New Delhi, and at Tiruchirappalli (Irungalur), built over a total land area of about 400 acres with a built-up area of over 12 million square feet.

SRMIST offers a wide range of undergraduate, postgraduate, and doctoral programs in Engineering, Management, Medicine and Health Sciences, Hotel Management, Science and Humanities, Agricultural Sciences and School of Law. The curriculum and syllabus are outcome-based with specialized programs even at undergraduate level. The University offers 5-year M.Tech integrated programs under Engineering. At the Kattankulathur campus, Five Engineering programs are accredited by the National Board of Accreditation (NBA), Five by ABET, USA (www.abet.org) and another four Engineering programs by IET, UK. It has more than 1000 international students from 64 countries studying in various programs.

In addition to the academic spaces, there are around 45 hostels that house more than 15,000 students inside the campuses. The academic infrastructure includes all modern classrooms, laboratories, studios, conference halls, seminar rooms, open workspaces, computer labs, etc. The Central Library of the University houses over three lakhs books, 40,777 e-books among other e-journals and journals.

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SRMIST is a green, clean, and energy-efficient campus. Solar energy is one of the major sources of power in the institution. The energy generated from it is used to power solar water heaters and solar steam cooking installed in hostels. Battery-driven vehicles are also available in the institution.

Key Highlights

- 60,000+ students, including 1000+ international students from 64 countries.
- Internationally accredited programs are offered at

SRMIST

• Sir C V Raman Research Park is equipped with high end state-of-the-art research equipment.

• 50+ funded projects sanctioned by the Govt and private agencies.

• In 2020-21 campus recruitment, more than 685 companies made 7161 offers with maximum remuneration of Rs. 30 lakhs per annum.

• Fast-growing and evolving field in Science at SRM Institute of Science and Technology.

• SRM Medical College Hospital and Research Center has been nominated by ICMR to conduct clinical trials on COVID-19 vaccine.

• SRM Kattankulathur Dental College and Hospital houses a world-class simulation center, which is the largest in South Asia.

• The number of research scholars currently pursuing doctoral degrees is 3530.

Ranking & Awards

• SRMIST is accredited by NAAC (National Assessment and Accreditation Council) with the highest "A++" grade.

• SRMIST declared as 'Category I' university by MHRD / UGC

• SRMIST awarded Four Star rating, by Quacquarelli Symonds (QS), a leading global higher education ranking company.

• SRMIST – bagged first place under Clean and Smart Campus Awards (2020) by AICTE.

• In NIRF-2021, SRMIST is ranked 46 under the 'Research' category, 30th under University Category.

• SRMIST ranked globally in the 2022 rankings released by the renowned Times Higher Education and QS.

• SRMIST ranked 4th by MHRD among private institutions in the ARIIA 2020.

• MHRD / AICTE has awarded SRMIST I rank under Swachh Campus Rankings (2019).

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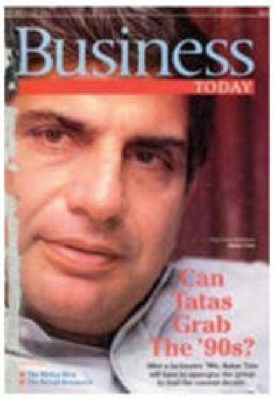

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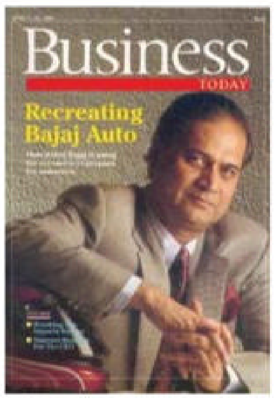

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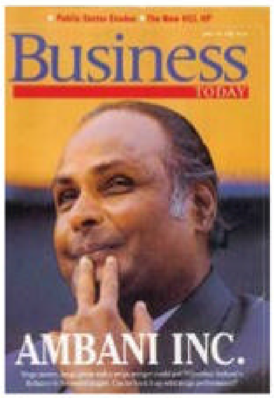

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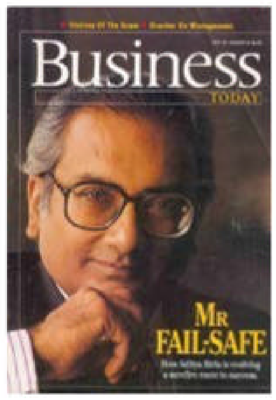

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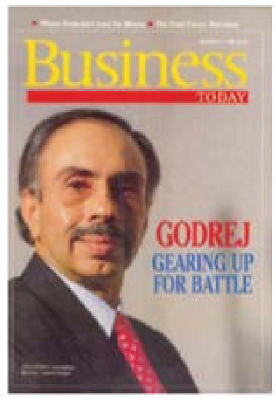

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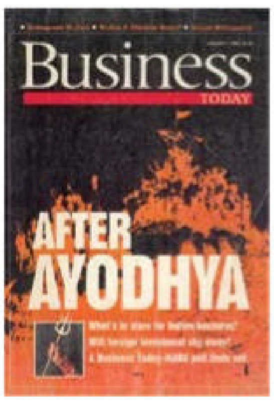

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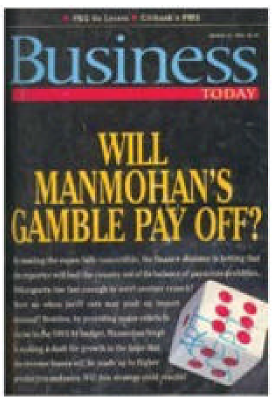

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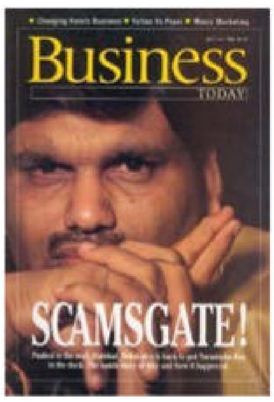

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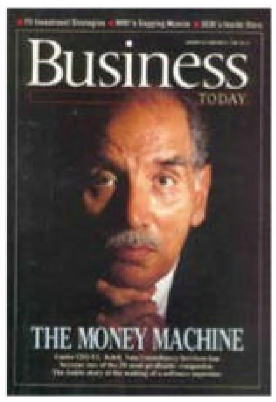

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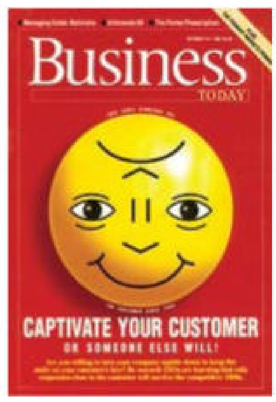

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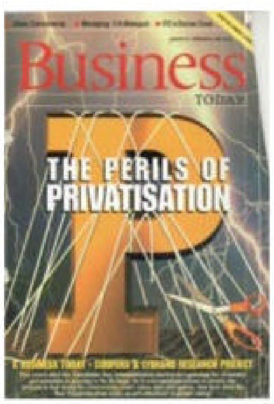

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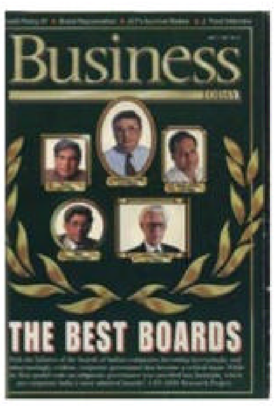

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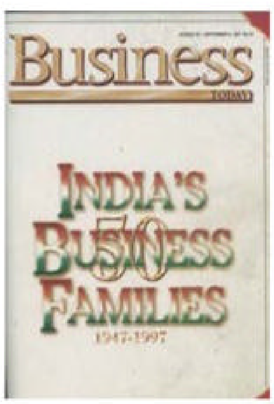

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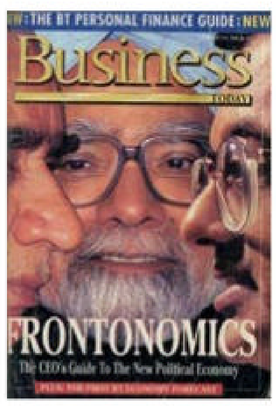

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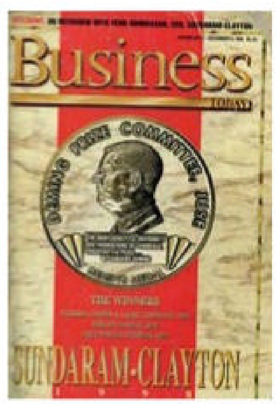

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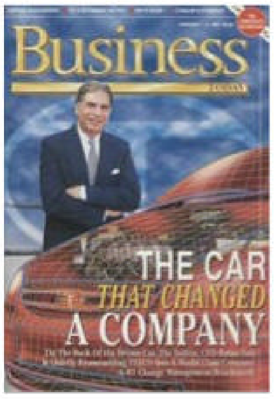

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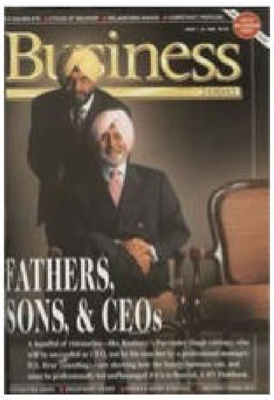

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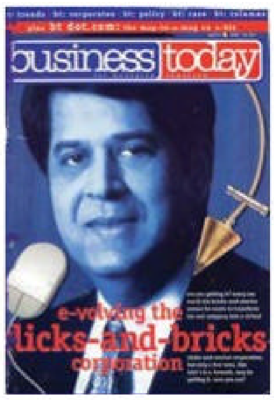

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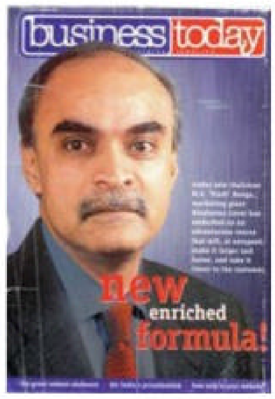

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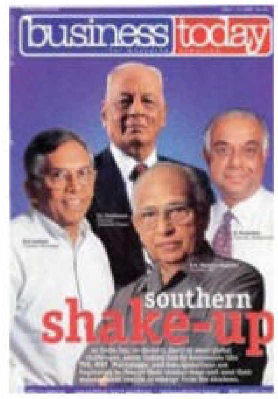

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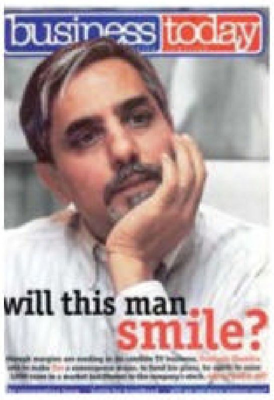

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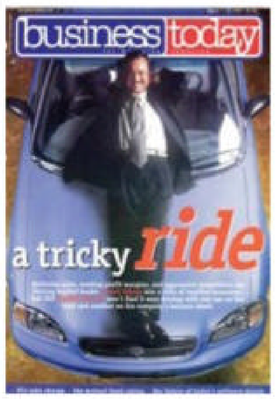

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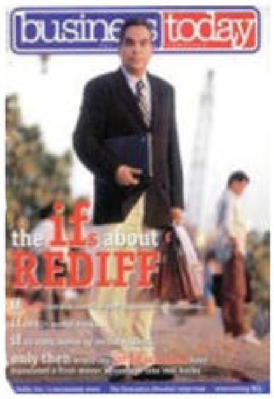

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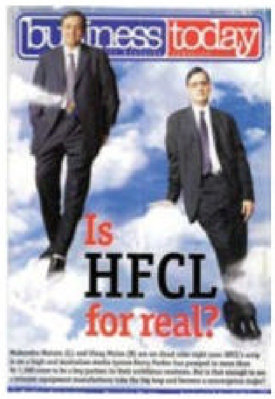

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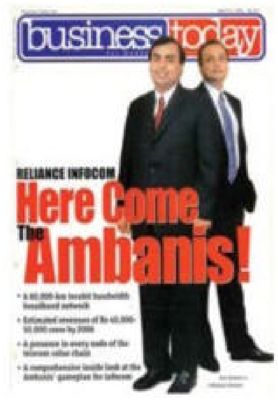

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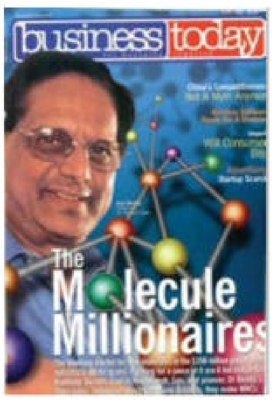

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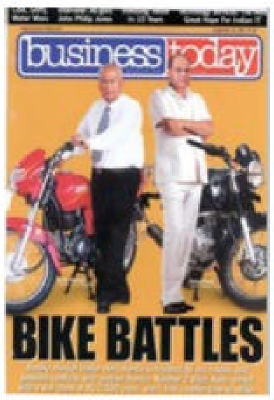

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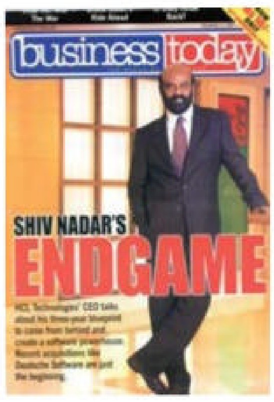

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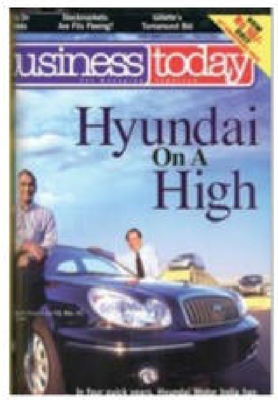

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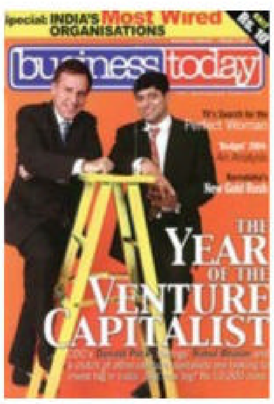

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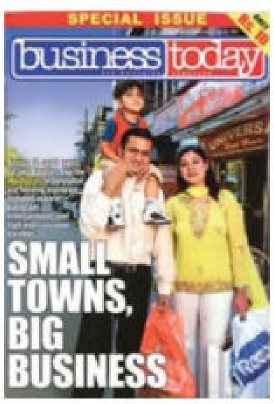

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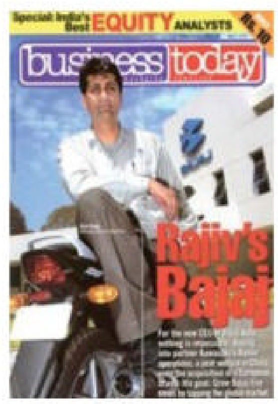

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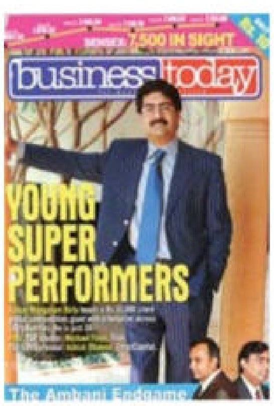

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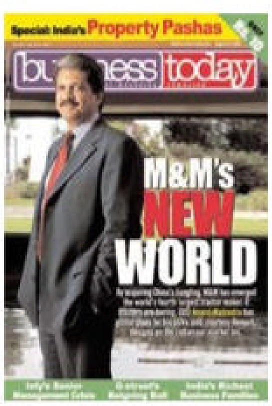

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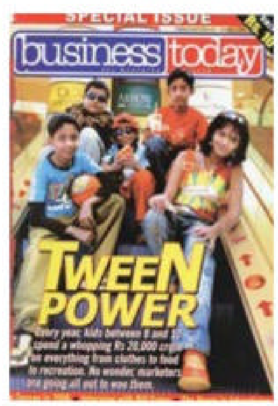

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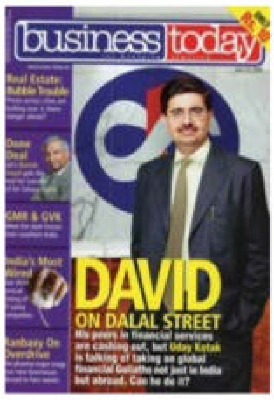

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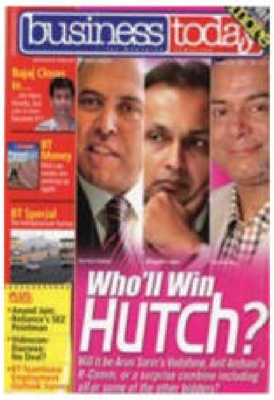

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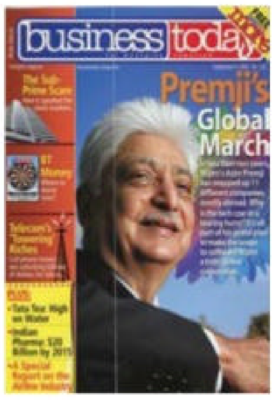

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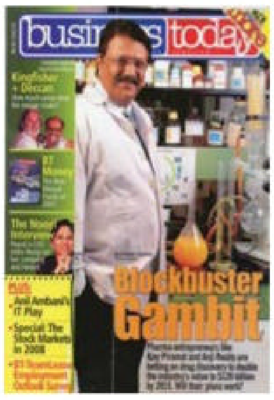

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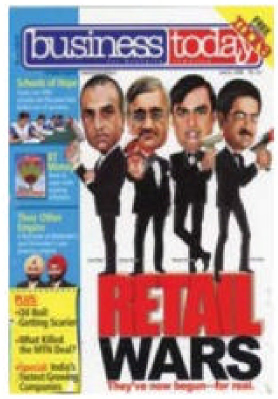

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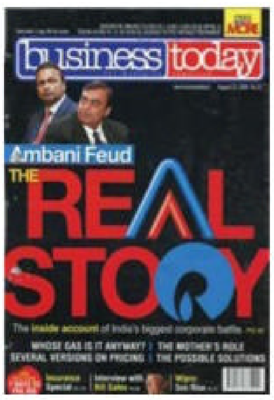

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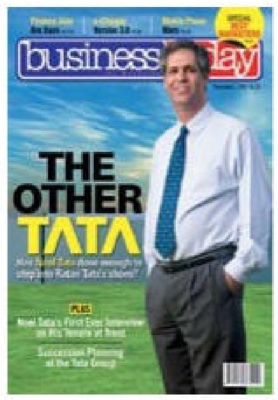

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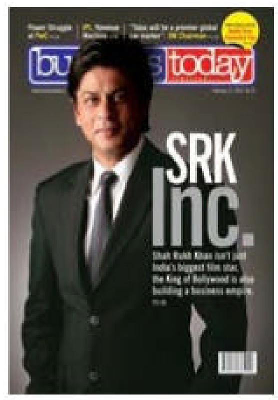

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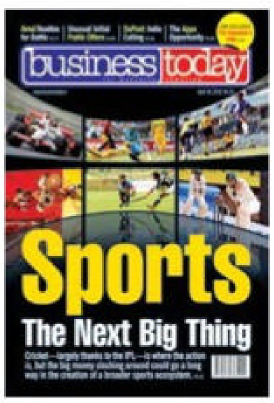

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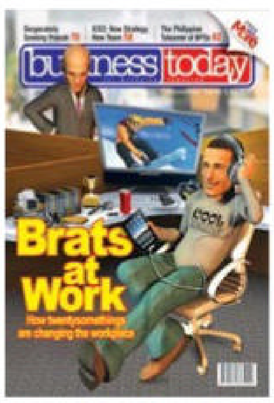

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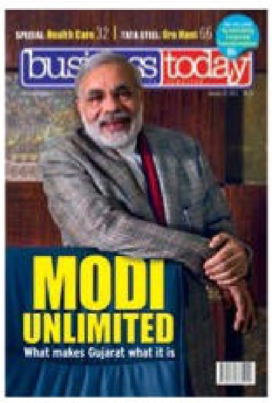

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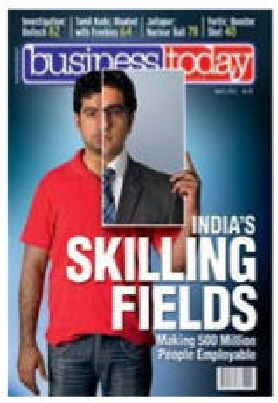

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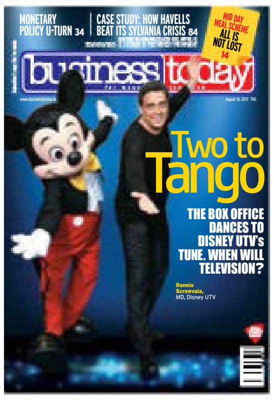

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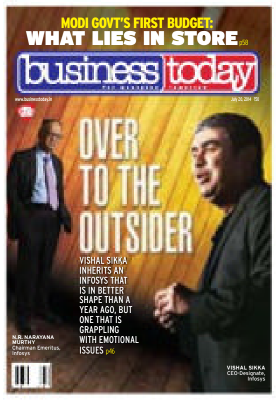

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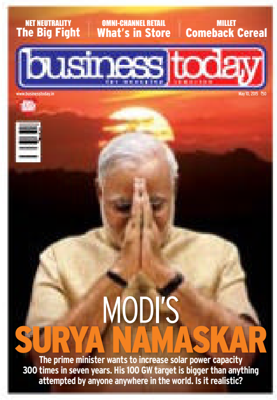

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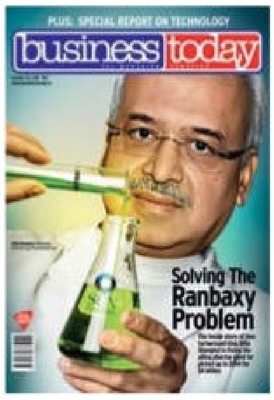

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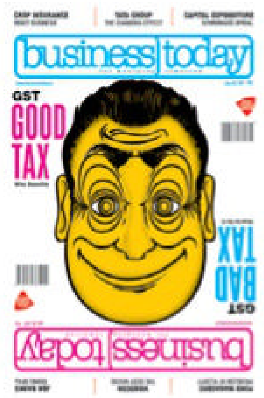

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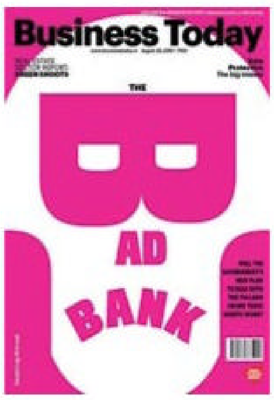

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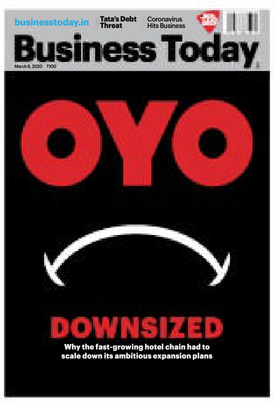

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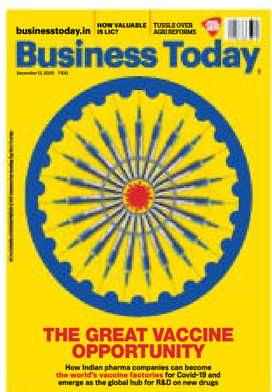

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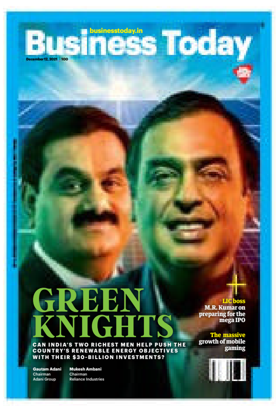

2021-DECEMBER 12

2022-JANUARY 23

*SOME OF THE COVERS HAPPENED BEFORE THE ERA OF DIGITISATION, AND SO MAY APPEAR A BIT RAGGED AS THEY WERE SCANNED AND STORED FOR POSTERITY.

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AUGMENTED REALIT
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START-UPS ● MSMEs
EDUCATION ● SMART
STOCK MARKETS ● I
ECONOMY ● SUPPLY

| BT 30TH ANNIVERSARY |

15 TRENDS THAT WILL POWER THE NEW INDIA

SUPER APPS
TY ZERO CARBON
BLOCKCHAIN
s REAL ESTATE
T MANUFACTURING
HEALTHCARE
Y CHAINS

IT IS PERHAPS FITTING that as this issue goes to press, the world of Indian business and economy is still contemplating the incremental changes wrought by the Union Budget of 2022-23, as though it were part of a slow symphony that will rise in time. But then, that is what real change is about, or at least should be about. What has altered this truth is the Covid-19 pandemic, and not so gently. But with destruction comes new birth. Not only has Covid-19 taught us new ways to live, but it has also taught us new ways to earn a living, new ways to educate, and new ways to do practically everything. But let us now look forward. What are the further changes happening now, at a subterranean level, which will slowly and subtly, without hype, dramatically alter things around us, like the symphony that rises? On this 30th anniversary of your favourite magazine, *Business Today*, we take a deep look at 15 such areas. The changes in workplaces and nature of work; how valuable our start-ups will look as we go ahead; what the amazing blockchain technology is going to do to the world around us; how stock market trading will become even more of a technology play; how electric vehicles will change the world of automobiles; how augmented reality will literally change the way you look at things; how you will visit a super app instead of a physical supermarket for your shopping needs, and much more. We bring to you the notes of the symphony that will rise in a few years from now. One note at a time. Savour it. BT

SEISMIC SHIFT

THE PANDEMIC HAS CHANGED THE CONCEPT OF WORK, WORKPLACE AND THE WORKFORCE. AS EMPLOYERS SPRUCE UP THEIR USPs, HYBRID AND FLEXIBLE WORK, MENTAL HEALTH FOCUS, AND HIRING FROM SMALLER CITIES AND TOWNS ARE HERE TO STAY.

BY **VIDYA S.**

W

WHAT IS COMMON between World War II and the coronavirus pandemic, apart from being large-scale humanitarian crises? They are both watershed moments in the history of work. If the former brought American women out of their homes into the workforce, the latter forced a large section of the global white-collar workforce back indoors to work from home. In doing so for nearly two years now, the fast-mutating nanoscopic but lethal virus has brought widespread acceptance for remote work.

"In the beginning of the pandemic, many employees were complaining that working from home impacted their work-life balance. But things have changed and people have clearly realised the flexibility it provides. If you ask people to come back to work, 30-40 per cent of them may even quit, if there are options available," says T.N. Hari, HR Head, bigbasket. The online grocery platform plans to keep all its offices open, leaving individuals and teams to decide who comes in and when. Hari estimates that less than a quarter of his workforce will be in office at any given point.

HR executives are unanimous that this hybrid model,

HYBRID WORK AND OFFICE SPACE

As the pandemic has dissociated productivity from being physically present in office, organisations are considering changes to office design.

1

Both ITC and bigbasket say they don't expect their office space requirements to grow as fast as their workforce addition. bigbasket's workforce has increased 60-70 per cent in the past two years, but the online grocer has not taken up any additional space.

2

For its new offices, ITC is looking at more common areas to conduct meetings in twos and threes when they come to work.

3

WNS, which so far had large format offices housing 4,000 employees under one roof, says it will explore the hub-and-spoke model

where employees come into office a few days of the work week and work from home on the remaining days, is the future of white-collar work. An extended, once-in-a-lifetime pandemic, coupled with the opening up of jobs and digitally enabled opportunities for skilled workers, has made them reassess their life and work priorities in an employee-driven market. Mercer India's Senior Principal Mansee Singhal puts it like this: "The whole concept around work, workforce, and workplace has undergone a significant amount of change, and that has impacted the employee perception of what the employer value proposition is going to look like." As organisations are forced to polish their pitches for why employees should choose them, it is heralding at least a few long-term changes in the world of work, of which the hybrid model is a major one. It gives both employees and employers the best of both worlds—flexibility and time saved on long commutes, while also making room for social interactions and collaborative work, experts say.

Conglomerate ITC, for instance, has recently approved a hybrid work policy. "We are already in hybrid mode with only 30 per cent staff in the office. But once things stabilise, we are saying two days a week, you can choose to work from any site in the base location other than the office," says its Corporate Human Resources Head Amitav Mukherji.

Multinational bank HSBC's India operation, which permitted flexible work even pre-pandemic for select functions, has begun classifying roles under four categories—office worker, hybrid-office worker, hybrid-remote worker and remote worker. "Our philosophy for flexible work starts with the customer. If something the customer needs is done from home, are we more productive or effective to meet their needs, or do we need to come to office?" says Archana Chadha, Head of Human Resources, HSBC India. The classification means employees come into office all five workdays, 60-80 per cent of the time, 20-40 per cent of the time, or work completely from home, factoring in banking regulatory requirements, she adds.

"People have clearly realised the flexibility WFH provides. If you ask them to come back to work, 30-40 per cent of them may even quit, if there are options available"

T.N. HARI
HR HEAD, BIGBASKET

"This whole process of meeting remotely has ensured a lot of rigour and discipline around planning work. There is a clear consciousness that there is a finite time limit to a conversation. People plan their day based on that. Work has become far more structured"

AMITAV MUKHERJI
HEAD, CORPORATE HUMAN RESOURCES, ITC

A NEW PARADIGM

While a fairly common concept in the West, hybrid and fully remote work were regarded with suspicion in India until recently. Most Indian firms needed employees to be in office to trust that they were working. But the change has come only on the back of proof of employee productivity in these two years. "2021 has been a rockstar year whether you look at annual GDP growth or industry-wise growth. There is absolutely nothing that suggests that just because people are working from home, the industry growth has been impacted. Something is going right," says Singhal of Mercer. Adds Deval Singh, Business Head-telecom, IT& ITeS, media and government, TeamLease Services: "There is an impact on productivity, fixed costs have come down, and so many additional variable bills because of travel and other things completely went away. Employers realise that people are actually working more diligently. There is no evidence to prove this other than the fact that the market is doing well."

ITC's Mukherji lists productivity gains made from focussed meetings and better time management. "This whole process of meeting remotely has ensured a lot of rigour and discipline around planning work. There is a clear consciousness that there is a finite time limit to a conversation. People plan their day based on that. Work has become far more structured." But bigbasket's Hari, on the other hand, doesn't see a direct productivity boost. Employees in metro cities are saving 25 per cent of their work day by not travelling, he estimates, which they are able to spend with their families and on their own interests. "That's all time well spent, which adds to overall quality of life and happiness. That index clearly has gone up. Even when we do pulse surveys, people are certainly very happy with this work-from-home arrangement." This improves their work quality in intangible ways, he adds.

But one size doesn't fit all within the hybrid framework, employers are realising. The role, the project, the team and the individual's needs all have to be factored in now to arrive at a roster. "We learn from multiple conversations with employees through their exit interviews

or during calibrations that they want that flexibility," says Singh. Multinational IT and consulting firm Accenture, which has over 250,000 employees in India, had flexible working even pre-pandemic. "What has probably changed is the increased level of flexibility where it's going to be very custom built and personalised to the nature of the work, the nature of our clients' requirements and our people's needs," says Lakshmi C., Managing Director–Human Resources Lead, Accenture in India. For instance, she says, people in technology roles have the option to choose their work location from any of the seven Indian cities where Accenture has a presence. "We will have very specially tailored in-office schedules, depending on the team and type of work. Some teams will operate more remotely, some will require more in-person time." So, the firm is not setting any one date for all employees to return to work.

Hyper personalisation is also business process management firm WNS's lesson from the pandemic. Chief People Officer R. Swaminathan says: "There is no point in me trying to draw the lowest common denominator. I need to do enough so that I am able to have some standardisation segment-wise. If an individual has a medical condition and can't come to work and the job requires them to be in office, we will get the customer's permission for that. It's easier solving at that level rather than putting a corporate guideline." ITC has also introduced policies recognising unique employee situations, Mukherji says, especially for women employees where they may apply for extended leave of up to 4 years for child care, or more flexible arrangements such as extended working from home.

And yet, several organisations have veered more towards getting employees back to office every time the infection comes under control, proven by the heavy traffic on the roads during peak hours. TeamLease's Singh says we are only seeing haphazard approaches because organisations are brainstorming and observing what other firms are doing as well. "HR heads are trying to work out a balance of how many days you want to come to office, how many days you can work from home. All of this will be drawn out in the next few months before going live in the next fiscal."

A WIDER TALENT POOL

The acceptance of employee demand for flexibility of location and hours is also working out in favour of the companies as they are suddenly able to dip into a wider talent pool sitting in the non-metro cities and towns of India, especially as several employees migrated back to their hometowns. Singh sees enough hiring evidence on the ground to believe a lot of employment will shift away from metros to the smaller cities and towns in the long term, backed by better telecom and internet infrastructure: "The industry is realising that talent in rural India is not just affordable, but you can get some really good talent from there." bigbasket's Hari likens it to the Y2K phenomenon, which resulted in the Indian IT outsourcing industry. "Imperatives of cost and access to talent forced these global companies to recruit from across the world, distribute their teams and find ways of working together. The same thing is happening within the country now." His team has a lot more people working from remote locations now than before the pandemic. "In the past, if somebody said, 'I can't relocate to Bengaluru,' we wouldn't hire them. But today, it's not a prerequisite."

The talent pool is also widened by newer formats like gig work, which is also stemming from this flexibility. The model has been used successfully by online platforms Uber, Ola, Swiggy and Zomato for blue-collar workers, thanks to a clear link between performance and pay. It is finding some initiation now in white-collar work, too, for specialist skills. "So many of these new-age skills like digital marketing and creating websites are so specialised that it's difficult to provide career paths to the people. And yet companies need work of this kind to be done. So, gig work is working very well," says Hari. Employers say a gig mindset is seeping into formal employment as well because people are keen to experiment with projects and develop their skills and expertise. "In In-

MENTAL HEALTH MOVES

The World Health Organization estimates that India will suffer \$1.03 trillion economic losses between 2012 and 2030 due to mental health conditions. Employees now want mental health and health of family also to be covered by insurance. Organisations are tweaking their policies accordingly:

1. ITC recently appointed a chief medical officer for employee wellness
2. WNS is working towards becoming a part of a global non-profit organisation which works on mental health
3. Accenture in India reimburses mental health consultancy even for employees' dependents
4. HSBC India offers equal physical and mental cover in its medical insurance

DELIVERING SUSTAINABLE & PROFITABLE GROWTH

TATA Green Batteries (TGY) is a 50:50 joint venture between TATA AutoComp Systems and GS Yuasa Corporation, Japan. TATA AutoComp from the House of TATA is one of the largest tier I automotive components manufacturers and suppliers of many components to reputed OEMs around the globe. GS YUASA is the world's largest two-wheeler battery manufacturer and Asia's largest automotive battery manufacturer with strong OEM relationships and a worldwide presence across more than 20 countries. Today we supply to leading auto Original Equipment Manufacturers (OEMs) across Two-wheeler, Three-wheeler, Four-wheeler, Off-road and Genset, E-Rickshaw and commercial vehicle spaces in India. We also have significant presence in After Market across various segments like Passenger Cars, Utility Vehicles, Commercial Vehicles, Tractors, Off Highway, Inverter, Solar & E-Rickshaw.

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To cite few such practices which we follow diligently, recycled water from our plant is so clean that we first feed it into fishponds in the campus which have live fish in them. We haven't had a single incident as yet of any harm being caused to them. To further reinstate that all our effluents are treated in-house to the tolerances which are significantly lower than statutory stipulations. Further we have deployed rain harvesting units and planted over 400 trees this year. Blood Lead levels of employees are constantly monitored and frequent air changes regulated along with reduction in temperature inside plant by using water-cooling tower thus creating an ambient work environment. We have also launched various initiatives for bringing Digitization in Safety & Health area.

Last but not the least, 90 per cent of our battery components are recyclable. We adhere to an efficient system of recycling lead from used batteries. We also have solar rooftop systems and carbon footprint management which helps us further in Global Environment Conservation.

For all such environmental friendly initiatives, we have received one of the highest recognition in **Sustainability Space (consecutively for 2 years) – Commendation for Significant Achievement in Corporate Excellence from CII-ITC Centre of Excellence for Sustainable Development.**

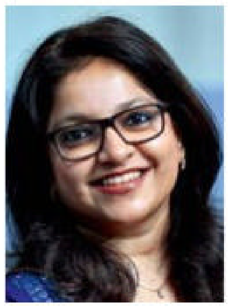
Going forward, we are aiming to be frontrunners in Environment & Social Governance. Our goal is to reduce 40% of our carbon emissions by 2025 and become net zero by 2028.

dia, careers would typically only see vertical movement. But not anymore. People are saying, 'Hey, I've done this enough, I want to take up something to build my perspective.' They are looking at alternative models to build their expertise in newer areas, and the whole conversation around skills is a big trend," says Singhal.

At HSBC, Chadha says, employees are given a flavour of gig work through a pilot started last year in India. Through 'Talent Marketplace', anyone in the bank's global network can choose to work on a project posted on the forum, depending on the number of vhours they can spare for it. "The project need not be related only to their work, it could be something outside the comfort zone, a training programme they've done and they want to leverage the learning of it." For three years now, WNS has allowed employees to take up additional employment for an alternative source of income. But Swaminathan has a caveat. "The problem comes in when you choose to work for, say, JP Morgan and Bank of New York at the same time. Then there is a conflict... and our clients won't like it."

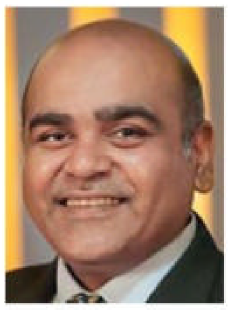
HEALTH IS WEALTH

If the first wave of the pandemic brought the hitherto largely unaddressed issue of mental health in corporate India to the fore, the second wave showed how crucial family's health is to the employees' overall well-being. The impact is evident with the definition of employee wellness expanding to include both factors now. Staffing and recruitment firm Manpower's Senior Director of Sales and Global Accounts Alok Kumar says health benefits have become one of the selling points for employers when they talk about the company to the candidate. "Earlier, even employees did not take much interest in it beyond whether the family is covered. Now, they are looking at the specifics and whether their parents and spouse's parents are also covered."



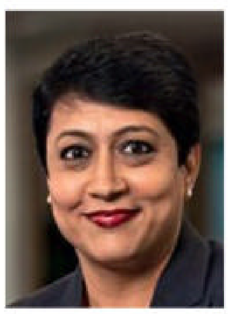
"We are trying to give our employees a flavour of gig work. The project need not be related only to their work, it could be something outside the comfort zone, a training programme they've done and they want to leverage the learning of it"

ARCHANA CHADHA
HEAD OF HUMAN RESOURCES, HSBC INDIA



"We'll prepare ourselves for two years and get into the mental health journey. We believe this will make us appreciate the workforce differently tomorrow. That's a significant number of people in many businesses that we'll be able to attract"

R. SWAMINATHAN
CHIEF PEOPLE OFFICER, WNS



"What we saw with the onset of the pandemic was a need to amplify our focus on holistic well-being and not just for our people, but their families as well"

LAKSHMI C.
MANAGING DIRECTOR – HUMAN RESOURCES LEAD, ACCENTURE IN INDIA

"What we saw with the onset of the pandemic was a need to amplify our focus on holistic well-being and not just for our people, but their families as well," says Accenture's Lakshmi. The firm allowed employees to personalise medical insurance and add even siblings, parents-in-law and partners as dependants, and extended mental health consultancy reimbursement for people's dependent family members as well.

While several MNCs say they began their mental health journey before the pandemic, the global health crisis intensified their efforts and forced other organisations to take up the baton, too. Singhal concurs that she hasn't seen as much reach out, group sessions, communication efforts, marital/relationship counselling and focus on self-care in the 20 years she has been working.

In taking baby steps towards long-term measures, organisations are experimenting with a host of initiatives. ITC recently appointed a chief medical officer for employee wellness. HSBC India and Accenture in India are training their line managers and frontline supervisors to recognise signs of mental health issues among employees even during remote interactions so that they can be guided accordingly. WNS's Swaminathan says they have set their sights on joining a global non-profit organisation which works on mental health. Without revealing the name, he says it requires WNS to be able to accommodate any employee with a mental health issue. The firm, he says, has begun a two-year journey to prepare its managers to be more aware and understanding of mental health. "We believe this will make us appreciate the workforce differently tomorrow. That's a significant number of people in many businesses that we'll be able to attract." BT

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The Great Reshuffle

Every organisation will need a new digital fabric for collaboration that brings together both digital and physical spaces and empowers everyone to participate

BY **ANANT MAHESHWARI,** PRESIDENT, MICROSOFT INDIA

ILLUSTRATION BY **RAJ VERMA**

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THE PANDEMIC HAS led to one of the biggest reshufflings in the concept of 'work'. Today, a workplace is no longer just a physical location, a workforce is no longer just a group of people operating at the same time and space. The defining trait of this new world of work is that there is no single standard or blueprint for operating.

The pandemic affected each of us differently. Therefore, every organisation and every individual will need to create their own unique road map as we move forward. This diversity of experiences and perspectives is best summed up by what we call the 'hybrid work paradox'. Microsoft's Work Trend Index survey, which reveals insights, challenges, and motivations that will shape the future of work, found that nearly 74 per cent of employees in India want more flexible, remote work options, while at the same time, 73 per cent of them are also craving more in-person time with their teams. In summary, more than half the workforce wants to work from anywhere with physical connect at the same time. This necessitates organisations and individuals to redesign and refresh their work contracts with each other.

The data is clear: extreme flexibility and hybrid work will define the post-pandemic workplace. The narrative on "the great resignation" is just one aspect of this broader change. For organisations to take a broader and longer-term direction they should think of this change as "the great reshuffle" and the early movers and broader thinkers will have the opportunity to shape and manage it to their advantage. Organisations will need to empower employees with the flexibility to work when and where they want, with the tools they need to equally contribute. Hybrid work will require a completely new operating model, spanning people, places, and processes. And technology will be critical to power this changed world, enabling flexibility, inclusion, and wellbeing for everyone.

Empower people: Among the biggest shifts the pandemic accelerated that will shape the future of work is the deep focus on flexibility, wellbeing, and effective collaboration between remote and physical workers. Digital overload is real and rising. Our Work Trend Index data shows that more than half (57 per cent) of Indian employees feel overworked and 32 per cent feel exhausted. We need tools that not only keep us 'always on' but that help us pause when needed and prioritise our health and wellbeing. Data and analytics are powerful tools for organisations to understand the needs of employees in a hybrid world and enhance employee experience. Technology is also a key enabler of inclusion for everyone in the hybrid workplace, including people with disabilities. For example, turning on captions in Microsoft Teams enables not just deaf users, but everyone to participate more effectively. Or as simple a feature as recording meetings can help users not in the room

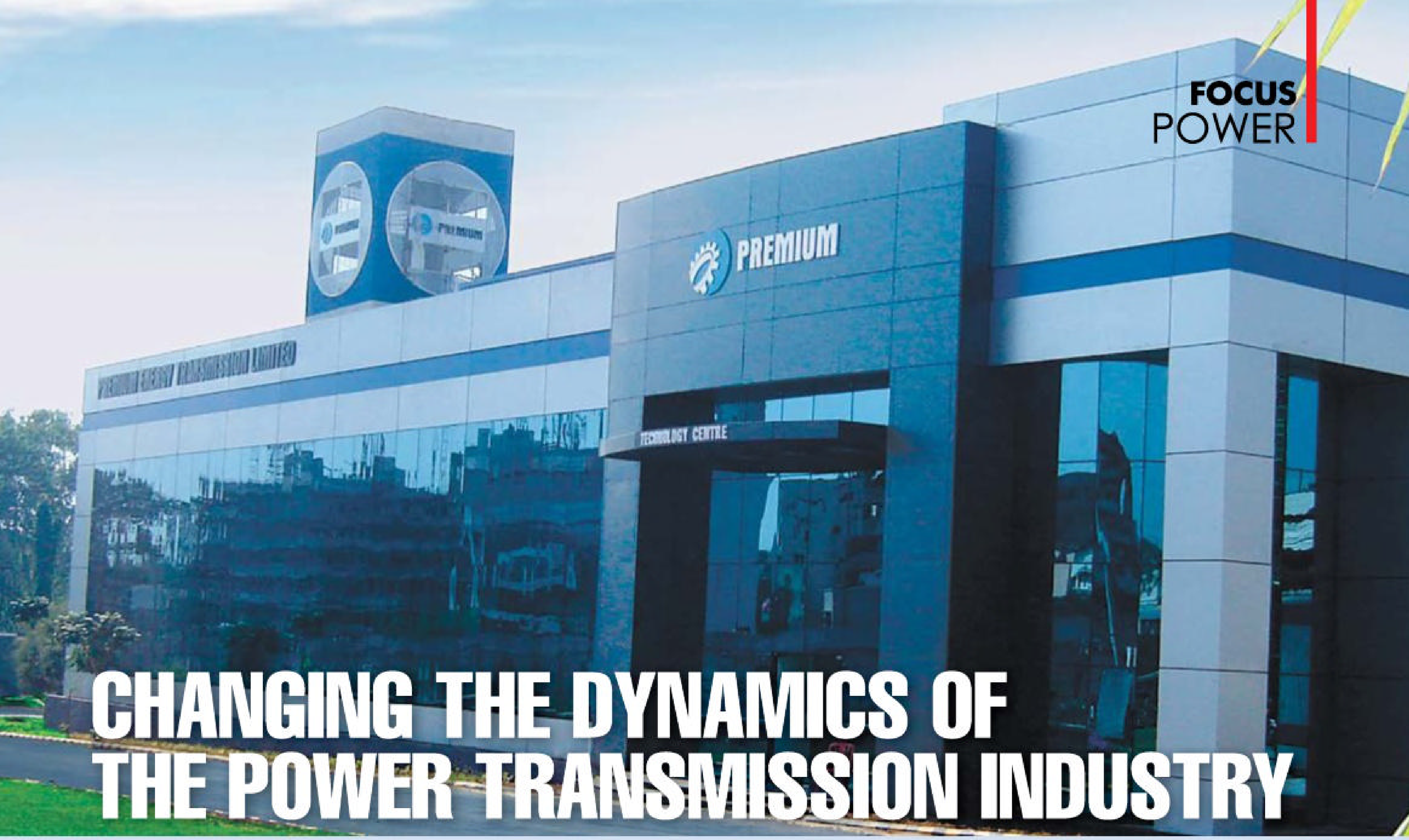
Technology will play an even more fundamental role to empower every individual and every organisation on the planet to achieve more

come back to it at a time that works for them and even search to find out if their name was mentioned so that they can pick up any actions due for them. The world around us is changing fast and technology is helping everyone participate equally.

Redesign workplaces: Creating equitable, inclusive experiences starts with designing for people not in the room. Every organisation will need a new digital fabric for collaboration that brings together both digital and physical spaces and empowers everyone to participate, whether they are in the office, at home or on a factory floor. Culture will be a key determinant of success in a hybrid world. Building culture at a time when half of the people are working from anywhere and the other half are at the office is no small challenge. Organisations will need to find new and unique ways to keep employees connected and engaged to sustain culture across the organisation. Technology will play a major role in creating this unified hybrid experience, enabling secure and accessible collaboration for all. Technologies like AR, VR and mixed reality are enabling organisations to create a 'real' experience of being together for employees across different geographical locations. The use cases of immersive tech in hiring and onboarding experiences have immense potential.

Rethink processes: Every business process will be impacted by the move to hybrid, and every business function will need to transform with technology at the core. In the era of hyper-connected businesses, data and AI are powering the next level of real-time insights that will be crucial for transforming the hybrid workplace experience. Data-driven employee experiences will be key to moving from merely adapting to thriving at hybrid work and creating a truly inclusive workplace. One area of paramount importance is security. Today entry points for attacks—identities, devices, apps, networks, infrastructure, and data—live outside the protections of traditional perimeters. The modern digital estate is distributed, diverse, and complex leading to an exponential increase in attacks. Data from CERT-In finds that cyberattacks in India rose by almost 300 per cent in 2020 as compared to 2019. As corporate networks are suddenly without firm borders, there needs to be a change in our approach to security. Embracing a Zero Trust architecture is now more important than ever. Organisations need end-to-end security tools to build cyber resilience and protect their workforce and data.

We are already in the midst of a monumental transition in the way we work. It will require organisations to create a completely different playbook in the way they look at collaboration, productivity, inclusion, and learning. This will shape the future of work and the great reshuffle is the path to get there. Technology in this world will play an even more fundamental role to empower every person and every organisation on the planet to achieve more. BT



CHANGING THE DYNAMICS OF THE POWER TRANSMISSION INDUSTRY

Premium Transmission equals quality and innovation. With a rich legacy of over 6 decades, we have established ourselves as a strong player in the mechanical transmission products manufacturing industry. Our products are serving in variety of industrial set-ups efficiently across the globe. Even though we come wit h a rich heritage we believe in adopting to the changing times. We have continuously launched new products that keep the wheels of the industry in motion. Innovation drives change and at Premium we highly value innovation. Our experienced team of design engineers ensures that all our products meet the global standards of quality. In-house R&D, Load testing, and adherence to stringent quality guidelines are the core principles of our business.

The pandemic posed several challenges to businesses across the world. Instead of getting distracted by the challenges, we decided to reinvent ourselves. Along with our employees, distributors, growth partners, and customers, we have performed our best to cope with these difficult times. In fact, we've recorded a growth in business after channelizing all our efforts into expanding our footprint globally.

We take pride in the strong network of dealers and distributors that we have weaved. It helps us to reach new sectors and target new customers. Our Business Development team is focused on acquiring new customers and projects and the supply of Premium make Gearboxes, Geared Motors, and Fluid Couplings, while at the same time our service vertical 'Premium Care' reaches out to our existing customer base to meet their spares and service requirements. Premium Care is a one-stop solution for overhauling and reconditioning of gearboxes, geared motors, and fluid couplings of any make. Anyone can download the Premium Care app from android or iOS and schedule gearbox repair within no time. Further to that, we have launched 3 service centers in India to cater to the customers who prefer refurbishment. Being accessible even to customers from remote parts is one of our dreams.

2021 was special for us as we are now into the renewable energy sector. With the inception of Premium Motion Private Ltd, we are all set to establish ourselves as the preferred supplier for complete tracking systems. We want to contribute our share in moving towards a greener tomorrow. We strongly believe in creating products for a sustainable future. The core ethos at Premium Motion is delivering sustainable solutions and our engineering and manufacturing capabilities set us apart from the rest.

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NEERAJ BISARIA, Managing Director and CEO, Premium Transmission Private Limited

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SUPER MULTI-TASKER

'COLLABORATE OR DIE' IS BASICALLY THE MANTRA THAT THE APPS OF TOMORROW WILL FOLLOW. IS INDIA READY FOR A CHINA-LIKE SUPER APP INFLUX?

BY PRERNA LIDHOO
ILLUSTRATIONS BY NILANJAN DAS

I**N THE EARLY YEARS** of this century, when malls were getting popular in India, there was palpable excitement in the way clothes, gaming parlours, groceries and restaurants came to be housed under one roof. Today, a similar disruption is in the making in the digital arena. This disruption that we are talking about is the emergence of the super app, a single mobile app that offers basic services like chat and payments, but also has a host of other third-party 'mini-apps' for e-commerce, food delivery, healthcare, etc. Not dissimilar to a physical mall that houses a variety of brands.

In many ways, the super app has become the Holy Grail that every company—from conglomerates like Tata and Reliance to fintech players like Paytm to even Big Tech firms such as Facebook and Amazon—is in the fray to own.

In India, super apps are still in a nascent stage, but across Asia, they're a rage. China's WeChat, for example, started out as a messaging app, but today it can be used for anything from finding a date to getting a loan and more. It offers

more than a million different services through a network of mini apps developed by businesses within WeChat. Singapore's Grab, Indonesia's GoTo, Vietnam's Zalo and South Korea's Kakao also work on the same principle.

Experts believe that India, too, is about to witness a boom over the next decade. But is there a criterion for an app with multiple services to qualify as a super app? "There are no established benchmarks. However, usually super apps have multiple offerings ranging from 25 to 100+ spread over financial services, healthcare, media & entertainment, e-commerce, education, travel, leisure, etc., to cover a majority of fin-life needs of consumers," says Sachin Seth, Digital and Fintech Leader, EY. "They also aspire to have significantly high ratio of daily active users (DAUs)/monthly active users (MAUs) above the average of 10-12 per cent for successful B2C niche services apps."

WeChat has around 1 billion MAUs. By that standard, apps like WhatsApp, with upwards of 200 million users in India and State Bank of India's (SBI) YONO, which has more than 37.9 million users, are well on their way to becoming super apps.

BANKING TAKES LEAD

Globally, most successful super apps have been built around core services like social messaging, digital payments, food tech, and so on. In India, banking has taken the lead. Five years ago, SBI came up with an app YONO—an acronym for 'You Only Need One'. In the last three years, YONO has notched up impressive numbers: 37 million registrations, ₹21,000 crore-plus loans, 77,671-plus daily cardless transactions and leads for ₹10,000 crore of home and car loans. It also became the first digital bank in the world to break even in less than two years. "The journey of YONO started because the bank wanted to attract the younger generation," says Rajnish Kumar, former SBI Chairman. "The idea was [that] there's clutter on your mobile phone. So, with one app you can take care of all your financial and shopping needs. The key difference between China and India is that in China, the banks did not come forward.

"What distinguishes a new-age firm is its agility and ability to innovate around what the customer needs. The new trends that are emerging are designed to fill a void left by legacy institutions in terms of process and convenience"

RAJNISH KUMAR
Former Chairman, SBI

It was done by the likes of Alibaba and Tencent, whereas in India, the banks themselves are building their own super apps."

In the financial sector, ICICI Bank's iMobile Pay, a mobile banking app that provides payments and banking services to customers of any bank, HDFC Bank's PayZapp, which offers digital payment and purchase solutions, Kotak Mahindra Bank's KayMall, which is a one-stop online mall for customers' shopping and travel needs, are some of the examples of banks spearheading India's super app journey. Other UPI-based issuers, too, are fast diversifying into full-fledged financial services like lending, and trends like 'buy now, pay later' are offshoots of that. Examples include Paytm, PhonePe, MobiKwik, Google Pay, BharatPe, Pine Labs, RazorPay and CRED. Experts believe that financial services were successful because they already had a platform that was solving the core need of a large customer base.

TOUGH COMPETITION

The situation is also rapidly evolving and the nascent super app ecosystem is already witnessing the offshoots of what could be tough competition ahead. Mukesh Ambani-owned Reliance Industries' JioMart is set to get into the super app business in a bid to outmanoeuvre rivals like Tata, which has companies across hospitality, jewellery, fashion, airlines, etc. Tata UniStore, which owns e-marketplace Tata Cliq, has received ₹102 crore in two tranches as part of its plans to raise ₹1,000 crore, as per the company's regulatory filings. The Tatas have pumped in ₹5,025 crore into its e-commerce platform, Tata Digital, as the conglomerate plans to fulfil its super app ambitions. The company also has a controlling stake in e-grocer bigbasket and digital health company 1mg, and has also invested $75 million in fitness company CureFit. Brands like bigbasket, 1mg, Taj Hotels, Croma and AirAsia are already available on what is being called the company's super app, the TataNeu.

Apart from conglomerates, fintech giant Paytm isn't far behind. It aims to build a platform that can provide different products and services on a single app. With almost 700 developers on

BIG NAMES, BIG SPREAD

Some of the biggest brands are developing super apps

RELIANCE JIO
Telecom, OTT, payments, cloud, e-commerce, messenger, browser, broadband, gaming, food delivery

PAYTM
Payments, e-commerce, gaming, food delivery, financial services, investments, ticketing, travel

FACEBOOK
Social media, e-commerce, gaming, messenger

PHONEPE
Payments, food delivery, e-commerce, OTT, gaming, travel, financial services

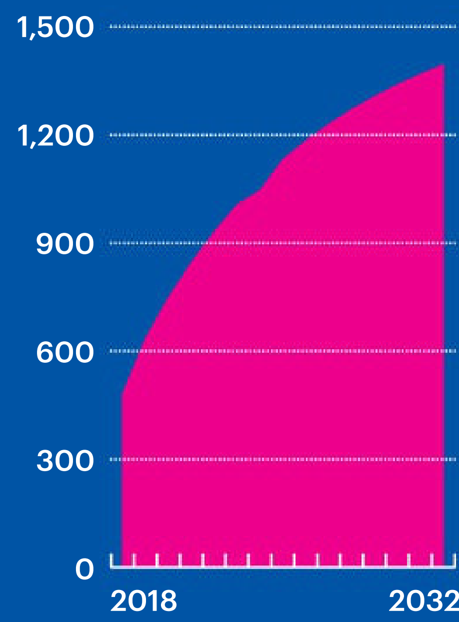
AMAZON
Payments, e-commerce, food delivery, OTT, grocery, financial services, gaming, travel

TATA
Financial services, consumer & retail, edtech, entertainment, health & wellness, travel, MSMEs, grocery

SMART NATION

Super app developers are banking on the projected growth in smartphone penetration in India

SMARTPHONE USERS
(million)



Source: Statista

GRAPHICS BY **TANMOY CHAKRABORTY**

its mini app store, Paytm says it is looking to become a super app by the end of the year and hopes to have 2,000-3,000 developers on board. According to Paytm's DRHP, among consumers who joined the Paytm app in FY17, the GMV by consumers transacting for three or more use cases in any year increased 6.8x by FY20.

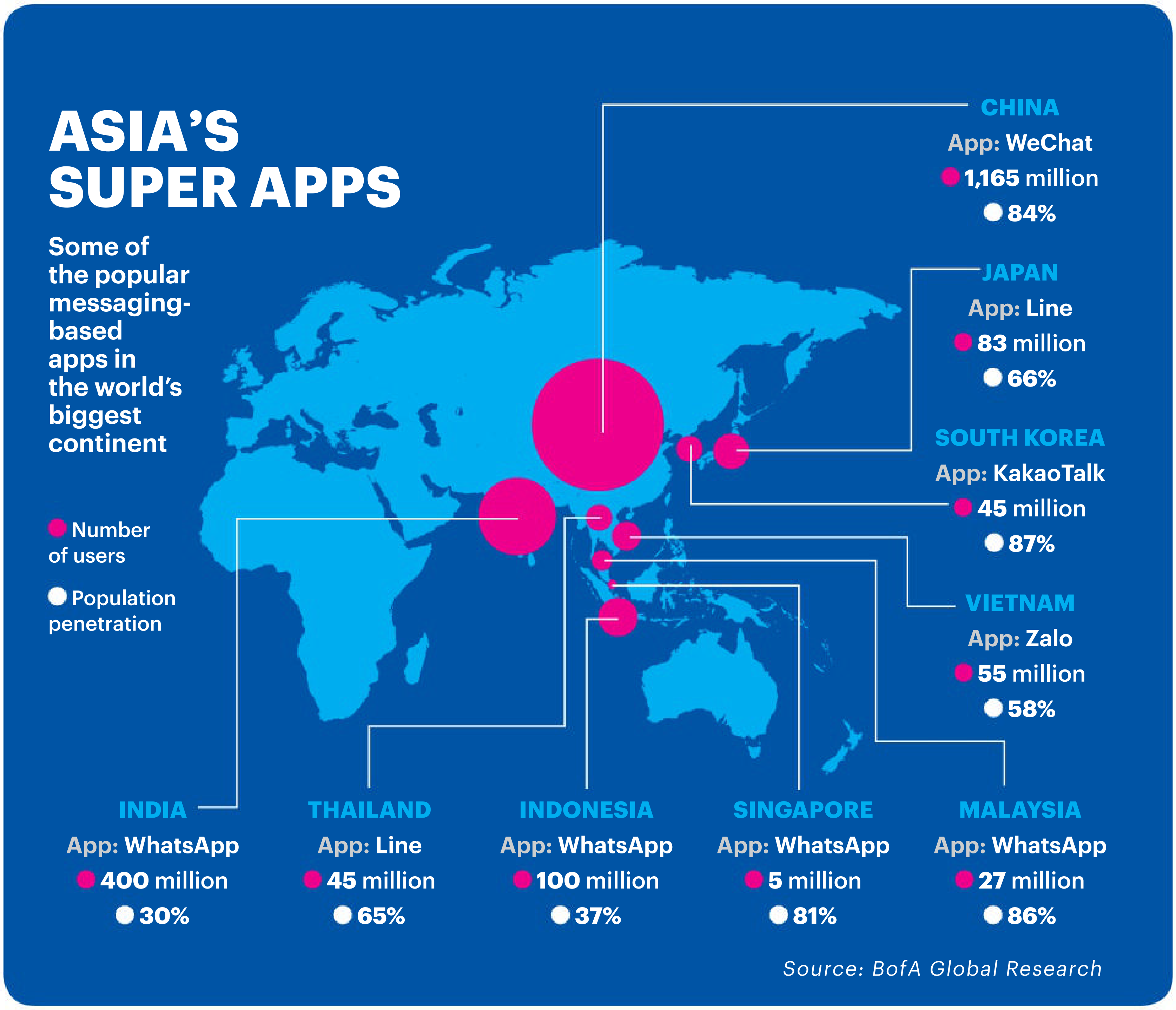
Flipkart-backed PhonePe, too, is gearing up to acquire Indus OS, which has built Indus App Bazaar. Through this acquisition, it plans to integrate 400,000 localised Indian apps from Indus App Bazaar to its PhonePe Switch, the mini-app store it launched in 2018. Today, PhonePe can already send and receive money, make utility payments, and make investments. It also claims to be accessible at 20 million merchant outlets across 12,000 towns and 4,000 *taluks*.

"I will bet on Amazon and PhonePe in the long term. That's because already the largest number of transactions go through them. Some conglomerates have also acquired companies, but if they're able to break that brand perception and crack that omni-channel puzzle, then they'll become bigger than the big tech players," says an industry expert on the condition of anonymity.

SMARTPHONES AS GROWTH DRIVERS

According to a report jointly released by Indian Cellular and Electronics Association and consulting firm KPMG, India's smartphone base is estimated to reach 820 million this year. Experts are banking on this massive growth when it comes to the adoption of super apps in the country. Since smartphones have limited storage and memory, super apps are best suited to mobile-first markets like India since they require relatively less storage and memory, as opposed to having multiple apps for different needs.

"Whether financial or non-financial, the use of mobile banking is growing at a fast pace. Today, the number of mobile and internet transactions is neck and neck," says SBI's Kumar. And companies realise this and, hence, are banking on the country's fastest-growing smartphone user base. A report by BofA Securities argues that big tech firms like WhatsApp, with a large user base, are best placed to become super apps, while an entity like Tata is yet to have a core use case. "The offering [super app] will also be seen from top fintech players, while WhatsApp's positioning makes it best suited to succeed as a super app. Over time, India has the potential to have at least three or four super



apps coming from conglomerates such as Reliance Industries and the Tata group, which have ambitions to become large tech-focussed ecosystems," the report says. However, the report also adds that Indian companies are still sometime away, both from customer value proposition as well as providing high frequency use cases.

GROWTH SECTORS

"However, things are dynamically evolving owing to the pandemic, and most of the products and services have significant potential to become Do-It-Yourself (DIY) through super apps." says Seth. "While financial services will remain the strongest layer of the super app story, sectors like health & wellness, food, travel, learning & education, e-commerce, entertainment, MSMEs, local merchants and rural services will witness tremendous growth."

As seen in other Asian markets, India, too is likely to end up with one or two players dominating the space. However, some industries will take precedence when it comes to initial adoption and penetration of these apps. "Embedded finance—one of the foremost themes of India's fintech story going forward—is working very successfully with further potential to unlock vast growth opportunities for specific target segments, such as Gen Z, millennials, or small business niches," says Seth. "Its adoption is gradually picking up in scenarios where frequency of purchase is low and need for physical touch points is high. For instance, life insurance may take longer to take off as compared to lending, payments or bite-sized general insurance because it is a push product and requires certain

amount of phygital connect with buyers."

Experts say that industries that either help people manage finances, livelihoods, or become a frequent touch point in their overall lifestyle, are expected to see growth going forward. "The time for super apps is now. Currently, there is a significant play of Big Tech and e-commerce companies in the space, and their success rate has been very high because of their ability to influence consumer behaviour across channels and [them] investing heavily in customer acquisition and retention without worrying about profitability. However, large conglomerates with diversified B2C businesses are also entering this space and soon we will have multiple options available to consumers," says Seth. "Sectors like health, wellness, financial services and rural services are expected to see growth."

THE FUTURE

'Collaborate or die' is basically the mantra that the apps of tomorrow will follow. But is India ready for the disruption yet? "In the past 10 years, the world has changed so much. Nobody can predict what will happen in the next 10 years. Going forward, start-ups have an edge because legacy institutions and their systems have become old-fashioned. That's why you have so many start-ups in fintech coming up because they don't carry the baggage," says Kumar. He adds that while legacy firms have their own advantages in terms of scale and customer trust, start-ups will take the lead in terms of their capability to deliver innovative solutions.

But as companies gear up to become super apps, there are challenges that they need to first tackle. Experts point out that as super apps become popular in India, addressing regulatory concerns around data privacy and building a robust infrastructure will be key. "There will be new challenges coming up with the changing times. The regulation needs to change accordingly. Issues around crypto, data privacy bill, etc., need to be tackled with the right approach," says Kumar.

Cryptocurrency is still a grey area as far as India's regulatory framework is concerned. Some countries like the US are already on the verge of integrating crypto

"The time for super apps is now... Sectors like health, wellness, financial services and rural services are expected to see growth"

SACHIN SETH
Digital and Fintech Leader, EY

and payments apps, to make transacting more convenient for customers, and experts believe that India, in this domain, has a long way to go. The key, they explain, is to deliver financial services in a personalised manner. On one hand, crypto payments would go a long way in democratising finance, in the sense that people with no credit history, who struggle to get loans or get credit cards, will get better access to financial services. But on the other hand, there are issues related to data privacy, illegal activities, hacking and cybercrime that could lead to a bigger menace going forward.

"Challenges related to data privacy continue to prevail in terms of data being collected and used across industries and platforms. The guidelines and regulations as well as consumers' sensitivity regarding their data vary for different purposes. Cross-leveraging data of consumers' preferences and transactions, this will be one of the biggest challenges for super app providers," Seth says. According to him, another cause of caution could be around customer service and customer complaints. "Super apps are providing multiple services. However, not all of them are provided by the same manufacturer or producer; most of the times it's from third parties. Then the question arises [as to] who's responsible for service delivery deficiency issues and how super apps will provide a seamless servicing platform. It will be interesting to see how this question will be addressed," he adds.

Experts also warn that smaller and niche companies, who struggle to find relevant partnerships and are not able to create enough critical mass, will find it difficult to survive. "Everybody today has understood that the game is not about playing it solo. Also, it is not just about getting new partnerships. The success mantra is to develop sustainable long-term business partnerships. Either someone already has consumers and they would like services to be offered by someone else on their platform; at the same time, someone else already has a proven bouquet of services and products to offer, but needs a platform to find consumers. The key is to create compelling value propositions for partners and consumers," Seth explains. BT

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Will Super Apps Disrupt the Internet Economy?

Only if they can offer a seamless marketplace user experience and a more-than-robust cybersecurity promise on data and payments information

BY **UPASANA TAKU**, CO-FOUNDER AND COO, MOBIKWIK

I

IN RECENT MONTHS, there has been a lot of talk of super apps that will replace all other apps. Everyone from fintech to social apps to grocery and ride-hailing apps is looking at evolving into an all-in-one platform. Super apps are basically single mobile applications that are designed to provide a multitude of services under a single, virtual umbrella. Thus, rather than relying on multiple apps for different services, users can have access to a plethora of seemingly unrelated services in a single location on their mobile phones. The idea is to make it convenient for people to use a single login for all possible needs. Across the globe, these platforms are being envisioned as virtual malls, and different geographies are responding to the trend differently.

The idea of super apps has been around for a while. In the West, players have been experimenting with super apps for several years now, but they are yet to pick up pace or mass popularity. It remains to be seen how consumers in the UK, US and Europe respond, when bigger players like Meta, etc. enter into this space.

China's experience has been different. The world's most populous country has managed to scale super apps with Alibaba and Tencent because of their sudden growth in internet penetration—more on this below. But the overall experience across Asia is yet to see any noteworthy growth in the super apps space. While India is still new to the space, it is unlikely that super apps will become the touted revolutionary disruptors in the mobile B2C space. There are a number of reasons for this:

▶ To begin with, the super apps scenario in India looks a bit disheartening because there are already established leaders in the industry for different product categories. Disrupting existing leaders in their categories is challenging, owing to the deep capital and people investments made.

▶ Furthermore, as mentioned above, other than China, the global trajectory of super apps has not been the most encouraging. Thus far, no single company in the world has been able to develop a fully successful, all encompassing super app model. Players like Salesforce and ServiceNow have been working on designing ecosystems that began with basic offerings, but soon pulled in solutions and services which were logical partners in its bouquet of applications.

▶ The players in China who have been able to build traction have a lot of contextual history to their credit, starting with their journey of digital penetration across China. Tencent, the Chinese tech behemoth and leader in the super app realm, did this with its WeChat app—the messaging services app that acted as a virtual platform for enabling life online in China. WeChat first successfully introduced the concept of a super app. It soon morphed into becoming more than a social networking platform and offered its over billion users an entire ecosystem of services that includes payment services, gaming, doctor consults, financing and loan services, hotel reservations, and car purchases.

▶ But China's experience has been different for another reason. China has been able to scale the super app model because of weaker regulations. India, on the other hand, is a highly regulated country especially when it comes to fintech, lending, peer-to-peer or marketplace models.

▶ Super apps are also likely to face challenges as they do not hold enough value generation promise for partners. The bedrock of any digital ecosystem is to generate profitable growth for each participating partner. Most super app models so far have ended up as monopolies or at best duopolies and this makes their enduring future questionable.

▶ Moreover, it is important for a successful digital ecosystem to build

ILLUSTRATION BY **RAJ VERMA**

With the ecosystem getting overcrowded, a super app needs to be able to cut the clutter and prove itself as a necessity rather than a luxury to be integrated into people's lives

customer-centric offers and for this it is not just the volume of user engagement but also its stickiness. For developing genuine customer value propositions, a huge amount of investment needs to be undertaken.

▶ It is important for super app aspirants to understand that one cannot be reigning supremos in multiple segments and still provide the best user experience. It is not feasible to be a leader in every category. There are specialised apps for travel, shopping, payments and so forth where companies are providing the best experience to their users. This is not for super apps to provide.

▶ Another thing super app players are not taking into account is that variety is the spice of life. Shopping is an experience users cherish. There are recreational elements to shopping or engaging services that people like to experience. Super apps can seem binding and monochromatic to a user. While discounting the convenience of use, they take away the charm of visiting different online retailers or brands to get a sense of the variety and multitude of choices available.

▶ Furthermore, in a country like India, customer trust—especially in online spaces, where people are already a little wary of virtual frauds—plays a key role. The consumer must never be taken for granted. Lastly, for users to trust one platform with all their information, the robustness of the platform's security framework will need to be more than exemplary.

One cannot deny that super apps do offer several benefits to customers and present new opportunities for business, but for super apps to have a fighting chance against Indian users' favourite standalone apps, they not only need to offer a seamless marketplace user experience with strong customer appeal, but they must also offer more than robust cybersecurity promises on data and payments information. With the internet ecosystem getting overcrowded and scores of apps vying for people's attention, a super app needs to be able to cut the clutter and prove itself as a necessity rather than a luxury to be integrated into people's lives and not just grab but retain attention. A tough ask by any standards. BT

ANOTHE WORLD

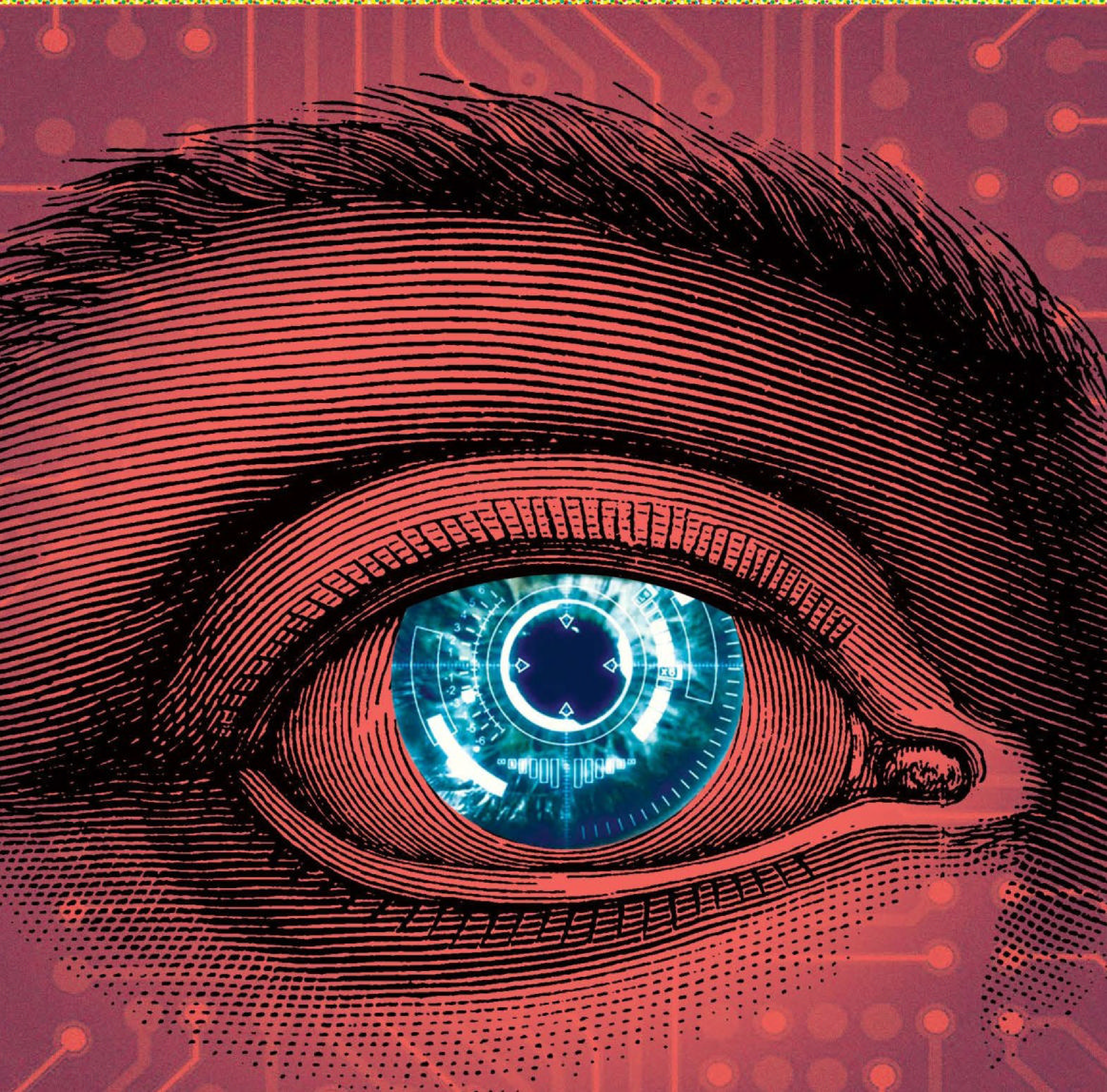
JUST IMAGINE THIS. You land at the Denver International Airport in the US with barely 20 minutes to catch your connecting flight from a different terminal. So, you need to walk, take a train, and walk some more. Today, you have one option—run—with no idea if you will make it in time or end up missing your flight. But not in the augmented reality (AR) world of the future: as you step out of your aircraft, your smart lenses would scan the nearest gate number, search the airline database for the connecting flight's gate number and, using the airport's indoor maps, project directions on the lens itself and also display your estimated time of arrival basis your walking speed. If you have time, you could canter along. Glancing through the shops on the way would overlay the smart lenses with the in-store collections, which you could simply add to your cart and pay for with a voice command, and collect within minutes—all with the assistance of your smart lenses. Cool, right? This is a sample of what AR can power, not in the distant future, but barely within a decade from now. (And yeah, in case you're wondering, if you're really late, you still have to run!)

Pegged to be a promising technology over the past few years, AR uses technology to enhance reality with digital components. Think of it as a virtual layer added to the real world. And

R

POWERED BY STATE-OF-THE-ART HARDWARE AND SOFTWARE, AUGMENTED REALITY WILL CREATE A NEW, PARALLEL UNIVERSE OF VIRTUAL OBJECTS, CONVENIENCE AND EFFICIENCY IN THE COMING YEARS

BY NIDHI SINGAL
ILLUSTRATIONS BY NILANJAN DAS



AUGMENTED REALITY MARKET GLOBALLY

$14.7
BILLION
2020

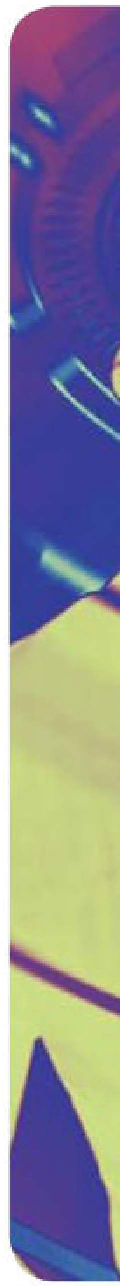
$88.4
BILLION
2026

INDIA'S AUGMENTED REALITY AND VIRTUAL REALITY MARKET

$1.83
BILLION
2020

CAGR of 38 per cent until FY27

Source: Research and Markets



this layer, which is mostly visual with auditory or haptic, creates a composite view that can be used to convey additional information and create an immersive experience for the end user. It is, essentially, a real-time augmentation of the physical world.

AR WAS INVENTED in 1957 by Morton Heilig, followed by US scientist Ivan Sutherland, who developed the first head-mounted display system in 1968, although the term 'augmented reality' was coined in the 1990s. Since then, the technology has come a long way, touching upon almost every industry—from NASA leveraging AR to assist in providing better navigation during test flights, to Volkswagen debuting the MARTA app (Mobile Augmented Reality Technical Assistance) for providing technicians with step-by-step repair instructions within the service manual, to Google developing AR glasses for immersive experiences, AR applications are being used in manufacturing, training and education, maintenance, simulation of complicated procedures, etc. It has consumer use cases, too—filters on social media platforms giving motion to animate objects; students viewing an information layer replete with visuals and audio by placing a mobile device on a three-dimensional toy; checking out how furniture will look in real life using the Flipkart app, among many others, are some everyday use cases.

In 2020, the AR market was valued at $14.7 billion globally, and is projected to reach $88.4 billion by 2026, according to Research and Markets, which incidentally has valued the Indian augmented and virtual reality market collectively at $1.83 billion in FY20 and forecasted to grow at a CAGR of 38 per cent until FY27. "The report is bullish on the share of APAC in the next five years, and that definitely augurs well for India, as we are in a good position to leapfrog and become market leaders here," says Sachin Arora, Partner & Head-Digital Lighthouse (Analytics, AI and Data), KPMG in India.

Impressive tech potential. Impressive numbers. But that's still scratching the surface. What's holding it back? Multiple things, ranging from hardware to software and apps, deployment to use cases. With users expecting instant and highly customised solutions, the existing deployment simply isn't measuring up. The majority of the AR hardware (including headsets and glasses) available today are bulky and many need to be connected to a computing device such as a PC, tablet or smartphone. Google Glass, introduced in 2013, was way ahead of its time, but suffered from short battery life and overheating. In the current age, Epson's Moverio smart glasses continue to be deployed across industries but even its new-age Moverio BT-40 Smart Glass, which was launched in 2021, requires external hardware support.

Another shortcoming of these AR glasses has been the sensors.

REALITY CHECK

Get the lowdown on the different kinds of ‘reality’

AUGMENTED REALITY (AR)
Overlaying digital elements to live real view

VIRTUAL REALITY (VR)
A complete immersion virtual experience disconnected from the physical world

MIXED REALITY (MR)
An experience combining elements of both AR and VR, real-world and digital objects interact

EXTENDED REALITY (XR)
It includes virtual reality (VR), augmented reality (AR) and mixed reality (MR) technologies, enhances our senses, whether they’re providing additional information about the actual world or creating totally unreal, simulated worlds for us to experience

Industry experts explain that a sensor such as an accelerometer is easily disturbed by electric interference. So, what’s the solution? “AR, powered by LiDAR, will enable AR creations to appear more lifelike and avoid clunky experiences,” says Ranga Jagannath, Director-Growth, Agora, a real-time engagement platform based in Santa Clara, California. (LiDAR stands for light detection and ranging, a method of using light pulses to measure distances of objects on the Earth’s surface.) And as companies such as Mojo Vision experiment with hardware, AR will evolve from just smart glasses to smart contact lenses.

Everyone’s excited, from start-ups to the biggest technology firms. Apple, Microsoft, Google, Facebook, NVIDIA are fuelling investments in the development of AR software and hardware. Apple is working on its own AR hardware, and Qualcomm Technologies and Microsoft collaborated to develop custom AR chips to enable a new range of power-efficient, lightweight AR glasses to deliver rich and immersive experiences. Greg Sullivan, Director, Mixed Reality at Microsoft, says: “Today’s AR devices, like HoloLens 2, are targeted at the enterprise, but we are absolutely focussed on continued innovation and are building devices for the future that will serve both enterprises and consumers.”

Other hardware firms, too, have gone back to the drawing board to address the existing challenges. They are experimenting with real-time offloading of AR computations to a high-performance server using edge computing in a wireless network. If that sounds too nerdy to you, here’s what it really means. Edge computing-embedded AR headgear will not need to be connected to external hardware such as a smartphone or a PC. Instead, they will connect to an edge server, which will remotely pro-

“Augmented reality, powered by LiDAR, will enable creations to appear more lifelike and avoid clunky experiences”

RANGA JAGANNATH
Director-Growth, Agora

vide access to apps through CPU- and GPU-intensive AR algorithms. All this would need high-speed wireless networks such as 5G (and 6G in the future). Why? You don't want your immersive AR experience to buffer and stutter, right? "Latency, connectivity, and infrastructure are some key challenges that the AR industry will need to address," says Sachin Kalantri, Senior Director, Product Marketing at Qualcomm India.

THIRTY-TWO per cent of XR or 'extended reality' experts in the US surveyed by Statista in early 2020 cited user experience (bulky hardware, technical glitches) as the biggest obstacle to mass adoption of AR. Lack of quality content and the amount of AR content available came in second, with 18 per cent highlighting this. These two were followed by a reluctance to embrace AR by consumers and businesses, regulation and legal risks, financing and investing, and cost to consumers. So, even as the tech is being sharpened and perfected, cybersecurity and regulatory risks will also come in at some point. Right now, nobody knows much about them yet.

"While an exciting field, there are still several challenges regarding AR implementation on a wide scale. The cost would be the primary consideration at this stage of the journey, with regards to the infrastructure set-up and hardware requirements," says Arora of KPMG. "Building a custom app especially will require greater financial investment than instances where an AR layer to an existing app will suffice. Since this is a relatively nascent sector, availability of skilled developers and designers in the market may also pose challenges." Enterprises across the world are working towards making emerging technologies such as AR

"Imagine a landscape architect trying to explain his/her vision of a new backyard... Using AR-powered smart glasses, the client will be able to envision all the details clearly, as if in real life"

SACHIN KALANTRI
Senior Director, Product Marketing at Qualcomm India

more widespread. "We're working to make emerging technologies like AR more mainstream, which is why we've extended our partnership with CBSE to provide an AR curriculum to over 10 million students and 1 million educators," a Meta (erstwhile Facebook) spokesperson told *Business Today*. Meta has also teamed up with Reskilll in India to teach students, developers, and tech enthusiasts about Spark AR Studio i.e., a platform that allows creating AR effects for mobile cameras.

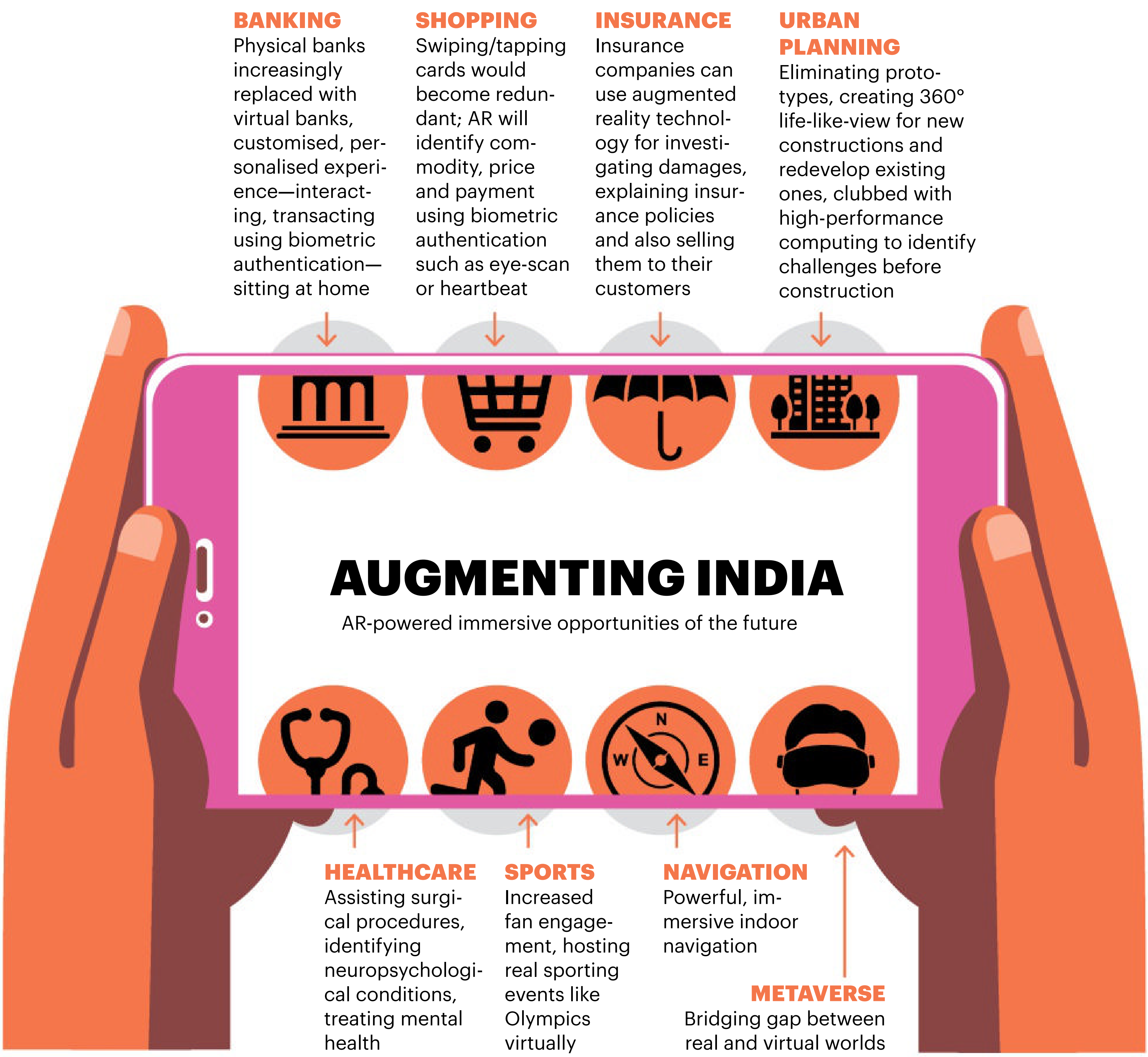
While the challenges are being worked on and will be overcome as the technology matures, there are immense opportunities in the developer space to design innovative applications addressing a wide range of use cases. Let's start with banking. Despite consumers migrating in droves to digital payments, branch banking remains at the core.

While banks would initially leverage AR to guide customers to the nearest ATM or sell new banking products, a decade from now, physical banks could increasingly be replaced with virtual ones. And as all services would be provided virtually, customers will continue to be the centre of everything. Using AR, customers can visit the virtual bank, interact with their relationship manager, open an account, even carry out a transaction with biometric authentication while sitting at home.

Similarly, shopping in the market, swiping or tapping cards would become redundant. AR-enabled devices would identify the commodity, its price and with the users' biometric authentication, would process the payment. Insurance firms, too, will utilise this technology for investigating damages, explaining insurance policies and selling them, too.

Then, AR can transform urban planning. Building prototypes will be passé as AR tech efficiently designs a new smart city and redevelops existing ones. Be it an overlay on barren land, placing a bridge on a traffic intersection or planning an underground tunnel underneath a monument—a 360° life-like view could be overlaid without disturbing traffic movement or incurring any additional cost. When deployed with high-performance computing, architects can identify challenges posed by wind speeds, soil quality or a natural calamity the area might be prone to. "Imagine a landscape architect who is trying to explain his/her vision of a new backyard to a client. Using AR-powered smart glasses, the client will be able to see all the details clearly, as if in real life," says Kalantri of Qualcomm India. Driven by data, AR experiences will be accurate, and eliminate cost of constructions and prototypes, resulting in a much more efficient deployment.

In healthcare, AR will make train-



Graphic by TANMOY CHAKRABORTY

ing of doctors easier, but can also help in surgeries by putting information into the eyesight of the surgeon. Using real-time data and scans, AR can locate tumours and blood vessels, resulting in successful surgical procedures. For neuropsychological conditions, specialised applications will use facial expressions, voice tone and behaviour to identify depression, phobia, anxiety and other mental health illnesses. The addition of AI/ML tech could truly personalise these AR experiences and help in treating symptoms. Grand View Research expects AR-VR in the healthcare segment to be a $9.5-billion market by 2028, expanding at a CAGR of 27.2 per cent from 2021 to 2028.

While AR and VR have been adopted by teams to enhance sportsmen and athletes' methods to train or view statistics on their performance, or to increase fan engagement, the ultimate deployment would be playing sport in real-time with the player in a different country. In the future, AR will have the calibre to power global sporting events such as the Olympics virtually.

AR has the potential to further bridge the real and virtual worlds. Industry expects AR to replace VR as the metaverse matures. "In the metaverse, VR is one part today, primarily because it is immersive and cheap. [But] AR will take over from VR because everyone will stick to their smartphones (commonly used by consumers for AR experiences) over VR headsets," says Hemanth Satyanarayana, Founder & CEO, Imaginate, a home-grown VR, AR and MR tech company.

From enhancing photos in low light to smart agriculture to assisting in counter defence, the possibilities of using AR are endless. But none of this will be possible without advanced tech solutions. And tech such as edge computing, 5G, AI and ML will revolutionise the AR experience over the next decade. Augmented reality, as a technology, has the calibre to become as ubiquitous in the workplace as PCs and mobile phones are today.

Wrap your head around that. **BT**

@nidhisingal

HOW DO DEBT FUNDS COMPLETE YOUR PORTFOLIO?

It is a well-established fact that the only way to grow one's wealth is to invest in a variety of assets. These assets could include equity, debt, real estate, gold, and so on. Each of these assets also come with a degree of risk with some being riskier than others. Recently the financial markets saw an upheaval when the COVID-19 pandemic occurred and thousands of investors watched the value of their equity investments plummet as the markets took a severe hit. Some investors were able to stand their ground and wait out the turbulence. However, others realised that high-risk investments like stocks and equity mutual funds were probably not for them. How then should these investors continue investing to ensure that their portfolios have some amount of risk protection?

Exploring Debt Funds Further

Risk-averse investors or any investor who wishes to add a layer of stability to their portfolio, would do well to explore debt funds in more detail. Debt funds are also known as fixed income funds as they invest in fixed income instruments. These instruments could include Government issued sovereign bonds, corporate bonds, treasury bills, and money market instruments. While equity mutual funds invest in stocks and are highly susceptible to market fluctuations, debt funds are relatively less affected by these changes.

The relative stability of debt funds comes from the way they are structured. Each debt scheme, depending on its investment strategy, invests in a basket of fixed income instruments. For example, a corporate bond fund scheme would invest at least 80% of its assets in bonds issued by corporates. A liquid fund scheme that has a maturity of no more than 91 days would invest in money market instruments with similar maturity periods. The various debt instruments typically have a fixed maturity, after which they are required to pay the investor back in full with any interest that the investment might have earned. While debt funds cannot guarantee returns, the issuer of the bond is obligated to pay back the principal amount to the investor once the bond matures. Therefore, debt funds are relatively less risky when it comes to losing capital.

The Benefits of Debt Funds

Debt funds, no-doubt, are less risky than some other types of investment instruments. However, their benefits do not end there. These funds could prove to be a viable investment option for those investors who are looking to meet short term financial goals within the next 3-5 years. Debt mutual funds also show potential for relatively higher returns than other instruments like a banks savings account or even fixed deposits. Depending on the type of debt fund scheme, investors could even expect returns as high as 9% in some cases. It is, however, important to keep in mind that the rate of returns could fluctuate from time to time.

Debt funds are also highly liquid which makes them suitable for emergency and sink funds. As an investor, if you wish to park some idle cash to build a corpus for any type of emergency, you could consider investing in short duration funds or liquid funds. Not only is it easy to withdraw from these funds as and when required, but even in holding, the investment continues to have the potential to earn returns. Even modest returns of 6%-7% could add up over time and increase the invested amount.

Another benefit of fixed income debt funds is that they help to diversify an investment portfolio. An equity-heavy portfolio as we have seen earlier, could be prone to high risk. However, by allocating a portion of the assets to debt, investors can create a more balanced portfolio that could be more resistant to risk. Asset allocation of this sort would no doubt depend on the investment goals and the risk appetite of the investor him/herself.

Risks Associated with Debt Funds

While we understand the benefits of debt funds, it is necessary to note that they are not without risk. Two of the more common risks associated with debt funds are credit risk and interest rate risk. Credit risk occurs when the organisation that issues the bond in unable to pay back the invested principal. This risk is higher in case of debt schemes that invest in companies with low credit ratings. Credit risk can be lowered by investing in high quality bonds of companies with high credit ratings.

Interest rate risk occurs due to changes in the interest rate of bonds. This happens when new bonds issued by an organisation have a higher interest rate than those already being held by investors. As bonds with higher interest rates have higher demand, the value of the bonds in holding drops. Consequently, this causes a drop in the NAV (net asset value) of those debt schemes that hold these bonds, leading to lower returns for the investors. Debt fund schemes with shorter maturity periods, like ultra-short funds, are less affected by interest rate risk than those with longer maturities. Floater funds, wherein the fund manager changes the maturity of the scheme based on market outlook, are another way in which investors could lower interest rate risk.

How are Debt Funds Taxed?

Investors in debt funds need to also be aware that returns or capital gains earned on debt funds are taxable. Capital gains may be short term (STCG) or long term (LTCG). Here's how they are taxed:

STCG – When held for a period of less than 3 years, are added to the investor's income and taxed as per his or her tax slab.

LTCG – When held for 3 years or longer, are taxed at 20% with indexation benefits.

Indexation takes into consideration the inflated buying price of the scheme units and therefore reduces the tax liability.

Capital gains tax in only applicable once the investment is redeemed and the amount is credited to the investor's bank account. No taxes apply while the investment is still in holding.

To Conclude

Debt funds are a good investment option for conservative investors and those investors who would like to create a more robust portfolio. Not only are these funds less affected by market fluctuations, but they also have the potential to generate moderate returns and can be highly liquid, making them a good option for emergency funds as well as a way to meet short-term financial goals.

In Metaverse, AR to Take Over from VR

Smartphone-based AR metaverse experiences need to take off for the market to reach the estimated figure of $1 trillion

BY **HEMANTH SATYANARAYANA,** FOUNDER AND CEO, IMAGINATE

A

AS A KID, I came across in the Valmiki Ramayan a mythological story about the sage Vishwamitra. The story goes that King Trishanku wished to reach heaven in his mortal form and approached the sage. Vishwamitra promised Trishanku his wish, offered the power of his penance and sent Trishanku to heaven. But Trishanku was pushed back to earth by Lord Indra, the caretaker of heaven. Vishwamitra flew into a rage, stopped the falling Trishanku in midair and created another heaven for the king—Trishanku Swarg. The word Trishanku has come to denote a middle ground or limbo between one's goals and one's current state.

Decades later, I came across movies where lives on new planets are beautifully depicted. I thought it won't be surprising if people desired to visit such worlds. This brings us to the concept of the metaverse where people can visit a magical world of their choice for an amazing time. In the metaverse, a person can choose an interesting character— her avatar—and accessorise it to her liking. In the metaverse, based on the underlying platform that powers it, one can fly around defying physics or better yet, teleport to any virtual world. There will be virtual worlds that could be spawned instantaneously on demand or those that are available continuously for its virtual avatar-clad visitors unless a massive volcano wipes out internet connections in the real world.

Let's talk real-world examples. Sportswear firm Nike recently announced its virtual world called Nikeland in the metaverse. It's a space for the brand's fans to connect, create, share experiences and compete. Enterprises in the B2B space have also started adopting the metaverse for their employees to have productive conversations. These virtual worlds are digital twins of their real world facilities that enable easier employee onboarding, new equipment and process training for enhanced productivity and finally a breakout space for employees to engage with each other. Reliance Industries is investing heavily in creating digital twins of its subsea operations so employees visiting those sites can hereafter become a reality since it requires a click of a button and no real diving.

The metaverse also helps enterprises generate revenue, besides enabling sales training using role-play in realistic customer worlds. For example, Cisco's Kalki platform not only allows sales training but also provides sales enablement by bringing the customer and the vendor sales team together inside a virtual world similar to that of the customer's industry.

One of the earliest metaverses most may recall is the platform *Second Life* that allowed visitors to join and chat with each other using regular computers. Fast forward to 2022—computing devices are about eight times faster at a similar price point and powerful computing devices can be handheld or even head-worn—and a new paradigm of how metaverses can be experienced has emerged, using virtual reality (VR) and augmented reality (AR) technologies.

Several products available in the market today, including Facebook's VR headset Oculus Quest 2, allow users to get a full immersive experience of the metaverse. While VR headsets provide a rich immersive experience, AR headsets like Microsoft's HoloLens 2 also allow users to not feel disconnected from the real world.

Now, how would one enter a metaverse using an AR headset and explore a new virtual world? What was apt for VR or for PCs need not apply in the same exact means for AR. While it is true that one can experience virtual worlds as well in an AR headset through gestures, I believe AR headset-based metaverse experience is best enjoyed when users see a seamless blend between their real world and the superimposed virtual world. This will allow consumers to comfortably enter the metaverse from their living room or any physical space without the worry

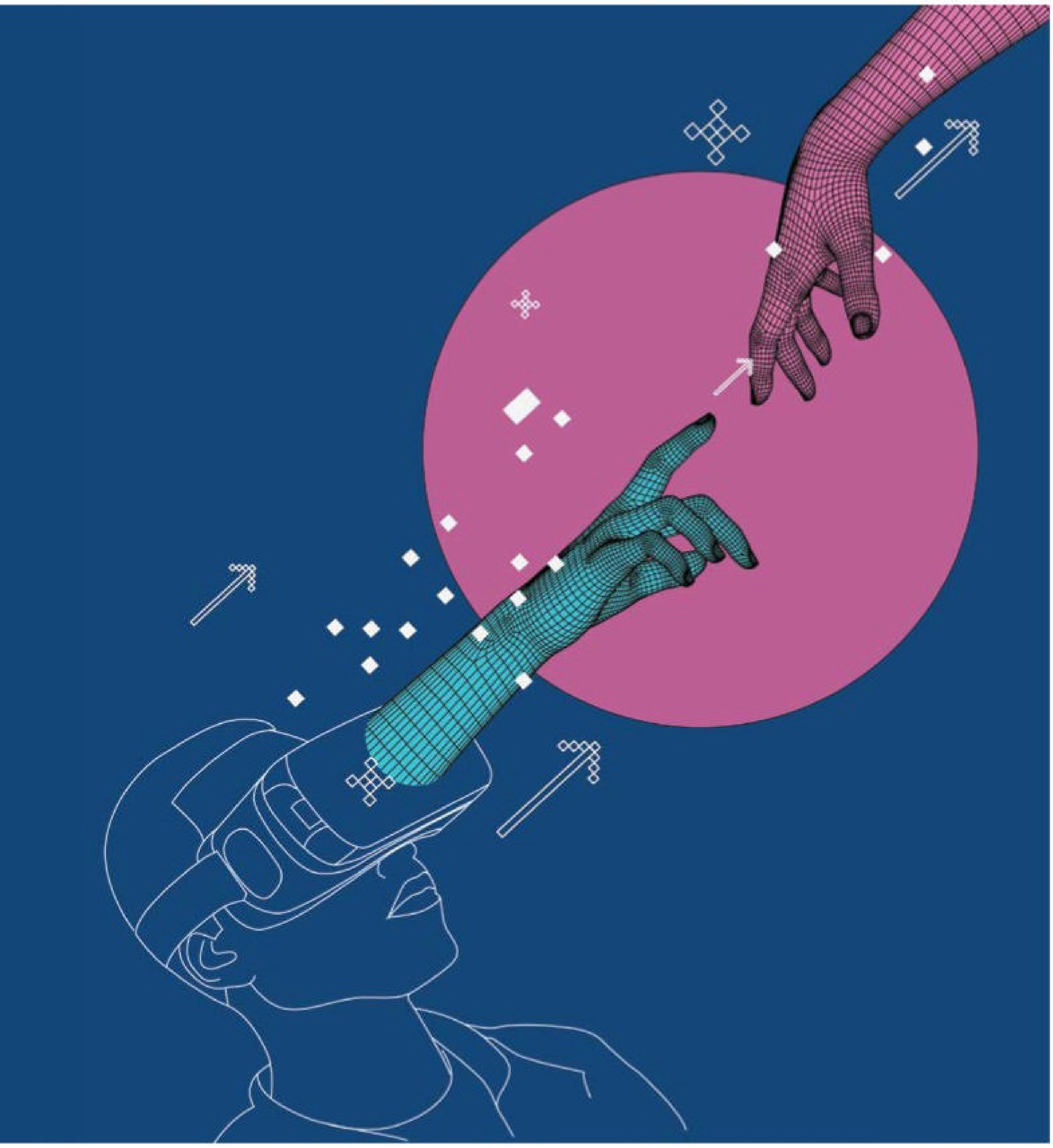


ILLUSTRATION BY **RAJ VERMA**

In the metaverse, based on the underlying platform that powers it, one can fly around defying physics or better yet, teleport to any virtual world

of losing sense of surroundings.

Wouldn't it be nice if a regular pair of spectacles like an AR headset in the future allows you to switch between the real world and the virtual world. While most of today's all-in-one AR headsets are bulky, expensive and have limited computing power, the smartphone-tethered ones are lighter and utilise the phone's processing power. As of today, a powerful VR headset is about eight times cheaper than a good AR one and thus VR will enjoy good market share in the headset space. AR headset costs will eventually become affordable but the big potential I see today is with a smartphone-based AR experience.

Education at school and college levels has already witnessed tremendous upsurge in the use of AR. A natural extension to the traditional AR experience is through the metaverse where students can connect with each other in virtual labs through regular smartphones and learn content collaboratively. In the manufacturing sector, employees at distant sites can collaborate using traditional smartphones via AR and work together on a holographic digital twin of a network of machines. Likewise, when it comes to sales, virtual customer experience centres can be made available with the click of a button for a customer and enable her to not just interact with the holographic display of products but also have a virtual discussion with the sales team from the experience centre.

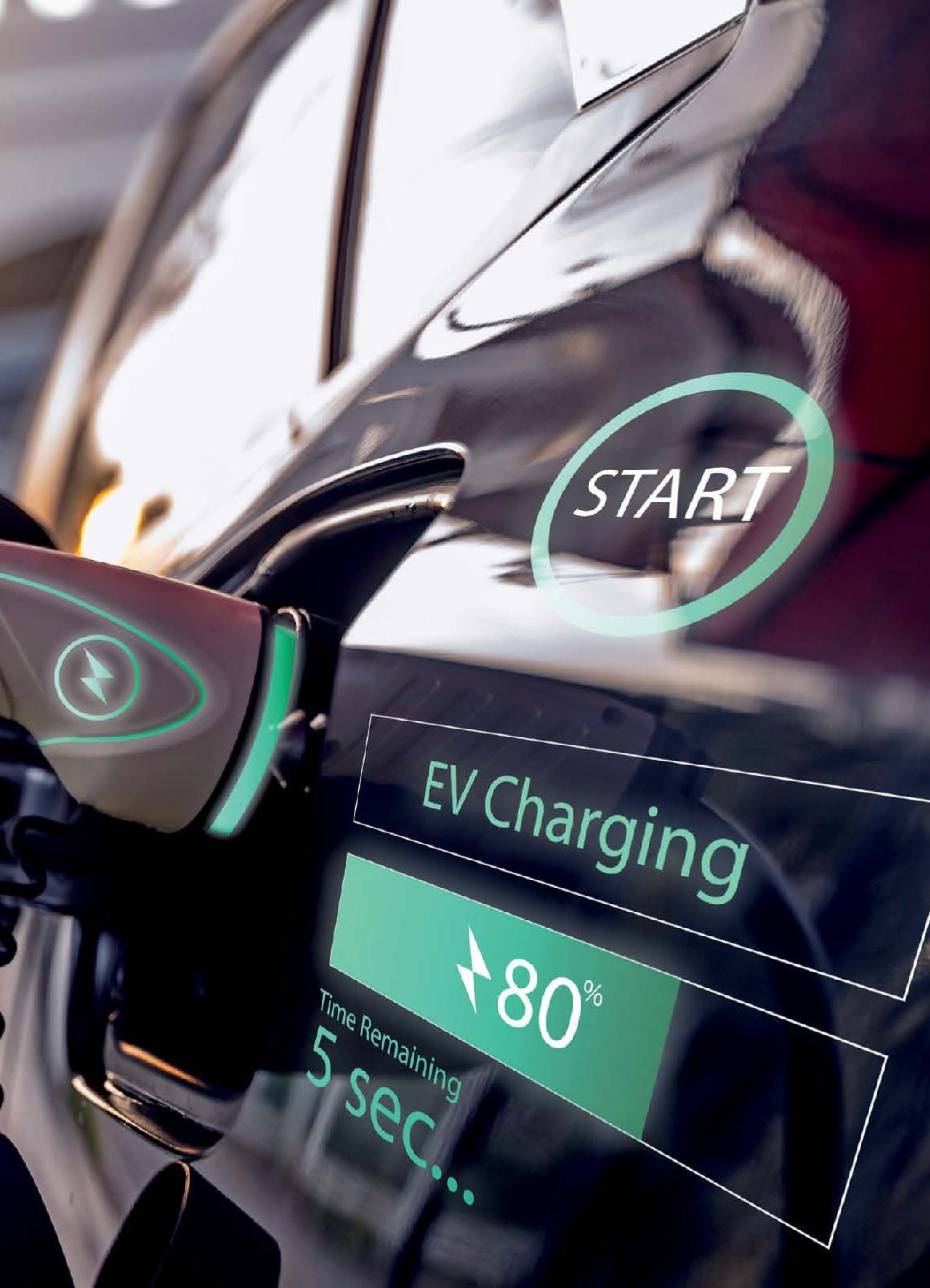
Niantic, the parent company of AR game *Pokémon GO*, is building an AR metaverse to enable a new era of gaming where users can create and share unique experiences with other members. It may be possible that every such experience can then be sold off as a non-fungible token (NFT) in blockchain-based marketplaces, thus creating a much larger value chain.

Epic, Grayscale and a few other organisations have predicted the metaverse market to be worth $1 trillion in the next few decades. If this were to happen, while VR is playing its role in enabling metaverse experiences, I firmly believe smartphone-based AR metaverse experiences will need to take off and that will provide the thrust for the market to reach the estimated numbers. BT

THE GREEN QUESTION

ALL INDICATIONS POINT TOWARDS LARGE-SCALE EV ADOPTION IN THE COUNTRY IN THE NEAR FUTURE. BUT WILL THE CHALLENGES OUTWEIGH OPPORTUNITIES IN THE LONG RUN?

BY **PRERNA LIDHOO**


START
EV Charging
80%
Time Remaining
5 sec...

IN THE LAST THREE MONTHS, petrol prices in the national capital have averaged at around ₹100 per litre. That means for a daily commute to work of around 30 km, on an average a Delhiite has to shell out nearly ₹12,000-14,000 per month. An electric car for the same distance will cost ₹2,900 a month to run. Undoubtedly, electric vehicles (EVs) have a good case purely from the cost of running perspective yet they still make up merely 1.5 per cent of the total automotive sales. Challenges like range anxiety, high battery prices, lack of charging infrastructure, etc., continue to keep first-time EV buyers at bay. Plus, people think EVs are not really all that green since the source of electricity is still mostly fossil fuels. “It’s not correct to think that EVs are not all that clean. You’re replacing the diesel and petrol. Electricity is the new fuel and the grid is getting greener which is a good thing. Yes, for now, it’s not as green,” says Mahua Acharya, Managing Director and CEO, Convergence Energy Services Ltd (CESL).

Experts say that charging systems are beginning to become cleaner. The industry acknowledges that it’s not 100 per cent clean fuel but people like Acharya are still betting on EV adoption because of one very important reason: health of citizens gets affected by ambient air pollution as they’re breathing 3-4 times more toxic fumes on the city roads due to tailpipe emissions.

State-run CESL has recently floated an initiative called ‘Grand Challenge’ which aims to create demand for electric buses aggregated across nine cities. This new-age public sector undertaking (PSU)—a wholly-owned subsidiary of Energy Efficiency Services (EESL)—is working on EV adoption at a large scale. “The next big chunk is that we have to liberalise the business of making

THE BIG EV PLAN

WHAT THE GOVERNMENT WANTS TO ACHIEVE OVER THE NEXT FEW YEARS

1

The power ministry in its revised ‘Charging Infrastructure for EVs’ guidelines said one charging station will be present in a grid of 3x3 km; one every 25 km on highways; a fast charge one every 100 km

2

Public charging stations will be rolled out in a phased manner—Phase 1 (1-3 years): In all megacities with a population of 4 million+; all expressways and big highways will be connected to megacities

ELECTRIC RISE

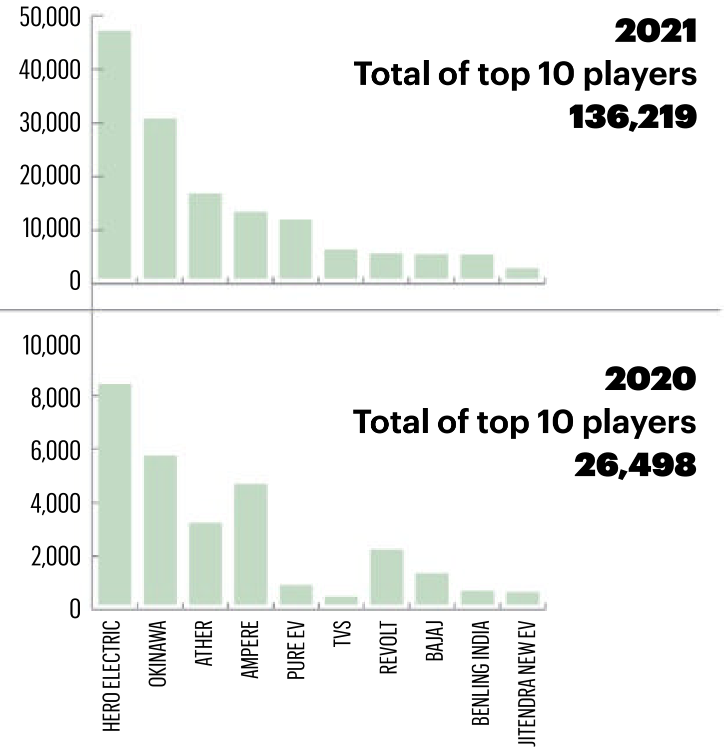
ELECTRIC VEHICLES PENETRATION BY FY25 SHOWS PHENOMENAL GROWTH

EV penetration estimate	FY20	FY25
Electric two-wheelers	<1%	13-15%
Electric three-wheelers	<1%	30%
Electric buses	1-2%	12-15%
Light commercial vehicles	Negligible	8-10%
Electric passenger vehicles	<1%	6-8%

Source: *ICRA Research*

TWO-WHEEL DRIVE

CUMULATIVELY, TOP 10 ELECTRIC TWO-WHEELER MAKERS SAW MORE THAN 400% GROWTH IN 2021



Data is for respective calendar year
Source: *Vaahan/SMEV*

charging stations and the grid green. That's necessary to help close the loop. But is it really significant right now? No, because we hardly have any vehicles on the road. That doesn't mean we don't think about it," Acharya adds.

ACCORDING TO THE Society of Manufacturers of Electric Vehicles (SMEV), total EV sales in India are expected to be around 1 million units by the end of this year, surpassing the number collectively sold by the industry in the last 15 years, mainly riding on the good traction witnessed by electric two-wheelers (E2Ws). In 2021, the sales of E2Ws in the country jumped over two-fold at 233,971 units, driven by a good traction of high-speed scooters as compared to 100,736 units in 2020. "EVs are the first step and not the end. In the next 5-10 years, the market will see organic growth. The next phase of growth will also come from rural and Tier II and Tier III markets. One year back, there was a push in the market but now there's pull. Only the vehicles that are able to compete with ICE [internal combustion engine] vehicles will survive in the long run," says Jeetender Sharma, MD and Founder of Okinawa Autotech.

Okinawa recently crossed domestic sales of 100,000 units of its electric scooter models on the back of its IPraise+ and Praisepro scooters which are locally manufactured. The company has expanded its operations to over 400 dealerships in India, including metro cities, Tier II, Tier III and rural markets in the country. Sharma feels that the market for EVs is already there. In 2019, the industry sold around 21 million two-wheelers, achieving

3

Phase 2 (3-5 years): Big cities, state capitals and headquarters of Union Territories will be covered along with highways connected to these megacities

4

By 2030, India has set a target of 30% EV sales penetration for private cars, 70% for commercial vehicles, 40% for buses, and 80% for two- and three-wheelers

5

So far, 14 states including Delhi, Andhra Pradesh, Maharashtra, Madhya Pradesh, Uttar Pradesh, Gujarat, Kerala, Punjab, Tamil Nadu and Bihar have announced EV policies

6

Starting this July, public sector undertaking CESL will supply 5,580 electric buses in major cities like Bengaluru, Delhi, Surat, Hyderabad and Kolkata

the highest-ever sales mark. In 2020, due to the pandemic this number came down to 17.5 million while last year the industry sold around 16.5 million two-wheelers. "This year, it will be somewhere around 15.5 million. There is already the gap of 5 million vehicles from 2019 to 2021. Now everyone is talking about EVs and I think that gap in the market is going to be captured by EVs only," Sharma adds.

He also makes a case for detachable batteries being the future. "Electric two-wheelers don't really need charging stations. They can have detachable, fast-charging batteries and people can charge it anywhere like a mobile device. Our EVs can charge 80 per cent in 45 minutes. We need to create awareness in the minds of consumers who are stuck on charging infrastructure being the be-all and end-all of E2W adoption," says Sharma.

According to the 2017 FICCI and Rocky Mountain Institute report, titled 'Enabling India's Transition to Electric Mobility', India's shift to shared, electric and connected mobility in the passenger vehicles segment could help save nearly 1 gigatonne of carbon dioxide emissions by 2030. Energy experts feel that given India's targets of achieving 50 per cent of energy by non-fossil fuels by 2030, EVs are an inevitable way forward. "While today the share of fossil fuels in the whole energy mix is high, as EV deployment on a large scale happens, the renewable energy share will keep increasing on an annual basis. So the dynamics would change. The share of renewable energy has gone up to about 10-12 per cent. As big players like Reliance, Adani and Jindal are committing big investments, we're hoping for favourable results," says Vibhuti Garg, Energy Economist, Lead India at Institute for Energy Economic and Financial Analysis (IEEFA). "We need 30 GW of annual installation which might not happen in the next 2-3 years but post that India will witness 25-30 GW of annual installation," she adds.

"We have to liberalise the business of making charging stations and the grid green"

MAHUA ACHARYA
MANAGING DIRECTOR AND CEO, CESL

Apart from the challenge of making the grid greener, another challenge that the industry faces is battery prices. Batteries account for nearly 50 per cent of the total cost of an electric vehicle. While the prices of lithium-ion batteries used by most EVs have dropped 73 per cent over the last six years, it is still expensive for an EV manufacturer to sustain for the long haul. Since India does not have any lithium deposits, R&D labs across the world are working on making it a viable business proposition. "While this does present a challenge to setting up a viable battery manufacturing plant in India, it also means that companies must look for other options to power such vehicles. Another challenge is electricity generation for batteries. How additional capacity can be created for electric generation? The plan should consider renewable options over fossil-based options, ensuring the dream of an all-electric passenger vehicles fleet is realised with minimal carbon footprint," says a Grant Thornton report.

The other piece that we need to address sooner rather than later, Acharya says, is what happens to batteries after they finish their life in transportation. "The first generation of old batteries will probably come from buses. It's not critical mass for any company to make an investment today but we need to build out this repurposing segment because there's a life of these batteries after you finish them in a car. You can use them for rural electrification, for storage to light up street lights or backup power," she adds.

SMEV Director General Sohinder Gill says battery disposal is going to be a serious problem and it has to be seen from two points: one is policy intervention to make sure that batteries are recycled and the second part is that it has to be economically viable to recycle. "That's beginning to happen at the R&D stage. If you take an old lithium-ion battery and try to

"Today, EV volumes are hardly 2% of industry volumes. The day it becomes 15-16%, perhaps the energy will also be cleaner"

SOHINDER GILL
DIRECTOR GENERAL, SOCIETY OF MANUFACTURERS OF ELECTRIC VEHICLES

take out its minerals and recycle, and make use of those imports then you have an economically viable business there," he says.

Experts say that the time is not far off when disposing of batteries will be a viable business model. "In 3-4 years, there will be big businesses created in recycling of lithium batteries which will include laptop, telephone and EV batteries," he says.

India's energy import bill is expected to double from around $150 billion to $300 billion by 2030. "The shift to EVs will also help reduce India's energy imports where it looks to cut the oil import bill to half by 2030 and reduce emissions as a part of its commitment to the Paris climate treaty," Sridhar V., Partner, Grant Thornton Bharat LLP, wrote in the report.

ACCORDING TO A REPORT by RBSA Advisors, a transaction advisory firm, the EV market is expected to grow at an estimated CAGR of 90 per cent from 2021 to 2030 and be worth more than $150 billion by 2030.

Experts have also identified rooftop solar options to solve the problem of a greener grid. "If individual houses or businesses can combine rooftop solar and EVs, it kind of provides like a mobile storage. When you have excess, you store your energy in EV and you use solar rooftop to meet your electricity needs. In a decentralised manner, discoms can promote it. That is what we're propagating," says Garg of IEEFA.

Stakeholders of the industry are confident that EVs are the future and it's just a question of when and not if, they say. "EVs are not going to happen overnight. The government's plan of overlapping EVs with cleaner energy is well on track. As EV adoption progresses, the electricity comes out cleaner from the renewable sources of energy. Today EV volumes are hardly 2 per cent. The day it becomes 15-16 per cent perhaps the energy will also be cleaner. You can't stop one thing for the want of another. Both have to work in tandem," says Gill of SMEV.

According to a joint report by Colliers and Indospace, the EV segment in the country is likely to witness investments of $12.6 billion, or ₹94,000 crore, across the automotive value chain, over the next five years. Tamil Nadu currently is the frontrunner, accounting for about 34 per cent share in total planned investments for EVs, followed by Andhra Pradesh and Haryana, with a share of 12 per cent and 9 per cent, respectively. There are a bunch of startups already looking at the EV sector as one of the fastest-growing investment arenas. Bengaluru-based clean mobility start-up Micelio has an $18-million fund that is the country's first seed fund aimed entirely at clean mobility. "We see a huge opportunity for growth in the EV market. We are working towards powering innovation and driving long-term, sustainable change in the clean mobility space, and our strategy is in tandem with the government's plan of promoting electric mobility in the next decade," says Shreyas Shibulal, the Founder Director of Micelio.

Industry players say that the government's Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) II scheme and rising fuel prices have been a contributing factor towards the growing contribution of EVs in the country. But the key now is scale. "It's a chicken-and-egg situation. Till the time you don't create volumes you don't reduce costs," says Gill who is also the CEO of Hero Electric. Hero Electric sold over 65,000 e-scooters in India, the maximum units in the year 2021, and commands a lion's share of 36 per cent of the market.

$12.6 BILLION

LIKELY INVESTMENTS INTO INDIA'S EV SPACE OVER THE NEXT FIVE YEARS

From Kinetic Honda to Bajaj Chetak, the quintessential Indian middle class has always embraced the scooter as their preferred mode of transport and experts believe that electric mobility will be the next big disruption in the entire two-wheeler space. McKinsey forecasts sales of 4.5 million to 5 million units, or 25-30 per cent of the market in FY25. Both startups like Ola Electric, Ather Energy, Okinawa Autotech, Ampere Vehicles, etc., and legacy companies like Bajaj Auto, TVS Motor, Hero, etc., are competing for a larger share of the pie. "People will stop thinking about ICE in a few years. Any technology changes like in the case of ICE engines to EVs follows a normal curve from early adopters to early majority, to mass majority, etc. It's a question of how compressed this curve is. In the case of mobile it was three years. It is expected to be 7 years for EVs," says Gill.

Till about five years ago, not many people were buying these vehicles as there was no positive word of mouth, but since the cost of acquisition has come down and there have been improvements in the supply chain, the industry is finally seeing a positive momentum. "The key is to make them lighter and stronger. The vehicle for the future will have a lot more electronics, be safer and [have] self-diagnostics. The Indian customer is so conscious of the value equation that we'll have to create products keeping that in mind. They would need the same quality that comes from the ICE engine," says Gill. BT

@PLidhoo

THE MASTERMIND BEHIND INDIA'S LARGEST GCC:

DR. DURGA PRAKASH DEVARAKONDA

From being a college student in a small town to becoming the recipient of the Mahatma Gandhi International Leadership Award and a Guinness World Record Holder; Dr. Durga Prakash's journey is an inspiration for the youths of today!

Born & raised in the small but ambitious town of Andhra Pradesh, he believed right from the start that no boundaries could ever stop him from converting his dreams to reality. Technology fascinated him the most & in it, he found the passion of his life. Graduating from a government college, he completed his MIT from the Manipal University of Higher Education. He also completed the Advanced Management & Leadership program from Harvard Business School.

He began his career as the Managing Principal Consultant at Capgemini Invent, a powerhouse of innovation, design & transformation. Thereafter, he joined Oracle in the year 2000 as a senior consultant, playing a formidable role in executing the business plan & building a 300 people team with a revenue stream of over $350 Million.

Currently, he is Staff Vice President-Technology of a Fortune 23 Global Healthcare Firm managing over 4000 Digital, AI & cloud experts. Out of the 1400 Global Capacity Centres (centres that handle operations & IT support to boost productivity), the one that falls under his leadership is the largest & fastest-growing GCC in India with over 17,000 employees. He is a firm believer in creating employment opportunities & building an effective talent pool. He has already helped generate 20,000+ employment opportunities in India through his work & contributions across various GCCs.

He says, "My first and foremost aspiration is to generate more jobs in India. I envision accomplishing that by establishing Global Capacity Centres in India."

He visions utilizing the immense capability of new-age technologies like Machine learning & AI to help healthcare providers make better decisions. He believes that machine learning algorithms can treat contagious diseases, personalize medical treatments, and help nurture the process of preventive healthcare.

Over the years, he has built an unrivaled proficiency in analytics. He is an expert in Artificial Intelligence, with a deep understanding of subjects such as Blockchain, Machine Learning, Semantics, Deep Learning, Computer Vision & Natural Language Processing. He has worked & contributed to the growth of multiple tech giants like Capgemini, Oracle, Accenture, Temenos, Legato & more. He has played the role of the Vice President of Accenture, served as the Founder & CEO of Karvy Analytics, India's leading Financial Services Firm.

Dr. DP is a team player & finds himself lucky to have mentors guiding him on the right path to excel at the fast-paced & dynamic culture of MNCs & top IT companies.

Alongside, his efforts at combatting cyber threats have been remarkable. He has established his reputation as a recognized global leader for Threat hunting & artificial intelligence as an esteemed board member of the Global Cyber Security Forum. He has played an active role as an advisory board member of multiple ISBs & IITs as a mentor, guide & inspiration to thousands of Engineering students.

He is a responsible citizen and has been an active contributor to various CSR (Corporate Social Responsibility) events for over 2 decades.

Having dedicated 25 years of his life to the IT Industry, he has mentored thousands, created job opportunities for over 20,000 people in India in the IT & ITES Industry. He received the Mahatma Gandhi International Leadership Award from the British MP and received a Gold Medal from the International School of Protocol, Washington. He has recently been felicitated with Asia's Most Influential Young Leader Award. Dr. Durga also has a Guinness World Record to his name for organizing the world's largest Digital Event with an attendance of over 1,00,000 audience to chant prayers of a Hindu deity.

Dr. DP has made a striking difference with his contributions to the IT & ITES Industry & his Global Leadership skill & vision of contributing to India's development ultimately set him a class apart.

The Road to EV-Nirbhar Bharat

As time ticks by, it's getting increasingly apparent that India's EV growth focus is on public transport and two- and three-wheelers

BY **NAVEEN MUNJAL**, MANAGING DIRECTOR, HERO ELECTRIC

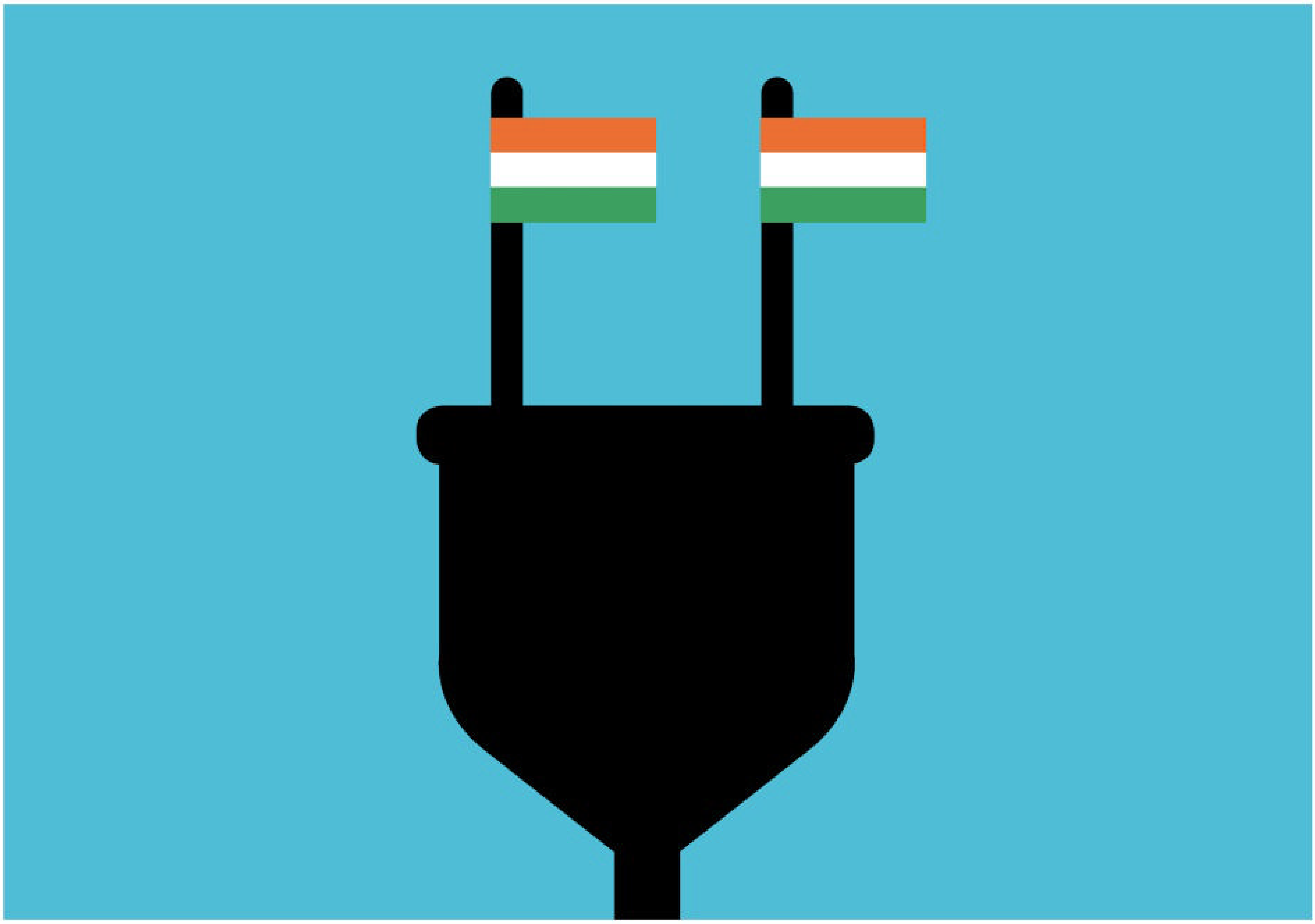


ILLUSTRATION BY **ANIRBAN GHOSH**

I

IT TAKES less than a keen eye to notice that we are in the midst of a critical transition with regard to mobility in India. The more-than-noticeable shift from internal combustion engines powering our vehicles to electric mobility is a cornerstone that, for a multitude of reasons, we must turn. As early adopters and firm believers to that line of thinking, we are gearing ourselves up for what will surely be an exciting future ahead. That said, it's not as simple a matter as 'Plug and Play'. As with any good structure, a solid foundation needs to be in place and, in this case, that foundation is building up an appropriate infrastructure and ecosystem to support the electric revolution.

To its credit, the Indian government has already stepped in and played its part to a great extent. We've made a commitment to becoming a net-zero emission country by 2070, and laid out ambitious-yet-achievable plans of having EV sales penetration of 30 per cent for private cars, 70 per cent for commercial vehicles, 40 per cent for buses, and 80 per cent for two- and three-wheelers, all by 2030. These are important numbers that show we mean business, and the government's revised FAME II subsidies and state EV policies have so far proven to be quite conducive to EV adoption. So while the signs are good, it's not the complete picture. There are still a number of glaring roadblocks for India to overcome.

For a start, even with the subsidies in place, on an average, the initial cost of an electric vehicle can still be considered high. It's not hard to see why, either: a shortage of supply of raw materials, availability of battery manufacturing, swappable battery technology—they're all sore points for India currently. In addition to that, the lack of a widespread network of charging stations, the very real fear that is range anxiety, and the limited amount of financing and resale value of second-hand vehicles—they're all barriers that we need to overcome.

The most obvious solution is for a greater synergy amongst OEMs, EV players and the government along with state and central policies to bolster the EV adoption. Once that comes into play, it will be pivotal to ensure that the entire supply chain is trained by OEMs to be onboard with new practices involving electrification of vehicles.

However, it would be prudent to note that there has been considerable traction as far as India's tryst with electrification goes. As time ticks by, it's getting increasingly apparent that India's EV growth focus is on public transport and two- and three-wheelers. Demand is getting increasingly significant in these sectors, and OEMs, battery manufacturers, suppliers, dealers, and power utilities are all doing their utmost to satisfy said demand. Not just that, several B2B and B2C partnerships and associations between OEMs, battery producers, and other suppliers have been struck, and plenty more are in the works. It's exciting to think of how these tie-ups will help catalyse the development of EVs and the supporting network in the coming years.

Inadvertently, this will also give rise to plenty of new business opportunities and investments. As per recent reports, a sizeable investment of ₹94,000 crore across the automotive value chain will be made over the next five years, which will give the space a well-deserved fillip. We will, as a country, require about 26,800 charging spots by 2025, roughly amounting to about 13.5 million sq. ft of space.

Speaking of space, this can provide real estate players an opportunity to capitalise on this transition by providing charging stations in their locations or even providing warehousing materials. Setting up multiple charging options at their sites will afford increased accessibility and a certain degree of future-proofing, which is beneficial to all parties involved. There will also need to be a fair amount of harmony between the automotive and power sectors when it comes to resources and energy. This will facilitate domestic manufacturing of vehicles, batteries, and EV supply equipment.

As per recent reports, a sizeable investment of ₹94,000 crore across the automotive value chain will be made over the next five years, giving the space a fillip

As per JMK research data, India witnessed a 132 per cent increase in sales in two-wheeler EVs in 2021 over the same period the year before and, recognising this, we've partnered with multiple last-mile solution startups like Turtle Mobility, BattWheelz Mobility, and even with electric fleet start-up MoEVing to deliver a sizeable number of Hero EVs in the coming years.

The market for electric two-wheelers in India is tremendously exciting right now. There are, despite the limitations listed earlier, tremendous opportunities to grow. The Centre and state policies are indeed helping push the sector forward massively, but there's always more that can be done—by us OEMs in providing customers with excellent products and customer service at a price point which would actually enable them to save money while providing them personal mobility; as customers to be open to adopting new technologies; by B2B operators to begin converting their gas guzzling and polluting fleets to cleaner EVs; by cities to mandate and enable the conversion towards electric. A strong positive push from us, along with other OEMs and the government will allow us to hit the net-zero goals we're aiming for much quicker than committed, not to mention completing the highly anticipated conversion to electric vehicles. The future is bright! The future is green! The future is electric! BT

DAUNTING PLEDGE

INDIA HAS COMMITTED TO DIFFICULT TARGETS FOR REDUCING CARBON EMISSIONS DESPITE NOT BEING AMONGST THE TOP EMITTERS. WHILE THAT IS PRAISEWORTHY, THE NEXT DECADE WILL TEST THE PATH TO REACH THAT PROMISE

BY **NIDHI SINGAL**
ILLUSTRATION BY **ANIRBAN GHOSH**

THE WORLD IS IN A climate emergency—decades of carbon emissions have left us all (on Earth) with just about seven and a half years before global temperatures hit a critical high and the effects of global warming become irreversible. To limit global temperature rise to 1.5° C, we need to cut emissions in half by 2030 and reach net zero by 2050. The world is acting now, and even though India is not amongst the top three carbon emitters, it has decided to take a leadership role in finding solutions.

Joining an increasing list of countries promising to achieve net zero emissions targets, India has promised to cut its carbon emissions to net zero by 2070 (albeit missing the goal of reaching the target by 2050). At the COP26 summit, India announced targets for 2030, too, which include 500 GW of non-fossil fuel-based electricity generation capacity; 50 per cent share of renewables in the energy mix; reducing carbon emissions by one billion tonnes, and reducing the country's emission intensity (emissions per unit of Gross Domestic Product) by 45 per cent from 2005 levels. Even though India's per capita energy use is lower than most developed nations (972 kilowatt-hours vs 12,235 kilowatt-hours in the US in 2020 as per Our World in Data, for instance), its per capita energy consumption will surge multi-fold from the current levels in the next 50 years.

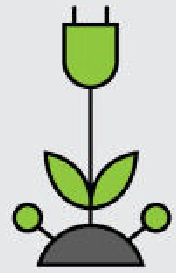
INDIA'S 5 GUARANTEES TOWARDS CLIMATE ACTION

A look at how the country plans to deal with climate change

- Achieve net zero by 2070
- Increase non-fossil energy capacity to 500 GW by 2030
- Meet 50 per cent of energy requirements from renewable energy by 2030
- Reduce total projected carbon emissions by one billion tonnes from now till 2030
- Reduce carbon intensity of the economy by less than 45 per cent by 2030

THE PATH TO SUCCESS

What India needs to do in order to fulfil its pledge to the world



- Focus on renewable power, close down old and inefficient coal-fired power plants
- Focus on new technologies and their commercial viability such as green hydrogen, storage, batteries
- Increase adoption of electric vehicles, make them affordable, and increase charging points.

Achieving the commitments makes for an arduous task ahead, and would require all the major stakeholders—government, policymakers, corporates and even citizens—to come together and collaborate. "India is known to have limited contributions to GHG inventories historically and has very pressing growth imperatives. The country is growing through rapid urbanisation and industrialisation, leading to growing demands for energy. India is aiming to nearly quadruple its economy from around \$2.75 trillion today to about \$10 trillion by 2030. Doing it with the desired climate change objectives will need sectoral transformations that are effective and equitable," says Atul Bagai, Head, UN Environment Programme, Country Office, India.

As 2070 is about 50 years from now, and many uncertainties prevail on the technology innovation front and financing models for good development, to reach its net zero goal, the country will need to make significant progress in lowering emissions starting now.

Solving the net zero equation will require many critical unlocks from the government. Companies, too, will have to get into the net zero arena with some urgency. "There are five industries that contribute to the majority of our emissions—this includes power (more than 40 per cent of our emissions), iron and steel, cement, transportation, and agriculture. These are followed by other industries like refining, chemicals, etc. These are the areas where substantial investments will need to be seen over the next few years to reach our net zero targets," says Rajat Gupta, Senior Partner, McKinsey & Company.

ENERGY TRANSFORMATION

The energy sector accounts for ~40 per cent of the GHG emissions of the world's fourth-largest emitter of carbon emissions. India's energy generation depends on fossil fuel (59.8 per cent), with coal alone contributing to 51.7 per cent and renewable energy contributing to 38.5 per cent. Yet there is a pressing need to decarbonise the energy sector, which would require replacing fossil fuels with renewables, reducing fossil CO_2 emissions from old power plants, and removing unavoidable carbon emissions through carbon sequestration. "Estimates show that in order to achieve net zero in 2070, installed power capacity on solar should increase to 5,630 GW, use of coal needs to peak by 2040 and go down by 99 per cent between the years 2040 and 2060, and crude oil consumption should peak by 2050," says Bagai. India has already taken several initiatives to

- Industries to work on demand-management, energy-efficiency improvements; shift towards electrification; carbon capture, utilisation and storage (CCUS); and use of low-carbon fuel-technology choices
- Corporates to reduce scope 1, 2 and 3 emissions
- Have strong policy framework and implementation
- Source funding (from developing countries) for supporting the environmental goals

WHAT'S ACHIEVED SO FAR

India has made big strides in renewable energy

- India now at 4th global position for overall installed renewable energy capacity
- Renewable energy has a share of 26.53% in the total installed generation capacity in the country
- Renewable energy installed capacity increased 286% in the past 7.5 years
- Solar capacity increased in the past 7.5 years from around 2.6 GW to more than 46 GW
- Highest ever wind capacity addition of 5.5 GW in 2016-2017

2070

India has promised to cut its carbon emissions to net zero by 2070 (albeit missing the goal of reaching the target by 2050)

SOURCE: MINISTRY OF NEW AND RENEWABLE ENERGY

push for renewable energy through solar and wind. In April last year, the government announced a Production Linked Incentive Scheme—National Programme on High Efficiency Solar PV Modules—to achieve gigawatt (GW) scale in high efficiency solar PV modules. In August, it proposed a set of rules for promoting the country's purchase and consumption of green energy. The latest is the infusion of ₹1,500 crore in the Indian Renewable Energy Development Agency (IREDA) for helping create renewable energy capacity of 3,500-4,000 MW and enabling lending of ₹12,000 crore to the renewable energy sector.

"India's situation is particularly challenging since it is among the largest high-growth economies and growth is energy hungry. The second challenge is the large high-carbon installed capacity base that has economic life left and, hence, is not easy to unwind. However, new assets will necessarily have to be low carbon and existing high-carbon resources will have to be progressively retired," explains Anish De, National Head – Energy, Natural Resources and Chemicals, KPMG in India.

Another big bet is hydrogen, which the International Energy Agency believes can help India meet different energy challenges. The clean energy sourced from hydrogen is believed to help many industries decarbonise sectors such as power, steel and oil refineries, cement factories, ports and logistics. Focussing on meeting its climate targets, Prime Minister Narendra Modi had announced the National Hydrogen Mission, and India's big players have already entered this space.

However, just adding generation capacity isn't going to help. "Implementation of reforms in the distribution segment remains important," says Rohit Ahuja, Head of Research and Outreach, ICRA Limited.

FIXING TRANSPORTATION

As the next decade will set the template for achieving 2070's goals, India's emission reduction targets for 2030 also prioritise transportation. The mobility sector contributes to almost half of India's overall oil demand and is unsustainably inclined towards road-based transportation. There is also a need for a shift in modal mix from road to rail, and fuel diversification from biofuels, CNG, LNG to electricity and hydrogen in the medium to long term. Electric vehicle (EV) penetration, the high upfront cost of EVs, and the lack of charging infrastructure are some of the immediate steps India should focus on. In 2015, the government adopted the Faster Adoption and Manufacturing of Hybrid and EV (FAME) scheme that provided subsidies for electric two- and three-wheelers, hybrid and e-cars and buses. This policy was scaled up with FAME II that provides upfront incentives on the purchase of EVs and supports the deployment of charging infrastructure.

TACKLING EMISSIONS

While India is heavily focussed on the energy sector and transportation, industry leaders believe it will have to make significant progress in lowering emissions in manufacturing, urban transportation, agriculture and food, amongst others. Manufacturing is a major contributor to India's GHG emission inventory. Iron, steel, cement, chemicals and fertilisers contribute dominantly to industrial CO_2 emissions. But controlling carbon emissions is challenging in the backdrop of a fast-growing economy.

"However, we have seen initiatives from certain corporates targeting net zero emissions at the entity level. Corporates are setting clean energy procurement targets to achieve their sustainability goals. Government can support initiatives and spread awareness," says Ahuja. But decarbonising these sectors will need a multi-pronged approach of demand-management; energy-efficiency improvements; shift towards electrification; carbon capture utilisation and storage; and use of low-carbon fuel-technology choices. Even the new investment decisions will have to be taken keeping decarbonisation in mind. De of KPMG says technical solutions exist in these sectors, but cost points will come down only with broader adoption.

Over the past decade, firms have been trying to reduce Scope 1 and Scope 2 emissions that are closer to the core but very few targets to reduce Scope 3 emissions—which make up 65-95 per cent of a company's emissions, according to the Carbon Trust findings—have been made. Evidently, the

"A total mindset change from all stakeholders has to take place in the next 10 years. After that, we will move to auto pilot"

SUNIL DUGGAL
GROUP CEO, VEDANTA LIMITED

"Most of the technologies required will be developed and mature over the next 10 years or so. If India wants to take the lead in becoming a global green manufacturing hub, this decade is the time to do it"

RAJAT GUPTA
SENIOR PARTNER, MCKINSEY & COMPANY

"In the power sector, policy clarity should be provided on the renewable purchase obligation, and there should be continued policy support for capacity and storage infrastructure"

ROHIT AHUJA
HEAD OF RESEARCH AND OUTREACH, ICRA LIMITED

impact will be limited if companies ignore Scope 3 emissions in their race to net zero. "Measuring emissions from direct (from a company's own activities), and indirect (from the generation of purchased electricity and along the value-chain) sources, implementation of strategy for reducing and finally eliminating these emissions and execution will be key to controlling emissions at entity level. For example, a company may find it simple to replace its cars with electric vehicles or to sign a contract for solar electricity or have its own captive RE plant," explains Ahuja of ICRA.

Other factors contributing to GHG are cities and agriculture. The former contribute heavily to India's GHG inventories, and the top 25 cities are estimated to have a share of more than 15 per cent in overall GHG emissions. Urban planning needs to account for transit-oriented urban development, reducing travel demands, intelligent transport infrastructure, and low-carbon buildings, construction and operations. While agriculture is not a major contributor to CO_2, it is a large contributor to nitrous oxide and methane emissions. There is a need to spread awareness on the issue, enabling farmers to adopt practices to reduce emissions of these GHGs. The use of solar pumps, precision agriculture, and sustainable animal husbandry are some options. Last but not least, Bagai says halting deforestation and restoring degraded ecosystems can reduce emissions.

NEED FOR BIG BUCKS

The success of interventions in these sectors will depend on the availability of finances. "Some estimates are now available. For example, the Centre for Energy Finance estimates that for achieving net zero, India will need about $10 trillion (₹700 lakh crore)," says Bagai. "About $8.4 trillion will be to scale up renewable energy generation and relevant infrastructure; and about $1.5 trillion for setting up green

PLANNED INVESTMENTS OVER THE NEXT DECADE

POWER GENERATION, CEMENT AND STEEL	
Power generation: To increase capacity of non-fossil fuels	₹35-45 lakh crore (includes investments towards transmission infrastructure and storage capabilities). Beyond 2030, ~₹6 lakh crore/year investments would be needed for renewables
Industry: Cement	o Cement companies in India have been investing in zero carbon footprint technologies to replace fossil fuel-based power generation with renewable energy and waste heat recovery systems (WHRS) o ₹1,400-1,700 crore (for WHRS in FY22) by some major cement companies
Industry: Steel	o JSW Steel to raise ₹3,700 crore via green bonds as company wants to cut carbon emission o Tata Steel in its capex plan of ₹50,000-60,000 crore over the next 5 years has made provision for making 5 million tonnes of steel through the recycling steel route
Transport	
CNG	₹1.8-2.2 lakh crore (includes 8th, 9th, 10th and 11th round by PNGRB)
Ethanol blending	₹28,000-32,000 crore (for ethanol production)
Biodiesel	Government floated 11 EoIs for 200 locations in the first phase of bio-diesel production. The first supply of biodiesel was given in May 2021
Hydrogen	o Oil refining companies (such as RIL, IOCL, etc.) are planning to add green hydrogen production capacities o Adani Group plans to invest ₹1.5 lakh crore in RE and hydrogen
Electric vehicles – two wheelers	₹7,000-9,000 crore by major players

SOURCE: ICRA LIMITED

hydrogen production for industrial decarbonisation." While this is an opportunity for India to unlock the huge potential of domestic investments through innovation in green finance instruments, there is also a need for the developed nations to meet their commitments and boost climate finance to developing countries.

Sunil Duggal, Group CEO of Vedanta Ltd, explains "A big chunk has to come from advanced countries who are responsible for creating the problem of climate change. Only a limited amount can come from the [Indian] government as the budget is limited and has so many competing claims. A significant portion can come from multilateral institutions in the form of concessional loans. The biggest part must come from the private sector, from banks, equity investors, as they shift focus from business as usual to the new, emerging sectors and technologies." He says at least $100 billion a year will be required to achieve this goal.

India will also need to adopt a clear and consistent taxonomy for green finance, which can reduce transaction costs, and develop a pipeline of green projects. The country must also explore a formal carbon pricing and trading framework to ensure that costs of climate change become a criterion for fuel and technological choices, and investment and lending decisions.

Gupta of McKinsey says most of the technologies required will be developed and will mature over the next 10 years or so. If India wants to take the lead in becoming a global green manufacturing hub, this decade is the time to do it. In view of growing energy demands and serious environmental concerns, the next decade will be crucial for India, to ensure delinking economic growth with carbon emissions. The government will have to continuously draw and redraw the overall policy framework for the energy transition. Industry must voluntarily and sensibly make operations sustainable, even if it means a compromise with profitability in the short run. Similarly, every stakeholder needs to ask itself if its every action is leading to making this world a better place to live or not. "Achieving net zero by 2070 will depend upon progress made by 2030. A total mindset change from all stakeholders has to take place in the next 10 years. After that, we will move to auto pilot," says Duggal of Vedanta.

The government would need to monitor the progress closely, on an ongoing basis. If things go right, this could be the biggest global story of the next decade—India rising as an economic powerhouse with sustainability and climate mitigation inextricably linked to it. No other country has attempted this so far. BT

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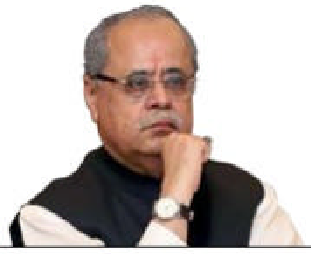

Needed: An Integrated Framework

To combat air pollution and climate change, India needs to have an integrated strategy towards both, through interlinked government programmes

BY **ATUL BAGAI**, HEAD, UNITED NATIONS ENVIRONMENT PROGRAMME COUNTRY OFFICE, INDIA

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OUR WORLD IS on the cusp of an environmental crisis—the triple planetary crisis of climate change, nature and biodiversity loss, and pollution and waste. Air pollution and climate change are two environmental challenges that we cannot ignore. More than 90 per cent of the global population is breathing polluted air. In developing countries, the problem is more serious. Due to dependency on traditional fuels, inefficient technologies and limitations on access to clean energy and capacities for enforcement of standards, air pollution levels in developing countries are found to be extremely high. In India, more than 70 per cent of cities do not meet the prescribed national standards for air quality. Implications are severe as an average person in the world is losing 2.2 years of life due to air pollution. For India, estimates show that about 1.67 million people die annually due to indoor and outdoor air pollution.

To add to this, increasing greenhouse gas (GHG) emissions are continuously making the world warmer. These gases have led to 1.1°C of warming since 1850-1900 and is expected to reach 1.5°C or even 2°C in the short term, unless immediate, rapid and large-scale reductions in emissions are being made. This is leading to increasing heat waves, intense rainfall, more intense floods and drought, sea level rise, and melting of glaciers, which are detrimentally affecting human society.

Based on the magnitude of their impact, we have to halt and reverse this march towards increasing air pollution and climate change.

The fact is that air pollution and climate change are the two sides of the same coin. Both are primarily caused by energy-based emissions. Continued reductions in both air pollutants and GHG emissions are essential and to our benefit; air quality and climate change management policies can be mutually beneficial. Interventions such as clean air measures can help in reduction of warming by control over short-lived climate pollutants (like black carbon particles, methane and ground level ozone). On the other hand, efforts to reduce long-lived GHG emissions may successfully and effectively end up reducing air pollution. It is evident that solutions to control air pollution and climate change are largely overlapping. For instance, India's adoption of Euro-VI equivalent vehicle emission standards will not only reduce vehicular pollution but will also lead to reduced carbon dioxide, black carbon and precursors to ground-level ozone, and hence, contribute towards climate change control. Similarly, renewable energy options, primarily designed for reducing GHG footprint, will also contribute to reducing pollution caused by coal-based power generation.

There is considerable interest as well as a need to understand the co-benefits of managing air pollution and climate change. Integrated management through strategies that provide benefits for both in a cost-optimised manner and the shortest possible time frames is the need of the hour. Research on co-benefits shows that climate policies which also tackle air pollution can generate additional environmental, health, social and economic benefits. But designing policies to combat climate change is complicated when predicting the complex interactions governing changes in climate and air pollutants.

There are multiple benefits of integrating efforts for mitigating emission sources of air pollution and climate change. First, it can provide a more comprehensive and stronger basis for drafting stringent policies for control. For example, the argument to shift to renewables or more energy efficient industrial technologies would be more compelling with inclusion of local air quality benefits along with global gains due to GHG reduction. Second, it can lead to more holistic and cost-effective planning of measures, which can provide co-benefits. Strategies can be prioritised based on their overall benefits and cost-efficiencies.

ILLUSTRATION BY **RAJ VERMA**

Third, it can avoid duplication of efforts and help build more synergies within the institutions responsible for control of two issues. Fourth, it can lead to enhanced national and global ambitions for control of two issues.

Considering the Nationally Determined Contributions (NDCs) and India's recent commitments at COP26, its ambition of National Clean Air Programme (NCAP) can be raised significantly. A TERI study showed that just by moving to the NDC trajectory, India will reduce its PM2.5 pollution by 13 per cent. And finally, it can enable development of technologies that can simultaneously ensure higher efficiencies and low pollutant emissions.

With similar sources, overlapping impacts and co-benefits of measures to control, climate change and air pollution ought to fall within the ambit of an integrated regulatory framework. The National Action Plan for Climate Change (NAPCC) and the NCAP are the government's two flagship programmes to tackle GHG emissions and air pollution, respectively. They individually focus on different strategies and are not interlinked. An integrated approach to control air pollution and climate change will help India enhance its ambitions and achieve faster results. An assessment can be done for the strategies listed in the two programmes for evaluation of co-benefits, and prioritisation. As a step in this direction, the Ministry of Environment, Forests and Climate Change has recently endorsed the development of a 'National Action Plan for the fast mitigation of Short-Lived Climate Pollutants', which will link up to NAPCC as well as NCAP. The work is supported by the UNEP-hosted Climate and Clean Air Coalition.

Now is the time for an integrated approach to fight air pollution and climate change, which could hopefully lead to the tipping point towards the mitigation of both

India is progressively taking steps to move forward for the two different agendas to become one. While domestically activities under NCAP are being implemented at different levels, globally, the commitments at COP26 are a step in the right direction. Integrated together, these efforts can provide an ambitious approach towards the daunting tasks of controlling air pollution and climate change.

Right now is the time for an integrated fight against air pollution and climate change, which could hopefully lead to the tipping point towards the mitigation of both. BT

CHAIN REACTION

THE EMERGENCE OF BLOCKCHAIN TECHNOLOGY IS EXPECTED TO BOOST INNOVATION IN MANY ASPECTS OF OUR LIVES THROUGH DECENTRALISATION AND REMOVAL OF INTERMEDIARIES, PROVIDING INDIA A UNIQUE OPPORTUNITY TO TAKE A DIGITAL LEAP

BY **TEENA JAIN KAUSHAL**

THE MUSIC INDUSTRY is no stranger to licensing disputes. There have been many instances when companies faced lawsuits because of improper media attribution or failure to pay songwriters. For example, Spotify, the world's largest music streaming service provider, settled a licensing dispute in the past with the National Music Publishers Association (NMPA) in the US over unpaid royalties. Later, to solve the attribution problems, Spotify acquired blockchain start-up Mediachain Labs, which has helped the company develop solutions via a decentralised database to better connect artists and licensing agreements with the tracks on Spotify's service.

Another example is Walmart where the blockchain technology has been efficiently leveraged to establish a system for food traceability. Here, each node of the blockchain showcases the entity that has handled the food before it reached the store. The whole supply process technology becomes easy and transparent, especially when there is a need to locate an infected batch back to a specific store.

Blockchain's first and most widely known use case was the cryptocurrency Bitcoin, but today it has spread its utility across a plethora of domains and sectors. "Blockchain

BLOCKCHAIN: WHAT'S COMING

Here are a few important use cases of the technology and how they will likely change in the future

1. **NON-FUNGIBLE TOKENS OR NFTS**
NFTs' potential goes far beyond rare and one-of-a kind digital artworks. From the video game industry to digital land purchases in the virtual world, NFTs have enormous potential.

2. **CENTRAL BANK DIGITAL CURRENCY (CBDC)**
When launched, the digital currency of the central bank will have the ability to do micro transactions at scale, thus taking some load off traditional banking networks.

3. **DIGITAL IDENTITY**
Today, we depend on passwords and verification questions to confirm our identity online. Digital identity in future can be based on a unique set of numbers assigned to each user on a blockchain network.

4. **HOME BUYING**
Buying a house can be a lengthy process due to a long verification process. This can be replaced through smart contracts, which can be used for various tasks ranging from managing property records to processing loan requests.

5. **HEALTH RECORDS**
Currently, healthcare providers are not able to share data with each other. With the use of blockchain technology they can exchange data and also integrate with insurance companies for quick settlement of claims.

6. **INTERNATIONAL REMITTANCES**
Traditional way of transferring money across international borders has been both expensive and slow. Through blockchain technology, money can be transferred in nearly real time without the need for intermediary banks.

has the potential to be a solution provider for any business, especially in securing and decentralising their data and automating contracts between parties via smart contracts," says Arjun Kalsy, VP Growth at Polygon, which is a protocol and framework that enables developers to build and connect Ethereum-based blockchain networks. "We are already working with multiple state governments including Maharashtra for a blockchain solution to provide Covid-19 certificates, while the Telangana government is working towards creating NFTs of folk artists, and Chhattisgarh and Assam governments are working on various use cases like land registration, court case registry, etc."

There are essentially two types of blockchains: public and private. Public blockchains are 100 per cent permission-less, which means that anyone can participate within the blockchain and can join the network. Experts say that the large-scale adoption of public blockchain can drive greater financial inclusion, data ownership and frictionless processes at the inter- and intra-organisational levels.

Moreover, blockchain can create opportunities on the socio-economic front, as it can create jobs on a large scale and usher in a new era of technology-led economic growth. "With blockchain, forward-looking companies (even those based out of Tier II, Tier III towns) will be able to build apps and platforms that seamlessly cater to a global user base, thereby boosting the 'Make in India, Make for the World' concept," says Om Malviya, Founder and President, Tezos India, which enables the use of Tezos Blockchain.

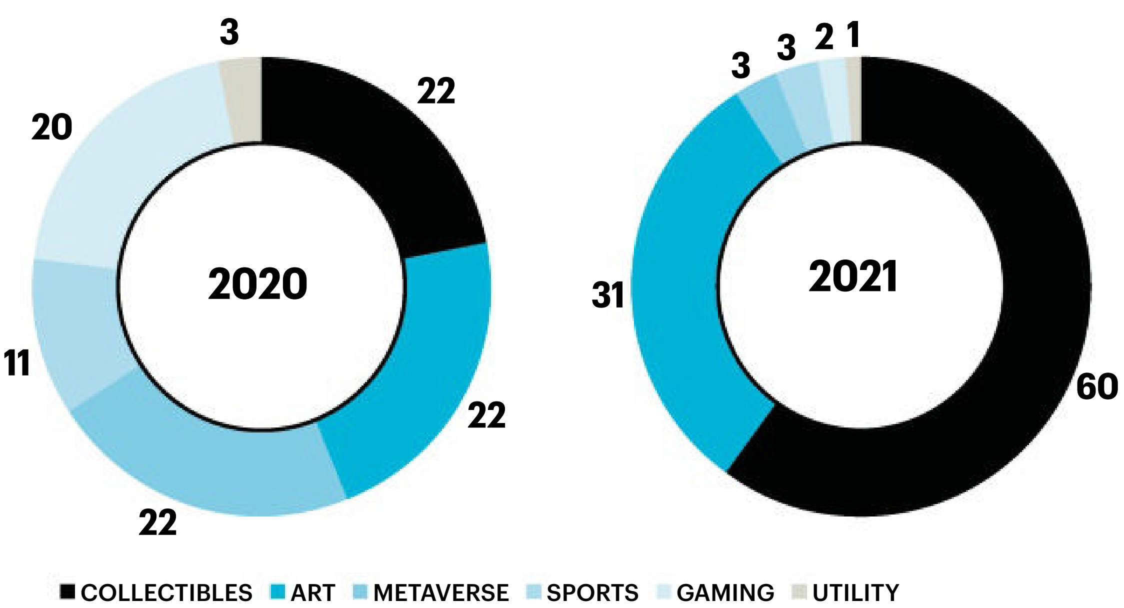
Neeraj Khandelwal, Co-founder of CoinDCX agrees. "Blockchain will have the same profound impact emails had to the workplace when it was first introduced. From logistics to supply chains, to finance and insurance, we are already starting to witness disruption at a scale never seen before, rapidly blurring the lines between legacy systems and new-age technologies. In the coming 7-10 years, blockchain technology will become the centrepiece of economies around the world, transcending the domains of e-commerce, healthcare, and public sectors," he says.

FRAMING THE FUTURE

Experts say blockchain has immense potential, as the technology is decentralised and is designed to be immutable. The records stored in a blockchain cannot be altered, and it can be of huge benefit for any organisation to permanently store asset transactions of property, land, stocks, etc. Despite numerous advantages, blockchain is

NFT SALES CATEGORY-WISE

Total NFT sales by category on Ethereum



Source: *Cointelegraph Research*

KEY FEATURES OF BLOCKCHAIN TECHNOLOGY

Here are some of the salient features of blockchain, which make it so useful

- Distributed ledger
- Real-time updates
- Chronological and time-stamped
- Cryptographically sealed
- Programmable and enforceable contracts

Source: NIC

still not a mainstream technology. However, the coming years are going to be defining, as several industries have begun to apply the technology for their product and services. Going forward, here are some of the most important use cases of blockchains:

Blockchain can create opportunities on the socio-economic front—it can create jobs on a large scale and usher in a new era of tech-led economic growth

Cross-border Money Transfer: Currently, international money transfer is done through SWIFT, or Society for Worldwide Interbank Financial Telecommunication, a Brussels-based organisation. Through the SWIFT channel the message instruction is sent from the issuing bank to the remitting bank. But there are usually multiple banks engaged in the process based on the underlying network, and each bank charges a cost, making international money transfer a costly as well as lengthy affair.

However, blockchain technology offers a solution by real-time verification of transactions without the need for intermediaries, increasing transparency and speed at much lower costs. "Blockchain technology is already seeing a lot of innovations in the financial sector, providing financial inclusion to millions of people in Africa and Asia and allowing easier remittances for immigrants," says Kalsy. Realising the benefits, the Reserve Bank of India has also recently selected—under its regulatory sandbox framework—Bengaluru-based Open Financial Technologies to build a blockchain-based cross-border payment system.

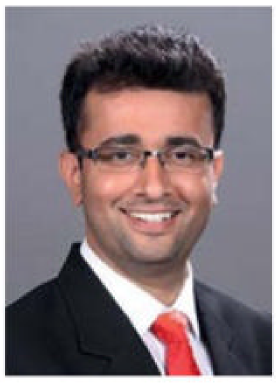
Central Bank Digital Currency (CBDC): India also plans to launch its own digital currency with the listing of the Cryptocurrency and Regulation of Official Digital Currency Bill, 2021 in Parliament. It will work similar to how digital wallets currently work but on blockchain, which means all transactions can be tracked on the ledger with no ability to modify the past. "As we move towards a more digital and decentralised future, crypto and CBDCs will dramatically shape India's economy to be more open and efficient. Through simplifying transactions and streamlining remittances, crypto and CBDCs do offer a unique opportunity not just for India but globally, to supercharge development and accelerate the pace of economic growth. Crypto has the potential to multiply the global internet economy. This will offer greater choice to consumers, who will be able to make cheaper and quicker transactions across the globe," says Khandelwal.

Vikram Subburaj, Co-founder and CEO of Giottus Crytocurrency Exchange, agrees: "CBDCs will have the ability to do micro transactions (even sub-₹1) at scale (depending on the blockchain it is based on), thus taking some load off traditional banking networks. Banks will have to adapt to serving their customers via this new route in addition to the existing channels."

DeFi: DeFi is a peer-to-peer financial service that works on a blockchain platform. The concept has come into prominence with the use of cryptos, as it enables you to take a loan against a crypto you hold without any intermediary. Here the lender and borrower meet on a DeFi lending platform where the borrower gives crypto as collateral to the lender to borrow money and in turn the lender earns interest income. In India, DeFi is at a nascent stage but going forward the business is expected to grow at a fast pace. "The future of blockchain looks bright in India. As we move forward, we can see more innovative projects in the near future, especially in the finance sector," says Avinash Shekhar, Co-CEO of ZebPay. Adds Malviya: "DeFi or decentralised finance is fast-emerging as one of the most frictionless ways to get access to financial products and services."

Non-Fungible Tokens or NFTs: NFTs are becoming the rage in arts, entertainment and gaming industries. It is becoming popular because a collectible item is made unique by giving it a unique code by putting it on a blockchain. The code makes the person the owner of that digital asset, which cannot be replicated. "NFT would prove to be a game changer for artists around the world. The artists can directly reach out to fans and even be guaranteed a part of any future sale of their work," says Kalsy.

Consider this: according to Cointelegraph



"We believe blockchain technology will be a game-changer in the days to come. It has the potential to be a solution provider for any business, especially in securing and decentralising their data and automating contracts between parties via smart contracts"

ARJUN KALSY
VP GROWTH, POLYGON

"In the coming 7-10 years, we can be sure that blockchain technology will become the centrepiece of economies around the world, transcending the domains of e-commerce, healthcare, and public sectors"

NEERAJ KHANDELWAL
CO-FOUNDER, COINDCX

"Currently, a lot of users don't have easy access to structured products, perpetual and derivatives trading, lending-borrowing, etc. DeFi removes that and makes it easier for everyone"

OM MALVIYA
FOUNDER AND PRESIDENT, TEZOS INDIA

Research, the number of NFT transactions on Ethereum involving art and collectibles totalled around 800,000 from January to August 2021, with a total volume of $2.93 billion. Therefore, the NFT art and collectibles market makes for an equivalent of 23.6 per cent of the online global art and collectibles market value, but only 2.5 per cent of transactions.

Similarly, gaming is expected to have huge potential. According to Cointelegraph Research, game-based NFTs have totalled $1.93 billion across multiple blockchains in 2021 so far, making up 1.5 per cent of the equivalent total free-to-play gaming revenue in 2020. The gaming market has continued to grow in 2021, fuelled by the Covid-19 pandemic and is forecast to reach $258 billion by 2025.

Smart Contracts: It is emerging as one of the biggest use cases of blockchain. These contracts are embedded in real-time on a blockchain, eliminating the need for middlemen. "In insurance, smart contracts can revolutionise claims. Similarly, governments can leverage distributed ledger technology in the areas of identity management, registration of land titles et al. From a customer's point of view, a comprehensive view of his/her history can reduce the probability of fraud. The list is endless—the right use case, with adoption at scale, is the key to success," says K.V. Dipu, Head - Operations & Customer Service at Bajaj Allianz General Insurance.

Authentic Documents: Another important use case that is growing of late is in the personal identity space, says Malviya, that wherein social security certificates, birth dates and other personal information documents can be kept on a decentralised blockchain ledger, which in turns enables one to have a kind of a 'global identity proof' that is akin to the present-day Aadhaar in India. "Governments have also leveraged distributed ledger technology in the area of digital identity, resulting in a dip in identity theft cases. Firms and customers have also leveraged smart contracts to get alerts if there is an unauthorised attempt to access personal data. Insurers have explored the use of blockchain for catastrophe-driven claim payments," says Dipu.

It can be of huge benefit for any organisation to permanently store asset transactions of property, land, stocks, etc. on blockchain

Real Estate: Blockchain can provide greater liquidity through automated property management and unforgeable land records and property rights. "The records stored in a blockchain cannot be altered, and it can be of huge benefit to the government to permanently store asset transactions of property, land, stocks and everything else," says Prashant Surana, Member of Blockchain and Crypto Assets Council (BACC) and Co-founder of Snapper Future Tech.

WEB 3: DECENTRALISED INTERNET OF THE FUTURE

The internet and World Wide Web as we know it today is mostly based on a lot of centralised servers—collectively known as Web2. On the other hand, Web3 is all about decentralisation powered by the integration of public blockchains. "By leveraging the marvels of Web3, individuals and organisations can build future-ready platforms or tools that are not centralised, and at the same time, provide more ownership of one's account, data, and digital assets. Additionally, Web3—while still a developing concept—is believed to improve manifold the aspects of user data security and scaleability," says Malviya.

Some of the biggest projects in the Web3 world also operate on home-grown company Polygon, such as the world's biggest NFT marketplace, OpenSea, and the most popular metaverse, Decentraland. "This year we also saw some of the biggest global brands such as Macy's, Dolce & Gabbana, and MG Motor release their NFT collections on Polygon," says Kalsy.

For the common man, Web3 means having access to the highest levels of decentralisation, autonomy and ownership. "When one is browsing the Web3-era internet, regulators will not be able to store, control or leak their data, and additionally, users would no longer be denied access to a webpage or a service. To put it in layman terms, Web3 will enable the ownership of data to shift from the big corporations to the users, thanks to its revolutionary focus on blockchain-led decentralisation," says Malviya.

Having said that, often people use metaverse and Web 3.0 interchangeably, as both point towards a vision of a better future. If directed right, they can help envision an internet of positive possibilities. "Metaverse can be understood as a shared digital space with digital human recognition as avatars that will constantly be changing and evolving, whereas Web 3.0 is the third generation of internet services giving humans the power to be in charge of their identity, power and monetisation. These technologies will help shape the future by creating a more intelligent, connective and open existence," says Surana.

Clearly, blockchain technology has immense potential and there are many more sectors and use cases where the potential of blockchain can be explored. BT

@Teena_Kaushal

Route to a Central Bank Digital Currency

Many countries are experimenting with launching their own official digital currencies, but they have various risks and challenges

BY **SUBHASH CHANDRA GARG,** FORMER FINANCE SECRETARY, GOVERNMENT OF INDIA

ILLUSTRATION BY **RAJ VERMA**

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BITCOIN, THE MOST famous cryptocurrency, was unleashed to the world in 2009 as a digital currency. However, it is not ideal as its value in terms of other official currencies like the US dollar and the Indian rupee keeps fluctuating. Cryptocurrencies in another form—more commonly called stablecoins like USD Tether, USDT, USD Coin or USDC—have acquired the character of an international currency.

These stablecoins tied in value to the US dollar are being used extensively for making international money transfers and payments.

The use of cryptocurrencies in crypto platforms is also becoming quite significant. Ether, the cryptocurrency of the blockchain platform Ethereum, is essentially meant for transactions on the Ethereum platform only.

Irrespective of their objectives, utility or use case, cryptocurrencies have established that it is possible to transform currencies into digital form.

Central Bank Digital Currency

Many countries have realised that it is time to issue currency in a digital form. The fact that private cryptocurrency innovators could successfully design and operate virtual or digital currencies, such as Bitcoin or stablecoins, has made many countries realise that they could launch their own digital currencies—the Central Bank Digital Currencies or CBDCs. Most are experimenting with their official digital currencies in the form of cryptocurrency.

To make sure that their CBDC is available for small payments, most central banks are experimenting with wholesale and retail versions of CBDCs. There are, however, severe design, technological and operational issues in using cryptocurrencies as the primary digital currency in any jurisdiction. The CBDCs are being designed to be carried in digital wallets in decentralised mode whereas central banks are the most centralised institutions. Thus, there is a fundamental contradiction if a decentralised cryptocurrency is issued and controlled by a central bank. The use of such a CBDC where all transactions are publicly authenticated rather than by the central bank would make it quite unsuitable for use in retail payments. For wholesale payments, there is not much of a use case for cryptocurrencies.

There is an alternative. A much better form of digital currency is the dematerialised currency issued and operated under the centralised database system by the central banks like the system of equities and bonds or for that matter bank deposits.

Right Design of CBDCs

There are three use-cases for which digital currencies are exceedingly efficient. First, for domestic retail payments, digital currencies held and used from digital wallets in place of physical wallets are far more convenient and accounting friendly than physical cash. Digital currencies can substitute and complement digital

If central banks go for blockchain-based decentralised cryptocurrencies for retail use, it is likely to be disastrous in populous countries like India

payments made through money in bank accounts. This would also succeed in phasing out physical cash.

Second, the world needs a global digital currency system for international payments and transfers. US dollar and a few other national currencies double up as international reserve currencies but with severe limitations and excessive cost in effecting transfers. Stablecoins like USDT have started filling this gap.

Third, cryptocurrencies cannot be wished away. The use of cryptocurrencies in platforms and for exchanging with other cryptocurrencies will grow. A way has to be found to exchange cryptocurrencies with the official currency.

There is a requirement for not only a domestic digital currency but an international digital currency as well. While central banks come up with their domestic digital currencies, the jury is still out whether world leaders would be able to agree upon a global digital currency or that of a country to assume the role of international reserve currency. If the world leaders fail to do so, stablecoins brought to the market by credible private partners will capture the global digital currency market.

Risks and Challenges of CBDCs

Both domestic CBDC and international digital currency present challenges and risks. Domestic digital currency might be poorly designed. At the same time, private cryptocurrencies might be banned without attention to their inevitable use in certain circumstances. If central banks go for blockchain-based decentralised cryptocurrencies for retail use, it is likely to be disastrous in populous countries like India. If the central bank opts for opening digital wallets of everyone with itself, it is also going to be disastrous as such a system would be impossible to operate. It might help avoid these risks if the dematerialised digital currency is issued in much the way paper currency is issued today—through the banks to the people.

Digital Rupee for India

RBI has probably suggested to the government that Section 22 of the RBI Act be amended to include digital rupees as banknotes. The government intimated Parliament of its intent to introduce cryptocurrencies legislation in the Winter Session. But no Bill was introduced in Parliament.

From the Bill proposed for introduction, it seems the government is keen on laying down a framework for the introduction of a digital rupee in the country and banning all private or non-official cryptos. That, however, does not appear to be the right path to take. The government and RBI would do well to do three things.

First, bring a separate law to introduce digital currency in India, preferably in the form of dematerialised digital rupee. Second, the government should bring up a sui-generis Crypto-businesses and Assets Transactions and Regulations Bill for development and regulation of establishment and operations of blockchain-cum-cryptography platforms in India and trade in crypto-assets representing the value of these crypto-platforms. Finally, the government should take a lead in establishing an international digital currency. BT

BREAKING THROUGH

In the midst of the pandemic's woes, India's start-up ecosystem shone bright in 2021. The frenzied fundraising, IPO euphoria, and landmark exits helped it smash all previous records. But now, it is time to look beyond

BY **BINU PAUL**

THERE HAS BEEN, ever since India's economic reforms began, a 'before and after 1991'. Likewise, there will be a 'before and after 2021' for the start-up story. It's the year when the country's venture capital and start-up worlds found themselves lifted centre stage into the country's business and economy, not by design, but by the unintended devices of a pandemic and the government's policies.

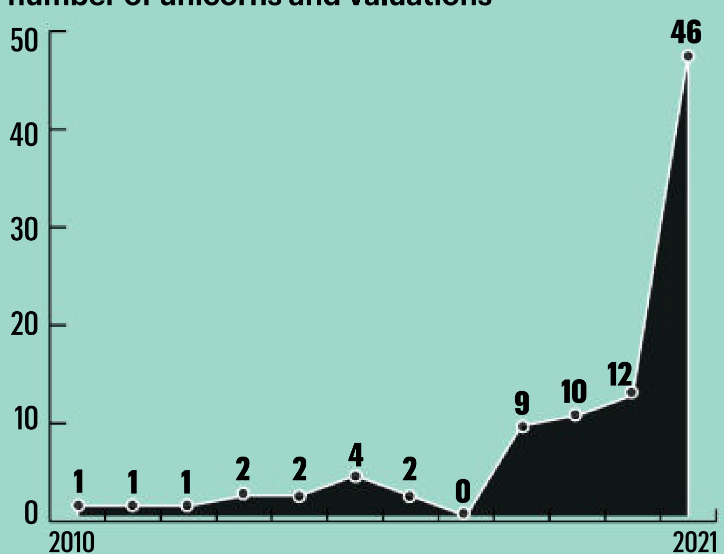
The Covid-19-induced digital shift placed many consumer tech categories, which includes edtech, payments and e-commerce, at the top end of a tailwind. The wind travelled quite well, blasting throughout the past year to bring a lot more people online while the existing ones became increasingly well-versed with digital transactions. Consequently, start-ups in these segments bypassed usual growth cycles to achieve economies of scale and the momentum spilled over to other sectors as well. Simultaneously, the results of the US Federal Reserve slashing rates began to reflect as investors, flush with excess liquidity, flocked to Indian markets to take advantage of this unprecedented new opportunity. The Chinese government's crackdown on internet companies also helped push significant global money into the neighbouring Indian market.

This confluence of domestic and external factors shaped up a landmark year for venture capital and start-ups in India.

"In the 2012-13 time period, we clearly saw that the elements to scale companies were present. In 2017-18, we saw companies were genuinely getting scale, not just

THE UNICORN SURGE

With 46 unicorns in 2021, India looks set to climb higher in the global start-up charts, both in number of unicorns and valuations



***Source:** Indian Tech Unicorn Report 2021 by Orios Venture Partners*

A LANDMARK YEAR FOR START-UPs

2021: QUICK FACTS

Total funding
$42 BILLION

Number of unicorns
46 (90*)

Sector with most unicorns
FINTECH

Fastest unicorn
MENSA BRANDS

Average years to unicorn
7.8

Start-up IPOs
11

Fundraising via IPOs
$7.16 BILLION

**Total number of unicorns*
***Source:** Indian Tech Unicorn Report 2021 by Orios Venture Partners*

consumer-tech companies focussing on India, but also enterprise tech firms focussed on global markets. The normal next step of that trend are three things: More global investors identifying that opportunity, more high-quality founders identifying that opportunity, and more exits because public markets, strategic investors, etc. also want a piece of that opportunity," says Anand Prasanna, Managing Partner at Iron Pillar, a mid-stage venture capital firm.

$7.16 BILLION

MONEY RAISED IN 2021 VIA THE IPO ROUTE BY 11 OF INDIA'S START-UPS, AS PER A REPORT FROM ORIOS VENTURE PARTNERS

According to a recent report from investment firm Orios Venture Partners, 46 out of India's 90 unicorns were created in the 12 months of 2021, the first 44 born through a decade or more. Technology start-ups together raised a total of $42 billion in 2021, up from $11.5 billion in 2020. Along with this, a total of 11 start-ups, including eight unicorns, raised somewhere around $7.16 billion through public offerings.

This is not all. PGA Labs, the market research unit of Praxis Global Alliance, states in a recent report that over 45 start-ups are likely to enter the unicorn club in the near future. According to research firm Tracxn, nearly 45 per cent of 'soonicorns'—or companies about to reach the coveted $1 billion valuation—were created in 2021.

However, history teaches us that the pendulum keeps swinging both ways. Financial markets go through ups and downs. What's an exorbitant up change today gets settled tomorrow. In this process, some changes unsettle the existing system. And when the correction kicks in, will the ensuing flight to safety shake up this ecosystem once again?

"At the end of the day, this kind of over-enthusiasm has to end somewhere. Whether it will end this year or not, I do not know, but it will end sometime. People who have invested through multiple cycles and still see the potential in the country will stay. They see the signals rather than the noise. I do not think many of the guys investing in India have that sort of an experience. The moment there is a wobble, how many of these guys will get nervous and run away is a big question today," says Parag Dhol, Managing Director at Inventus Capital Partners, an early-stage investment firm.

Dhol, who began venture investing in 1993, says the number of people who stay could still be good enough for the Indian VC ecosystem to sustain at a decent pace. As per Tracxn data, the number of first-time investors grew to 1,145 in 2021 from 708 in 2020 and 691 in 2019 while the number of international investors betting on Indian start-ups jumped from 697 in 2019 to 990 in 2021. The ratio of US investors in Indian markets grew from 44 per cent in 2019 to 53 per cent in 2021.

INDIAN UNICORN EXITS IN 2021

Most exits were through IPOs, some through M&As

IPOs

Unicorn	IPO Listing	Returns after listing**
Nazara****	March	16.37%
Zomato	July	19.52%
Freshworks***	September	-39.63%
Nykaa	November	5.06%
PolicyBazaar	November	-17.42%
Paytm	November	-31.71%
Mapmyindia****	December	6.08%

ACQUISITIONS

Unicorn	Exit	
bigbasket	May	Acquired by Tata for $1.2 bn
BillDesk	August	Acquired by PayU for $4.7 bn

***Returns from Date of listing to December 31, 2021*

****Listed on NASDAQ, US*

*****Nazara and MapmyIndia turned unicorns after listing*

Source: *Indian Tech Unicorn Report 2021 by Orios Venture Partners*

These may not be completely unfounded fears because there are historical precedents. Has the bull cycle shown enough to draw a trend line? The oldest start-up unicorn stock listed is just six months old, some of those that followed, including the much-anticipated Paytm listing, turned out to be duds for investors. With a bevy of loss-making start-ups queuing up to hit the public market, these optics may not be good enough for retail investors to trust them for years before they come out of the red. Meanwhile, the exponential consumer tech growth may also see slight correction when the pandemic subsides.

But like Dhol says, it would be too early to be talking about a private market correction and that long-term investors with several cycles of investing experience will continue to believe in India's ability to generate long-term value for stakeholders. Private investors look for companies that go after large markets. India, being an emerging market, they understand that the realised market value is only a fraction of its true potential. They look at unit economics, operating leverage, and path to profitability. The blockbuster IPOs of Zomato and Nykaa prove that public market investors understand these metrics, too, and appreciate long-term cash flow capabilities of these businesses. Most importantly, they understand that companies need to have a credible path towards profitability for investors to take them seriously.

"You should expect causalities, especially in consumer tech where a lot of segments are winner-take-all. With the amount of cash that is thrown in and private market money being raised, I don't think 2022 would be the year where you would see causalities. It may be 2023 or beyond, and a lot of that depends on what happens to Fed policies," argues Iron Pillar's Prasanna.

With US central bankers setting their sights on a rate hike in the coming months, the era of easy money may be coming to an end. But what has come into the market will stay, Harsha Kumar, Partner at Lightspeed India Partners, points out. "One thing we have observed traditionally is that when the market shifts, even if things simmer down, they don't simmer down all the way. There are some changes that are here to stay, and they will stay. Capital that has entered the market is here to stay. It's not just going to go overnight. Same thing with cheque sizes. It wouldn't drop all the way to what it was two-three years ago. Investors will probably get more practical. You may not see as many investors coming in, but the ones who are here will stay and when the market turns around, you will see more of them coming in," Kumar says.

45
PER CENT
NEARLY 45 PER CENT OF 'SOONICORNS' FROM INDIA WERE CREATED IN 2021, AS PER TRACXN

While the historic start-up funding run is likely to continue unaffected for the near term, it's the early-stage, smaller funds that are now staring at an existential crisis. They realise that what got them here wouldn't get them there if they don't adapt.

According to a report by industry body Indian Private Equity and Venture Capital Association (IVCA) and consulting firm EY, the average ticket size of early-stage deals has grown to \$4.1 million in 2021 compared to \$2.8 million in the January-July period that year.

Several leading growth-stage and late-stage investors are now actively looking at early-stage start-ups. SoftBank, whose average ticket was above \$100 million, is now writing smaller cheques to enter companies very early in their lifecycle. With its Surge start-up accelerator programme, Sequoia too is building an extensive early-stage portfolio. With exits at an all-time high, there is so much secondary money going around as well. Young founders prefer going with a larger fund that can write subsequent cheques or with serial entrepreneurs who have been there and done it a couple of times.

"How would you keep yourself relevant in that scenario when the ecosystem itself has a lot of money? Initial rounds, especially for small funds, become a challenge. Founders would always want to have a larger VC on their cap table who can provide a lot of money subsequently. This will force smaller funds to be more and more specialised. Speed as a weapon can be used if that's sustainable," Dhol says.

According to Venkat Vallabhaneni, Managing Partner at Inflexor Ventures, micro funds play an operator's role in their portfolio and that's the difference they bring on to the table to early-stage founders. "Funding sizes have obviously gone up; everyone needs to adjust to that fact. We have moved up a little bit in terms of deal sizes and investment stages," he adds. Inflexor Ventures' ticket sizes, for instance, have doubled over the last four years.

Average late-stage fund round sizes are also growing. In fact, in the January-July period of 2021 it was higher than the average cheque sizes of the past two years combined. Late-stage cheques size grew from \$88.7 million in 2020 and \$90.9 million in 2019 to \$217.6 million in 2021 January-July.

As industry matures, layers of investor hierarchies are also beginning to appear transparent. Prasanna says that there will be some early stage and growth

stage funds in the top tier, some who straddle the spectrum from early to growth, but in the late stage, it will be a completely new ecosystem. "There will be a set of firms, not the usual suspects but global funds, asset managers or large families who have never been into this space before. We would see more and more unusual names coming to the late stage when these companies become solid," he adds.

Meanwhile, the growth is also attracting legacy businesses to the digital front. Tata made three big-ticket acquisitions last year—bigbasket, 1mg and CureFit—to accelerate its super app play while Reliance has invested in quick commerce firm Dunzo, lingerie retailer Zivame, subscription-based hyperlocal grocery delivery platform Milkbasket, furniture retailer Urban Ladder, and e-pharmacy Netmeds. Legacy companies are, thus, disrupting the digital space by investing in and expanding some of the key vertical categories while also offering attractive exit opportunities to early-stage investors.

"Incumbents will try to hop on new ideas, and if they can't, they will try to acquire companies. Start-ups win basis their speed and ability to take risks which incumbents are unable to. This is how mature markets behave. If anything, it is a good sign. It means that the market is ready now, there is enough talent that these incumbents can hire to build on new ideas and market them, and if they are unable to do that, there is enough liquidity that they can acquire companies. This is just net-net positive for the ecosystem," Lightspeed's Kumar says.

Inflexor Ventures' Vallabhaneni is of the opinion that the increased noise in the market and the trust that larger investors bring to the ecosystem have got more domestic investors upbeat about this asset class. His early-stage investment firm raised an oversubscribed fund of ₹600 crore during the pandemic year, fully from domestic investors.

"With the amount of private market money being raised, I don't think 2022 would... see [start-up] causalities. It may be 2023 or beyond, and a lot of that depends on what happens to Fed policies"

ANAND PRASANNA
MANAGING PARTNER, IRON PILLAR

"Founders would always want to have a larger VC on their cap table who can provide a lot of money subsequently. This will force smaller funds to be more and more specialised"

PARAG DHOL
MANAGING DIRECTOR, INVENTUS CAPITAL PARTNERS

"The actual momentum has picked up in India. A lot of family offices and private investors are taking notice of alternative investments. They used to be quite resistant to look at alternative investments. There was a slight slowdown of growth in the US over the last two quarters, but we have not seen that in India. It could be that we are lagging behind the global trend. But I feel the healthy trend will continue, though it may not be at the same pace," Vallabhaneni says.

Today, India is the third-largest unicorn hub after the US (487) and China (301), and in 2021, one out of 13 unicorns globally was born in India. India as a growth story is expected to continue even if there is a slight short-term correction.

In a nutshell, the market is predicted to continue to grow, with a lot of things going for it. The pace of venture capital flow is expected to continue and there will be a lot more large rounds as companies continue to scale. This will, in turn, enable more and more Indian companies to expand beyond borders.

"The sentiment is positive. Unfortunately, there is a history of three cycles of private investments in this country that broadly disappointed investors. But this time, that story can be different. For the first time, we are seeing massive companies being created and massive exits are happening. Global investors look at India as a large emerging market which is going to deliver at some point in time, and seems like the time has arrived," Iron Pillar's Prasanna adds. BT

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The Unicorn Phenomenon

Across industries, most new enterprise creations outside of physical infra-heavy businesses will be tech start-ups. That would mean a rush of unicorns

BY **KARTHIK REDDY**, CO-FOUNDER AND MANAGING PARTNER, BLUME VENTURES; VICE CHAIRPERSON, IVCA

LAST YEAR WAS a watershed one for the Indian start-up ecosystem as it notched up a record investment of nearly $36 billion. 2021 also proved to be a full-cycle year for Indian venture capital as companies like Zomato, Nykaa and PolicyBazaar delivered outsized exits to their investors by listing on public bourses. This was also the year of the unicorn for India—42 start-ups achieved billion-dollar valuations, doubling its count of the entire past decade. Put this in the context of 2012—which accounted for 39 unicorns from around the world—and you get a sense of how far the ecosystem has come in the past decade!

Unicorns on Fast Track: Tech-led start-ups are rewriting the pace of business aggregation across sectors. While e-commerce, fintech, SaaS and edtech were prolific sectors that have created unicorns, we have the beginnings of unicorns in every sector now—healthcare, B2B commerce, and the first deep-tech ones are coming. Electric vehicles and the ecosystems that support them can alone create a few dozen of these unicorns. I don't think this is a function of global liquidity or a few funds anymore. It's a wider macroeconomic phenomenon where most new enterprise creations outside of physical infra-heavy businesses will be tech start-ups.

What was once thought of as an ambitious target of 100 unicorns by 2025 will be breached in the next few months. We need to rerate our ambition to 500 by 2030 and aspire to hit it by 2027-28. Fintech and SaaS may create the largest numbers, along with e-commerce.

Tech IPO is More Real and Accessible: The floodgates have opened. Whether public analysts punish or suspend disbelief and support long-term growth and lack of profits as they did, this is an irreversible trend. It is a win for all market participants and signals the beginnings of a large-cap tech universe in India.

It is going to be a tough road. Post IPO, founders who have dealt with 10-20 investors so far on their cap table, will need to deal with quarterly and annual goals, granular data/information disclosures, high governance and consistent business (growth) performance or cycles.

The IPO stories of 2021 notwithstanding, accessing public markets will not be an easy task, relative to a private raise. It is also not about simply hiring an investment banker and lawyers, to help you with pre-IPO filings and the listing. It is the beginning of a multi-year journey that will demand a lot of introspection, a massive upgrade of governance processes and behaviour, more scrutiny on one's public personas, and a culture change in young, hot tech start-ups.

That said, it is going to be very rewarding for long-term company builders. Companies who built despite the odds for a decade, and are just getting started to build for another decade, are relishing the idea of listing and continuing to grow at 30-50 per cent and be a darling of the stock market for another decade.

Large company benchmarks in tech for the first time allow for smaller comparables to list earlier and raise public capital whereas private capital tends to dry out quickly for players outside #1 to #3 in most segments.

Repeat Founders and Seasoned Start-up Professionals: The talent pool of bold technology leaders has multiplied 100x since the beginning of the decade. Trained under unicorns, with rapid growth, and incredible resilience, these new founders are like well-trained athletes ready for start-up marathons. Repeat founders who have had smaller exits and then built under a larger firm, or seasoned executives who were a part of a unicorn build-out tend to understand market issues better, are more fluent about how fundraising works, and are deliberate about choosing co-founders and building initial teams. 2022 will witness the continu-

ILLUSTRATION BY **ANIRBAN GHOSH**

What the Covid-19 pandemic has done is sound a death knell to geography. This means the future belongs to Indian tech talent

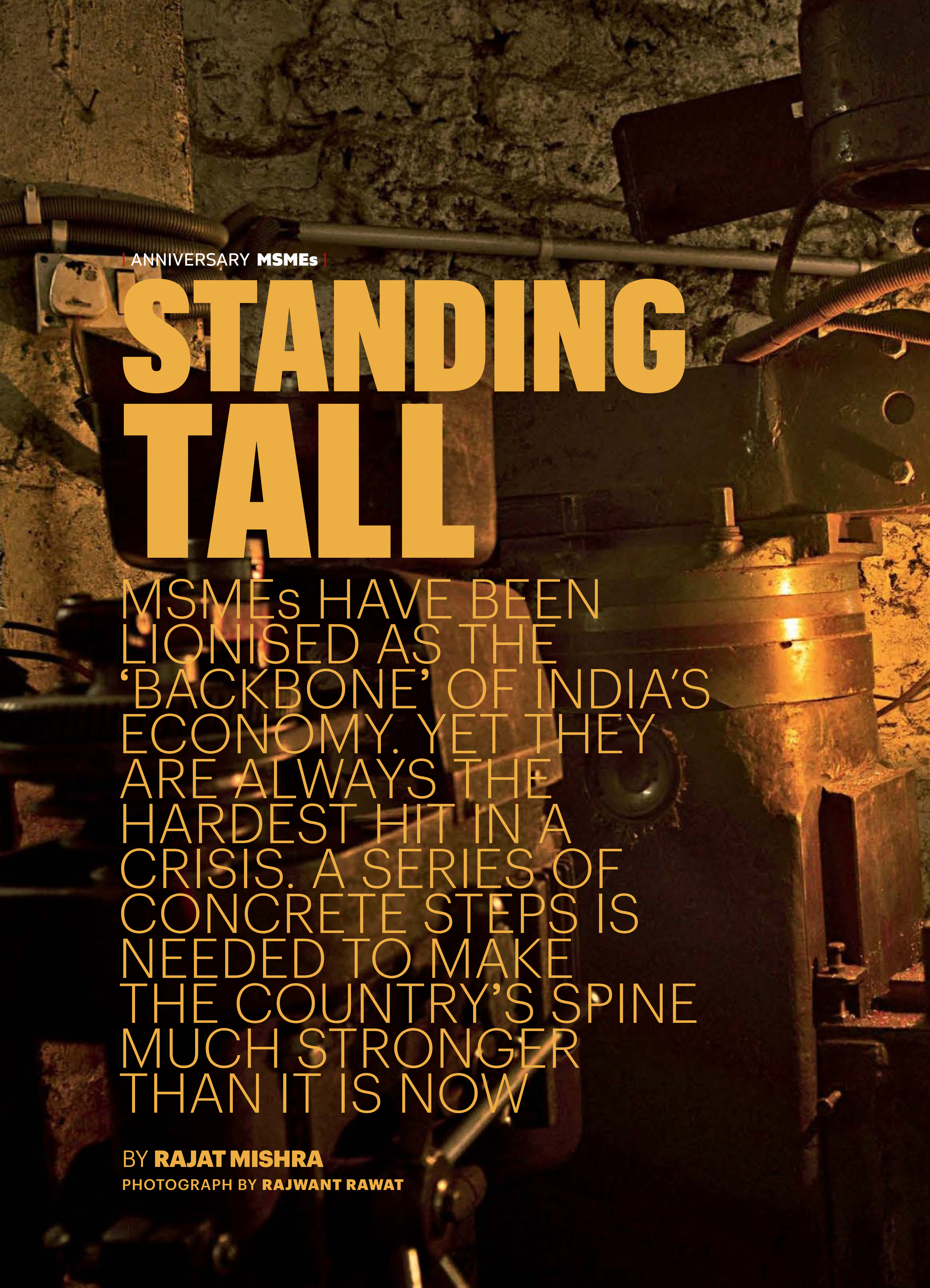
ation of blockbuster funding rounds headlined by many repeat founders. The growth, in number and quality, of these seasoned founders over the past 3-4 years has been astounding. VCs continue to back them with mega large seed rounds at unheard of valuations. As long as the exits keep coming, this trend will persist.

Monetising India Beyond India1: 2022 promises to continue being a 'heralder' of an unprecedented decade of growth for digital and tech businesses in India. LoveLocal, a firm that enables local retailers to sell daily essentials online, has clocked phenomenal adoption speed—reaching 100K retailers in over 1000 pin codes (in under a year). ShareChat and Dailyhunt are unicorns catering to short form content and short form video in multiple languages. Young start-ups like Koo and Stage are hoping to build products that scale with regional language audiences alone. This confidence in catering to and monetising audiences across the country and income strata is unprecedented outside fintech and e-commerce. 'Build for a need and they will come' is beginning to play out outside the top 100 million consumers in this country. Every SMB owner wants to participate in the digital-first economy. SMB owners and their employees will constitute a significant chunk of high usage, high engagement customers this decade.

Talent Wars Beget More Talent: We are officially in the midst of India's great tech talent crunch. While the war for tech talent is an indicator of macro-level innovation and rebalancing, the funding spree has ensured India's engineering talent gets paid top dollar (compensation value that rivals their Silicon Valley counterparts).

What the pandemic has done is sound a death knell to geography. This means the future belongs to Indian tech talent. Nurturing millions more of these skilled professionals and having the youth of India proliferate across global tech may singlehandedly be one of the biggest exports.

In conclusion, our path to $5,000 per capita GDP and beyond will be paved with digital enabled roads and infrastructure. The government machinery has created an incredible amount of world-class infrastructure and rails to enable this and the brightest tech minds are building world class products and businesses on these rails. BT



STANDING TALL

MSMEs HAVE BEEN LIONISED AS THE 'BACKBONE' OF INDIA'S ECONOMY. YET THEY ARE ALWAYS THE HARDEST HIT IN A CRISIS. A SERIES OF CONCRETE STEPS IS NEEDED TO MAKE THE COUNTRY'S SPINE MUCH STRONGER THAN IT IS NOW

BY **RAJAT MISHRA**

PHOTOGRAPH BY **RAJWANT RAWAT**

THE MICRO, SMALL and medium enterprises (MSMEs) in the country go by many sobriquets such as “engine of growth”, “powerhouse of the economy” and many more. That’s not surprising considering they have over 63 million units employing over 110 million people and are a significant contributor to India’s economic growth with over 30 per cent contribution to the GDP and over 48 per cent to exports. Around 95 per cent of all industrial units forming a part of this sector constitute a cornerstone for economic prosperity in our society.

However, MSME is the only sector that took back-to-back beatings in the last few years. “First, it was demonetisation, then implementation of GST and now the ongoing pandemic has broken the spine of the sector,” says S.N. Mishra, Founder and CEO of Microtech Industries, a small enterprise which is a pioneer in low-grade voltage equipment in Haryana.

According to Asian Development Bank Institute’s working paper, ‘MSMEs in Developing Asia’, the sector experienced considerably reduced employment and sales revenues in the first few months after the outbreak of the Covid-19 pandemic. “MSMEs were disproportionately affected by the pandemic. Raw material costs have shot up 30-50 per cent in a year while businesses are still trying to recover to pre-pandemic levels. Most businesses just don’t have the capital to bridge a 50 per cent increase in their input costs,” says Hardika Shah, Founder and CEO, Kinara Capital.

But still, the MSME sector will play an instrumental

A CHALLENGING PATH

The small business ecosystem faces several perennial problems

1. **Nine out of 10 MSMEs depend on informal sources for their working capital and term loans**
2. **Its exports under the Public Procurement Policy have largely stagnated**
3. **Increased compliance burden and documentation discourages MSMEs to grow**
4. **The MSME sector is also grappling with the lack of upgradation of technology and irregular and costly power supply**

PHOTOGRAPH BY **CHANDRADEEP KUMAR**

role in driving India's growth. "MSMEs will lead the development and industrialisation of underdeveloped regions. [They] are poised to establish themselves in globally competitive markets through initiatives such as the Global Bharat programme which provides MSMEs with access to the global marketplace, digital skilling initiatives and affordable enterprise technologies," says Arvind Sharma, Partner, Shardul Amarchand Mangaldas & Co.

However, the sector can get a boost only if perennial problems like difficulty in accessing capital, compliance burden, etc., are addressed and a concrete solution for all is provided, says Dev P. Goyal, Managing Director of Conquerent Control Systems and Co-chair of the MSME cell at the PHD Chamber of Commerce of India (PHDCCI). Echoing this view, Mishra says the potential in the sector is immense if tapped rightly. Mishra says boosting exports and modernising MSMEs would be key for the sector to contribute to India's growth story.

ACCESS TO CAPITAL

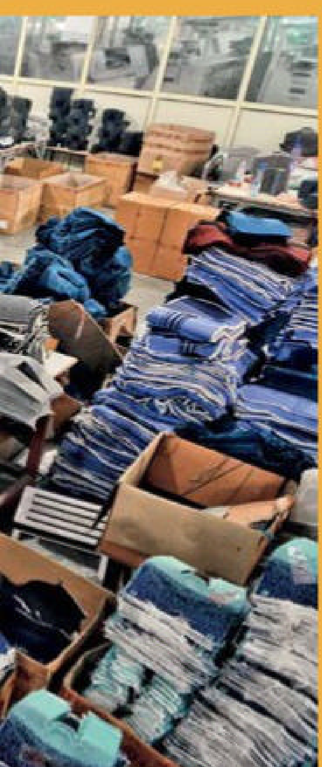
"The liquidity crunch has posed a question of survival for MSMEs," says Ajay Sahai, Director and CEO of Federation of Indian Export Organisations (FIEO). Indian MSMEs rely on unsecured loans and take few long-term loans for capex. The National Institute of Rural Development and Panchayati Raj in a recent report mentions that nine out of 10 MSMEs depend on informal sources (mostly unsecured loans) for their working capital and term loans.

According to MicroSave Consulting, a global consulting firm, the overall demand for credit is estimated to be ₹105.49 lakh crore. However, formal sources meet less than one-sixth of this demand at ₹16.94 lakh crore, 27 per cent of which is directed to micro, 40 per cent to small, and 33 per cent to medium enterprises.

"The problem of access to capital can only be resolved at the cluster and firm level rather than coming out with attractive macro-level schemes," says K. Rangarajan, Professor, Head-Centre for MSME Studies, Indian Institute of Foreign Trade. Concurs V. Padmanand, Partner, Grant Thornton Bharat LLP, "Encouraging financial institutions to evolve cluster-based financing instruments to make the financial sector more responsive to distinct needs of cluster MSMEs in terms of ballooning requirements would bear fruit for the sector."

The cluster approach to support MSMEs envisages setting up a group of units manufacturing the same or similar products in a locality with adequate infrastructure in terms of roads, power, drainage, etc. Even, as per the Ganguly Committee recommendations of 2004, banks have been advised to extend banking services to recognised clusters and cater to the diverse needs of the MSME sector.

"One of the ways is to promote more consortium financing with a guarantee by the local industry associations where the finance-seeking MSME is a member. Italy, where more than 80 per cent of industrial units are from the SME sector, has successfully addressed the finance access of SME units through small equity funds and



KEY NUMBERS

MSMEs are big employers and contributors to the country's GDP

TOTAL UNITS
63 MILLION

EMPLOYING
110 MILLION PEOPLE

CONTRIBUTION TO GDP
30 PER CENT

CONTRIBUTION TO EXPORTS
48 PER CENT

FY19

CONTRIBUTION TO MANUFACTURING GROSS VALUE OUTPUT (%)
36.9

CONTRIBUTION TO GDP (%)
30.5

FY20

CONTRIBUTION TO MANUFACTURING GROSS VALUE OUTPUT (%)
36.9

CONTRIBUTION TO GDP (%)
30

SOURCE: MINISTRY OF STATISTICS & PROGRAMME IMPLEMENTATION credit guarantee schemes. The NPA levels in the country were also low," says Rangarajan.

One industry insider, on the condition of anonymity, says that the Reserve Bank of India (RBI) mandate that banks should not accept collateral security in the case of loans up to ₹10 lakh that has been extended to units in the micro and small segments was reportedly not being adhered to in a few cases. He adds that banks are insisting on collateral security for loans as small as ₹5 lakh. In the absence of collateral and other documents like three years' audited balance sheets, income tax returns, etc., these entrepreneurs had to rely on moneylenders to meet their financial needs.

"Banks give loans based on the balance sheet of the industry. Micro and small industries in our country barely survive on a day-to-day basis. Banks normally discourage them as they are unable to provide the required information. For giving soft loans, a committee should be formed involving banks, industrial associations, an MSME ministry representative and two personal guarantors. The outer limit of loan could be fixed as per turnover," says Goyal.

The cluster approach to support MSMEs envisages setting up a group of units manufacturing the same or similar products in a locality with adequate infrastructure in terms of roads, power, etc.

According to Shah of Kinara Capital, lengthy and complicated loan application processes, lack of information and service support in vernacular languages, and systemic biases based on gender or other such factors, contribute to severely disadvantaging the MSMEs, especially in Tier II and Tier III cities and rural areas. "Utilising data-driven decisions can reduce human bias and assess the MSME owner with a new lens not dependent on taking property collateral. Tech-based approaches can also speed up the loan process and offering information in the vernacular can support a wider range of business owners," adds Shah.

BOOSTING EXPORTS

"Without boosting exports especially from MSMEs, the idea of MSMEs powering India is half-hearted," says Sahai of FIEO. The MSME sector contributes over 40 per cent to the total exports, and the target to raise it to 60 per cent has been set by the government. But the road to achieving this target is fraught with a volley of challenges.

"We are slowly losing ground to many competitors like Vietnam and Bangladesh in garments, Sri Lanka and Kenya in tea, leaving aside competition from China. Most Indian MSME exporters lack competencies to market specific products," says Rangarajan of IIFT.

According to Sahai, the big problem plaguing the MSME sector is businesses' inability to showcase their products in overseas markets. Thus, he believes tax deductions for the internationalisation of MSMEs should be provided. "Like Singapore where any MSME which spends $100 on overseas marketing is provided with a tax deduction of $200; so you are encouraging MSMEs to spend more on overseas marketing. Also, the government must incentivise the R&D to remain competitive," adds Sahai.

"Most of the exportable products of MSMEs are suitable for e-commerce exports as well. The government should come out with an e-commerce export policy with accountability for its implementation," says Rangarajan.

In addition, the importance of forging free trade agreements (FTAs) with different trading blocs in boosting exports from MSMEs can't be negated. FTAs would facilitate competitive market entry into global markets. The export of 358 items reserved for exclusive procurement from MSMEs under the Public Procurement Policy has largely stagnated. In 2018-19, the exports stood at $27,163.75 million, in 2019-20 exports were at $27,931.41 million and in FY21, it came down to $27,601.78 million.

"I think the government is not giving adequate kind of commercial support in line with what other countries are doing. Active marketing on behalf of Indian companies is not there," says Ashok Saigal, Co-chair, MSME Council, and Managing Director, Frontier Technologies.

DOCUMENTATION, COMPLIANCE BURDEN

Mishra of Microtech Industries says that a lot of MSMEs prefer to remain small because of the compliance burden. "Many of the MSMEs don't want to scale up because of the issues involved in scaling up operations such as increased compliance burden and documentation." Also, in a special study, RBI found that complex documentation was reported as a major hurdle for entrepreneurs accessing the banking facilities.

"Making GST processes simpler to understand and follow would also help. The sheer number of HSN codes, different tax rates, and confusion prevailing among even experts in this matter slows things down. Paying GST in advance without getting setoffs locks up working capital and cash flow for small companies. Getting a GST refund remains a long-drawn process. Removing these hurdles will give small industries freedom to grow," says Misha Gudibanda, Co-Founder of Sky Goodies.

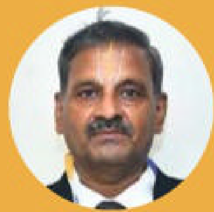
Gudibanda says interlinkages of data and deployment of technology can make the way far easier. "If technology is employed to make the process of filing GST and taxes less complicated, then that would help a lot. The good thing is that most processes are online now, but they are still very complicated and need the help of professionals, and cannot easily be done without spending considerable funds on an accounting team and CA," says Gudibanda.

POWER SUPPLY, UPGRADING TECH

The MSME sector is also grappling with the lack of upgradation of technology and irregular and costly power supply. Rangarajan of IIFT says that power constitutes 16 per cent of the total cost of MSMEs.

"MSMEs need an uninterrupted supply of electricity. In any developed country, no industry suffers because of poor electric supply which is the prime responsibility of the state electricity board. If this is done, we save on capital costs, running costs, maintenance costs. There will be tremendous growth in output as no labour or machinery will be idle," says Goyal of PHDCCI.

In 2021, a survey conducted by Tamil Nadu Small and Tiny Industries Association (TANSTIA) showed that the industrial production capacity of MSMEs in the state had declined by over 40 per cent in the past two years alone due to a power crisis. The survey said that if the trend continues, small industries will face a bleak future.



"[MSMEs'] problems can only be resolved at the cluster and firm level rather than coming out with attractive macro-level schemes"

K. RANGARAJAN
PROFESSOR, HEAD - CENTRE FOR MSME STUDIES, INDIAN INSTITUTE OF FOREIGN TRADE

"Utilising data-driven decisions can reduce human bias and assess the MSME owner with a new lens not dependent on taking property collateral"

HARDIKA SHAH
FOUNDER AND CEO, KINARA CAPITAL

"For giving soft loans, a committee should be formed involving banks, industrial associations, an MSME ministry representative and two personal guarantors "

DEV P. GOYAL
CO-CHAIR, MSME CELL, PHDCCI

"The Maharashtra Chamber of Commerce in Pune and the Tirupur cluster includes all local manufacturers. The associations have come together and have installed a captive power plant which is meant only for the members. So, whether the government is giving you power or not they are not bothered. The cost has also come down substantially for them," says Rangarajan.

Besides erratic power supply, the upgradation of technology is a big issue for the cash-strapped sector. "Technology upgradation is a no-brainer. The problem is funding. There are no good ways of funding technology purchase as of today," says Saigal.

To bridge the gap between financing and upgradation of technology, there is a need for an MSME Technology Finance Corporation (MSME-TFC) with branches in all MSME clusters, followed by opening of branches in all district headquarters in the country. According to an industry insider who did not wish to be named, such an institution must exclusively focus on the development of new technology through R&D, commercialisation of new technologies, and upgrading of manufacturing processes of MSMEs. At least 10 per cent of their lending should be devoted to technological— product/process—innovations.

"But there is no need to have a specialised institution when the infrastructure to do that is already available in the form of Bureau of Indian Standards (BIS)," says Goyal. "Rather than opening another institution, we need to augment our existing infrastructure. BIS, which is meant to advise industries to produce high-quality products, is not doing its job properly. BIS should work closely with industries in suggesting the ways to improve and upgrade their production line and products," he adds.

MSMEs are the backbone of the Indian economy but the government needs to remove the hurdles in their path to success. BT

@RajatMishra9518

MSMEs: Powering India

The pandemic has resulted in both threats and opportunities for MSMEs and the overall industry

BY **SHREEKANT SOMANY,** CHAIRMAN, CII NATIONAL MSME COUNCIL; CMD, SOMANY CERAMICS

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SMALL AND medium-sized enterprises (SMEs) are the growth engines of the global economy, making up around 90 per cent of all businesses globally, comprising roughly 70 per cent of employment and, by some estimates, contributing up to 90 per cent of global GDP. In the Indian context, the micro sector with 63.05 million estimated enterprises accounts for more than 99 per cent of the total estimated number of MSMEs.

The aforesaid data points demonstrate the vast footprint and the immense contribution that MSMEs make in overall nation-building and growth. While MSMEs, undoubtedly, have been prominent in the pre-Covid-19 era, the disruption due to the pandemic has resulted in both threats and opportunities for MSMEs and the overall industry.

Challenges such as disruption in the MSME supply chain, a spike in commodity prices translating into higher working capital requirements, the stress of margins due to depressed demand and pendency in payments are amongst a few of the repercussions emerging from the pandemic affecting the sector. However, amidst the present unprecedented scenario, it's the government's consideration for the stressed sector, empathetic view by the key concerned stakeholders of the sector and the resilience portrayed by MSMEs that has provided much impetus to the overall sector.

The MSME sector will play a central role in writing the growth story of the country and therefore, I would like to highlight the key imperatives which will form the foundation of small businesses and the overall industry.

The first area of employment generation is crucial for overall growth. India is a consumption-driven economy, and consumption is directly linked to employment and we as an industry need to identify the unmet needs of consumers not only in India but the world over. MSMEs in India can play a vital role as important growth engines of the economy and as employment generators positively impacting the bottom of the pyramid.

The second area is that of competitiveness. Technology, finance and market access are important determinants of MSME competitiveness and the government's initiatives under Atmanirbhar Bharat provides a great start. The focus should be on the adoption of new-age technologies and digitisation of systems, processes, and operations in all operational aspects to save time and cost and enhance the finished product for business continuity.

The third area is trade. India has the potential to emerge as a major export hub. Trade policy must not be looked at only from the lens of export and import. It plays an important role in attracting FDI and integration into global value chains. It is encouraging that India is in FTA talks with the UK, EU, and UAE, which should further boost exports in the medium term as India possesses trade complementarities with these countries.

The fourth area is technology and R&D which seems to be omnipresent and extends to all facets of business. The new normal will witness the increasing role of technology solutions in businesses where R&D will play a significant role in increasing the share of technologies and bridging the gap between MSMEs and new-age tools. Thus, the focus today is to work on technology and reap the benefits of the country's existing digital infrastructure, which can have a positive ripple effect on GDP growth and create a large number of jobs.

The key learnings from the recent past have drawn special attention towards how technology can help in business continuity and enhance business efficiency. It is a well-known fact that leveraging technology for MSMEs is the only sustainable solution in all aspects of their ecosystem development, including engagement

ILLUSTRATION BY **RAJ VERMA**

The pandemic has taught small businesses to think beyond geographical boundaries, diversify their customer base and increase their market through e-commerce

with stakeholders, marketing, supply chain management, product innovation, etc. It will also encourage women entrepreneurs to increase their role in businesses. The digital payment solutions that reduce the dependency on banks' physical infrastructure have further made payments accessible anywhere and anytime.

The MSME sector is focussing on transforming businesses and making itself future proof. In this shifting paradigm, the government plays an essential role in supporting it by developing the digital infrastructure and creating technology to enhance competitiveness. By launching the single window system of grievance redressal in the form of Champions Portal, real-time input is derived through information and sentiments analysis. These inputs and interventions help the ministry to formulate more pragmatic policy action.

To mitigate the problems of delayed payments, Trade Receivables Discounting System (TReDS), an electronic platform, was launched as a joint venture between SIDBI and NSE. The platform facilitates financing of trade receivables of MSMEs through multiple financiers.

The pandemic has taught small businesses to think beyond geographical boundaries, diversify their customer base and increase their horizon in the market through e-commerce platforms.

Last but not the least is the fifth area of climate change and sustainability. As more and more countries focus on green products, technologies and processes, India needs to keep pace to be able to export to these lucrative markets. Technology has accelerated our world towards becoming a small global village which is inclusive and integrated with more interdependency and volatility. Therefore, we need to keep rebalancing to attain the equilibrium of our coexistence which calls for recalibration, redesigning standards, directions, foolproof governance structures and priorities with frequent engagements and sharing of responsibilities for a common global purpose of sustainable business and prevent the adverse impact on the climate for the larger good. BT

PHOTOGRAPH BY **CHANDRADEEP KUMAR**

GAINING MOMENTUM

IN SPITE OF THE PANDEMIC RATTLING THE ECONOMY, THE REAL ESTATE SECTOR IS EXPECTED TO GAIN FROM REMOTE WORKING AND A BETTER REGULATORY FRAMEWORK

BY **ARNAB DUTTA**

W**HEN BISWAJIT CHATTERJEE** moved to Kolkata from his hometown Siliguri some 11 years ago, purchasing a home was a distant dream. Fresh out of university, Chatterjee started his career as a junior-level staff at a Kolkata-based mid-size company. His income barely let him meet his ends, which included supporting his parents. Over the years, he accumulated a few lakhs of rupees, in the hope of finally making the cut. But in 2019, booking an apartment in the city was still a dream too far.

When Covid-19 hit in early 2020, the scenario changed. "Working from home was becoming a major challenge as I had no extra room or space to turn that into my work station," says Chatterjee. So, he moved back to his parents' home in Siliguri. That allowed him to get rid of his rented apartment in Kolkata, eliminating the monthly rent of ₹12,000. In spite of uncertainties over job security, income levels and the overall economic recovery, financial support from his newly wedded wife egged on Chatterjee. Further, record low home loan interest rates and incentives offered by the Kolkata Municipal Corporation to vaccinated homebuyers in the city's suburbs encouraged him to finally buy an apartment in Kolkata. "I decided to come back after getting possession of the new flat," he says.

COMING UP

Several real estate stimulants are on the way. Here is a look at some of the main ones which are likely to boost the sector

- **1,300 acres:** Land requirement for setting up 110 GWh battery manufacturing capacity by 2030
- **13.5 million sq. ft:** Estimated space required to develop EV charging stations by 2025
- **₹94,000-crore** investment in EV ecosystem for development of giga-factories and related services
- **200-km** stretch along the expressway near the upcoming Jewar airport set for greenfield development
- **Over 30 per cent** escalation in land prices since 2019 in the Noida-Greater Noida-Jewar region

5-8 PER CENT

Rising input costs are likely to initiate a round of price hikes in the housing sector from the second half of 2022. The hikes could be in the range of 5-8 per cent, say developers and experts

CHATTERJEE IS NOT ALONE. The pandemic and the disruptions that followed resulted in financial distress for a large section of the working class, but experts say it also pushed thousands of fence sitters into the country's housing market. According to Pradeep Aggarwal, Co-founder & Chairman of affordable housing developer Signature Global and Chairman of ASSOCHAM's National Council on Real Estate, Housing and Urban Development, the pandemic-induced disruptions and change in working and learning patterns immensely helped the recovery that India's housing market was waiting for. "For years, the residential homes sector was suffering from poor demand growth as actual home occupiers were postponing purchase decisions. High cost of acquisition vis-à-vis renting a home, and lack of credibility and transparency in the sector were major hindrances for them. But the pandemic helped willing homebuyers realise the true value of owning a home—it is in the security and comfort that own homes offer during difficult times and not in just their monetary value," he tells *Business Today*.

The numbers are there to see. After a free fall in home sales and new launches, offtake of residential units has bounced back since early 2021. Data from global real estate services firm JLL shows, over the past one year, demand for housing units has grown stronger. In the October-December quarter, for instance, sales of residential units peaked to 46,750 units in the country's top seven markets—Mumbai, Delhi-NCR, Bengaluru, Pune, Chennai, Hyderabad and Kolkata. That was 114 per cent and 40 per cent higher year-on-year and quarter-on-quarter, respectively, and also the best quarter for home sales in over eight years. "It was up 70 per cent on pre-pandemic transaction levels of January-March, 2020. With the onset of the festive season and supported by discounts and incentives offered by the developers plus the low mortgage rates, sales soared in the last quarter of 2021," JLL noted.

While yearly sales numbers continue to lag pre-Covid-19 numbers—128,282 in 2021 compared to 143,703 in 2019—the recent trends have exerted confidence among home developers. Niranjan Hiranandani, Managing Director of Mumbai-based real estate major Hiranandani Group and National Vice-Chairman, NAREDCO, says the ball has been set in motion as a large section of the millennial population has now got the chance to own homes. "The recent measures by various state governments like cut in duty, record low home loan rates, and the necessity and the security of owning a home is here to stay. It will continue to drive home sales for years to come," Hiranandani tells *BT*.

Aggarwal from Signature Global expects this trend to define the current decade for the country's housing market. "There is a reason why we are now observing well over 50 per cent jump in both sales and new launches. I expect this trend to continue boosting the market till 2030," he says. "We expect some short-term lull in market activity given the rise in Covid cases and restrictions being put in place by state governments. With physical site visits likely to be impacted, sales momentum may see some temporary sluggishness. But India's residential sector has witnessed green shoots of recovery and is expected to gain further momentum," says Samantak Das, Chief Economist and Head Research & REIS, India, JLL.

One of the key factors that has encouraged homebuyers is affordability. As per a recent analysis by analyst firm Knight Frank, home purchase affordability is now at a "historic low across Indian cities". In the country's leading housing markets—Mumbai, Delhi-NCR and Bengaluru—the ratio of EMIs to household income has come down significantly in the past few years. From 97 per cent in 2014 and 68 per cent in 2019, it stood at 53 per cent in 2021 in the country's largest market Mumbai. For Delhi-NCR, it now stands at 28 per cent from 35 per cent in 2018 and 70 per cent in 2012.

According to Shishir Baijal, Chairman & MD, Knight Frank India, over the past decade, the housing market has undergone a structural transformation on both demand as well as supply side. This has made the environment for home buying relatively attractive and safe. "However, the key catalyst remained affordability, which has witnessed gradual improvement since 2015. For most part of the past five to six years, residential prices corrected leading to better affordability, while the recent reduction in home loan interest rates to below 6.5 per cent has been a deciding factor in the significant improvement in home affordability in the past 24 months," he says.

As a result, notes real estate market analyst Anarock Property Consultants, unsold inventory in the sector has come down significantly after it peaked in 2020. Data shows, overall inventory levels stood at 32 months at the end of 2021—down from 55 months

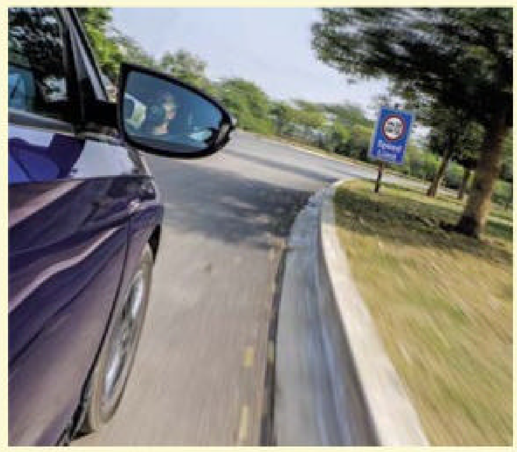
#BeTheBetterGuy
A Road Safety Initiative

India Today Group and Hyundai Motor India Foundation with a shared vision have come together to work towards a common goal of making Indian roads safer. The campaign is motivated towards raising civic sense within Indians, communicating road safety concerns to road users and bringing about an organic change in the world's 2nd most populous country.

The driving force behind this campaign is creating awareness about road safety and driving etiquettes. It is the lackadaisical attitude towards these two factors by drivers themselves that causes most accidents.

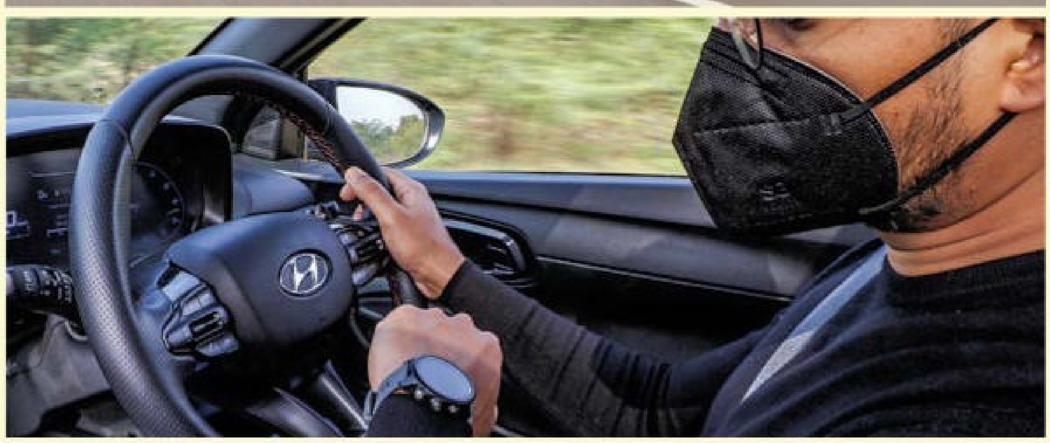
SAFETY MATTERS

The thrill of speed can be exhilarating, but it's important not to take the consequences of over-speeding lightly. It is imperative that you stick to the speed rules. The fear of getting pulled over and ticketed by speed cameras and interceptor patrol cars is enough to make even the most stubborn driver think twice before they break any laws.



Vehicle knowledge is also an important part of the equation when it comes to preventing speeding. To be a great driver, you need to know how your car handles and accelerates. Learning the optimal braking performance of each individual vehicle is just as important so that when someone messes up or makes an error in judgment while driving, you'll have time enough on hand to act before impact. You need an intuitive grasp on when it's better (or worse) time for you to brake, accelerate or change lanes.

Motoring is a joy and living life in the slow lane should be encouraged. So, next time you hear that chime go off at 80 or 120 kmph, take note of how much fun it can really feel when we're not speeding up.



GOOD RECOVERY

Residential real estate market nears pre-Covid-19 levels

FIGURES ARE SALES IN NUMBER OF UNITS
SOURCE: JLL RESEARCH

	2019	2020	2021	Change (2021 vs 2020)
Kolkata	7,463	2,568	7,183	180%
Bengaluru	26,453	10,440	27,118	160%
Pune	18,867	9,246	21,717	135%
Hyderabad	15,805	9,926	15,787	59%
Delhi-NCR	29,010	15,743	23,109	47%
Mumbai	32,138	19,545	25,368	30%
Chennai	13,967	6,983	8,000	15%
Total	**143,703**	**74,451**	**128,282**	**72%**

GETTING BETTER

Home sales and new launches at year's high in Q4, 2021

FIGURES ARE IN NUMBER OF UNITS
SOURCE: JLL RESEARCH

	Q4, 2020	Q4, 2021	Change
Sales	21,832	46,750	114%
Launches	26,785	45,838	71%

in 2020. And it is now nearly at the pre-Covid-19 levels of 30 months' inventory as IT- and tech-driven markets like Bengaluru lead the pack with only 21 months' inventory. (Inventory measured in months indicates the number of months it will take for the current unsold housing stock on the market to sell at the current absorption rate. An inventory overhang of 18-24 months is considered relatively healthy.)

According to Anarock's estimates, the overall inventory overhang is likely to come down further in the coming quarters if a high-impact third Covid-19 wave does not break the pace. "Factoring in the current housing sales momentum and guarded new supply across cities", the outlook is positive, it said.

Rising cost of materials and an overall inflationary scenario are pushing up costs for developers and they may soon resort to hiking prices. But industry watchers say it is unlikely to hurt the growth momentum anytime soon. As per developers and experts, rising input costs are likely to initiate a round of price hikes from the second half of 2022—by 5-8 per cent. "The market will see a round of price increases in 2022 but it will still keep home rates within the reach of buyers," says Hiranandani.

According to the IRIS Index from digital property consultant Housing.com, which measures trends based on online searches, megacities such as Mumbai, Bengaluru and Hyderabad are set to lead the recovery in the residential real estate sector. "We are also seeing increased traction in Tier II cities such as Surat, Jaipur, Patna, Mohali, Lucknow and Coimbatore on the back of continuing remote working policies. Homebuyers are now leaning towards larger homes and localities with access to better healthcare services, security and open spaces," says Ankita Sood, Head of Research at the firm.

IF THE FATE of residential realtors is hanging on the spirit of the homebuyers and continued thrust by authorities on keeping homes affordable, the commercial market is banking on new and emerging sectors for future growth, apart from large-scale greenfield projects that can pull in new investments. Relatively newer sectors such as electric vehicles (EVs) and data centres are estimated to be driving the growth of commercial real estate, even though conventional office and retail spaces have been hit hard since the pandemic.

According to a recent analysis by Canada-based diversified professional services and investment management company Colliers, the fast emerging EV ecosystem in India is set to boost the sector. The EV segment is likely to attract ₹94,000 crore worth of investment in the next five years, which according to Colliers assessments is likely to benefit the Indian real estate sector in the form of setting up of new augmenting manufacturing units, industrial parks, and clusters with focus on last mile delivery by e-commerce firms and third-party logistics companies.

One Green Mile
that's going to make
the city smile.

One Green Mile is now open to Mumbai

Come experience an extraordinary transformation story in the heart of the city. A one-of-a-kind undertaking between the BMC and Nucleus Office Parks, One Green Mile is a space that will change the way you look at Lower Parel. With the addition of four beautiful gardens across the stretch - **Green Isle, Parel Baug, Vachanalay and Aapla Angan** - in Senapati Bapat Marg, Lower Parel; it's truly going to be a place with artful facades, community spaces and a unique experience for Mumbai to come together and thrive.

As the government pushes for electrification of public transport, offers tax benefits and incentives for first-time buyers, the EV segment's growth will be the key driver for the commercial sector. Currently, 15 states have either approved or notified EV policies, with six more states in the draft stage. Tamil Nadu leads the pack, accounting for about 34 per cent share in total planned investments for EVs, followed by Andhra Pradesh and Haryana with 12 per cent and 9 per cent share, respectively.

While southern states and Uttar Pradesh are focussing on manufacturer-based incentives, states like Delhi, Gujarat, Maharashtra and Meghalaya are focussing on demand incentives. They are likely to set up industrial parks and/or clusters for EVs or manufacturing of ancillary components with plug-and-play. This, according to Colliers, is a game changer. "Real estate players can tap into the opportunity for manufacturing, warehousing, charging stations and dealerships of EVs. The government has a conservative scenario of manufacturing 110 GWh of EV batteries by 2030. This can spawn manufacturing requirement of about 1,300 acres of land pan-India," says Ramesh Nair, CEO, India & Managing Director, Market Development, Asia, Colliers.

The commercial real estate sector is betting on new and emerging sectors for future growth, apart from large greenfield projects

As per its estimates, India would need about 26,800 public charging spots by 2025, which would translate into 13.5 million sq. ft of land being developed commercially. Apart from landowners, it will be a big opportunity for commercial developers as well. "Landowners can enter into a revenue share model with charging service providers. There is also ample scope for developers to develop retail and recreation spaces in proximity to charging stations," analysts at Colliers noted. It estimates, of the total investments that the EV segment would attract, nearly 36 per cent would be in battery manufacturing. These, apart from component manufacturing, would require large-scale projects. Projected land requirement for setting up 'giga factories', measuring about 500,000 sq. ft, for lithium-ion batteries is very high, it noted. In fact, the prospective demand for land for EVs and related products and services like charging stations surpasses that of land demand for warehousing.

Further, lack of high-specification warehouses for storing lithium-ion batteries opens up opportunities for newer developments in the already growing warehousing space. With ₹34,500 crore planned investment in the lithium-ion battery sector alone, apart from ₹60,000 crore in original equipment manufacturing, commercial real estate is set to get a leg up in the next five to eight years in India, says Nair.

Another key driver for growth in the commercial segment is set to be massive greenfield projects such as new international airports and expressways. The largest of these, the upcoming Jewar international airport off the Yamuna Expressway in Uttar Pradesh's Gautam Buddh Nagar district, is set to transform the area's economy. According to a techno-economic feasibility study by PwC, the Indira Gandhi International (IGI) Airport in the NCR, which currently handles 30 per cent of the cargo in the country, gets half of it from regions like Gautam Buddh Nagar and Ghaziabad. Once operational, this entire load is expected to be diverted to Jewar, which is much closer and better connected by road. According to its estimates, by 2027-28 the airport will be handling more than 1.1 million tonnes of cargo per year—more than the 1 million tonne of cargo that IGI now handles. Interestingly, unlike IGI, nearly 90 per cent of Jewar's cargo will be for international destinations.

This, according to industry experts and developers, has opened up a long-term opportunity that is set to drive growth in the coming years. "The airport has the potential to extend the NCR towards Jewar," says Manoj Gaur, Managing Director of Gaur Group, a major realty player in the Noida extension region. While, according to Ashish Bhutani, CEO of Bhutani Group, which has key interests in commercial projects in the region, better infrastructure and planned implementation in the area have now opened it up as a major corporate hub, in competition to Gurugram.

As per estimates by analysts at brokerage firm Emkay Global Financial Services, recovery in Noida region's real estate market is already evident and the "outlook is bright for large developers". Industry estimates suggest, as commercial and residential developers have begun to flock to the region, land prices have already gone up by over 30 per cent since 2019. According to Knight Frank, the airport will boost the region's growth as a warehousing hub and will push India to augment its logistics infrastructure sector. "For the warehousing sector, a good transport network is primordial to ensure that businesses remain profitable on account of efficiencies. Most investors and landlords are looking for land with clear titles at ₹1-1.5 crore per acre. The right land at the right price will ensure that take-up is fast," says Balbirsingh Khalsa, Executive Director (Industrial and Logistics) at Knight Frank India. BT

@arndutt

Realty Road Ahead

A steady economic expansion will lead to a rebound in office leasing, rental cycles across retail and strong growth in the logistics and residential sectors

BY **ANSHUMAN MAGAZINE,** CHAIRMAN & CEO - INDIA, SOUTH-EAST ASIA, MIDDLE EAST & AFRICA, CBRE

ILLUSTRATION BY **RAJ VERMA**

O**VER THE PAST TWO YEARS,** India's real estate narrative has been shaped by resilience and constant adaptation. Despite ongoing socio-economic changes, 2021 saw India's real estate market recover from the hurdles induced by the pandemic. In essence, the year 2022 will be the year of faster decision-making, quality real estate boom, and workplace reconfigurations as businesses gain further confidence to resume operations.

Here are the top trends to watch out for in the coming years.

Residential: Attracting a new generation of homebuyers

The residential sector witnessed strong momentum in sales as of 2021. While affordable and mid-segment housing led sales, there was also an increase in demand for luxury projects. In 2022, residential sales can be expected to witness a smooth spike. Strong government support in terms of policies, low mortgage rates, reduction in stamp duty, property registration fee, and attractive payment schemes offered by developers will continue to boost sector growth. The Real Estate Regulation Act (RERA) that provides transparency will bring further accountability to property transactions, encouraging investment infusions from NRIs.

The government's Model Tenancy Act that bridges the trust deficit between landlords and tenants, will facilitate filling the demand-supply gap in the rental sector. The future of residential will remain aligned with the affordable- and mid-segment. Also, there will be a sustained demand for larger houses in the peripheries to accommodate a luxurious lifestyle at an affordable price.

Office: Leasing demand to normalise

The challenge for occupiers will be how to redefine the role of the office, accurately gauging space utilisation and creating agile office networks for a more dispersed workforce. Companies may exercise more scrutiny when opting for office spaces—focussed on sustainability, wellness features, and green leases, among others.

Office supply in India increased from 42.1 million sq. ft in 2020 by almost 18 per cent y-o-y to touch almost 50 million sq. ft. in 2021, leading to the total office stock in the country crossing 773 million sq. ft.

As the economic recovery continues to gain momentum, concerns about the viability of hybrid working models would further ease. Renewals, re-negotiations, and the addition of flexibility options are likely to be the focus areas for the next six months. The long-term drivers of flexible space demand are likely to be intact, with smaller occupiers seeking cost-effective fully furnished spaces and large multinationals looking to build more agility into their office portfolios.

Industry and Logistics: Growth of omnichannel

Occupiers will focus on bolstering supply chains, leading to further growth in demand for the industrial and logistics space in India. Increasing investment in and adoption of smart warehousing technology can be expected to boost newer logistics facilities. Logistics space demand is to be driven by growth in e-commerce and omnichannel distribution. Third-party logistics firms (3PLs) and traditional retailers will expand and improve distribution networks. While occupiers focus on securing warehouse space near end-consumption points, they must also recognise emerging secondary consumption clusters and transportation hubs.

Retail: Leverage leasing activity

The retail industry witnessed more innovation in 2020-21 than it did in the prior decade. These innovations are pushing retailers to adopt a sharper focus on customer experiences to differentiate and get customers back to brick-and-mortar stores. There's also an evident need for restructuring the retailer-landlord relationship. Going forward, lease agreements that are designed to absorb the impact of such structural disruptors while at the same time providing scope for rental growth and visibility on retailer performance would be preferred by retail stakeholders. While omnichannel was already a trend before the pandemic, the change in consumer shopping patterns have ensured that retailers consider omnipresence as one of the pillars of their business plan. Occupiers should capitalise on the tenant-favoured market to lock spaces. Leveraging brick-and-mortar can be expected to engage online and offline customers—incorporating 'click-and-collect' options into last-mile logistics. Landlords in turn should focus on rent clauses to capture market recovery, adopting a proactive approach towards experience-driven retailers.

We look forward to seeing how an increased focus on government reforms, accountability and transparency will shape the real estate industry and the overall economy

Data Centre: Move to the mainstream, spurring demand nationwide

With emerging technologies like 5G, AI, and edge computing adding to the already high demand for data centres, the development will increase in the coming years, spurring growth in established primary markets, as well as secondary and tertiary markets. Secondary markets will see growth as developers seek to expand capacity, focussing on affordable land in favourable climates, network connectivity, clean and inexpensive power sources, and favourable tax incentives.

REITs: Influx of global institutional capital

Considering the current market landscape, and available investment opportunities, REITs will be one of the favoured investment avenues given the comparatively resilient underlying cash flows. We can expect an increase in the influx of global institutional capital and increasing retail penetration in stable income-generating assets. 2022 will be an interesting year of change and innovation. We are hopeful to see how an increased focus on government reforms, accountability and transparency will shape the real estate industry and the overall economy. BT

LEARNING AFRESH

THE PANDEMIC-INDUCED EDUCATION DIVIDE AND LEARNING CRISIS HAVE HIGHLIGHTED THE NEED FOR A PARADIGM SHIFT IN THE WAY EDUCATION IS STRUCTURED AND DELIVERED. WITH THE NATIONAL EDUCATION POLICY OUTLINING FUNDAMENTAL CHANGES TO EXISTING MODELS, INDIA IS POISED TO MAKE SIGNIFICANT STRIDES TOWARDS HOLISTIC LEARNING

BY **BINU PAUL**

FUTURE OF EDUCATION

The National Education Policy (NEP) proposes various measures to improve the education sector

1. NIPUN Bharat programme aims to ensure foundational literacy for all children by 2026-27

2. The NEP aims to increase the gross enrolment ratio in higher education from 27.1% (2019-20) to 50% by 2035

3. It aims to enhance investment in the education sector to 6 per cent of GDP

4. The NEP plans to set up one large multidisciplinary college in every district by 2030

5. NEP recommends bringing vocational education into the mainstream

6. The policy aims to introduce at least 50% of learners to vocational education courses

W

WHAT'S WRONG WITH Indian education? Everything. Well, barring a few pockets of excellence. Is there hope for the future? Possible, yes, if the National Education Policy (NEP) 2020 is implemented in letter and spirit, with full participation of all stakeholders. Implementation of the policy began in the first half last year, and the first signs of activity are beginning to become visible. The introduction of the ambitious NIPUN Bharat programme, which aims to ensure foundational literacy and numeracy for all children by the year 2026-27, is among the initial steps. While the NEP will be implemented fully over the course of this decade starting from 2021-22, a strong focus on capacity and employability, multidisciplinary and experiential learning models, high-quality vocational education, and industry-institution collaboration can transform the face of Indian education in the long term.

The most pressing problem is, and has always been, extreme shortage of capacity. The NEP has an ambitious target of increasing the country's gross enrolment ratio (GER) in higher education from 27.1 per cent (2019-20) to 50 per cent by 2035 and 100 per cent GER in school education by 2030. This kind of growth needs additional capacity, and that too of high quality. The task of building capacity starts with budget allocation for education. The NEP has promised to boost spending by enhancing public investment in the education sector to 6 per cent of the GDP, up from the current 2.67 per cent of GDP. Rajiv Tandon, CEO – Executive Education, BITS Pilani, Work Integrated Learning Programmes (WILP) says that today, India has about 40 million students in higher education. To meet the GER targets, the country has to reach at least about 80-90 million in the next eight years.

On the other side, pass percentages of Teacher Eligibility Tests (TETs) are abysmally low in most Indian states. In 2021, only 19.51 per cent of TET aspirants cleared the test in Karnataka, which is actually a significant improvement from 3.93 per cent in the previous year. Only about 1-7 per cent aspirants were eligible for recruitment between 2013 and 2018 in Maharashtra. Such dismal statistics point to the low numbers of quality teachers in the system, which results in low quality output from school education generally. And that has a cascading effect on the quality of graduates India is producing. According to the 'India Skills Report (ISR) 2022', only about 46.2 per cent of the youth are considered highly employable resources. The report further says that about 75 per cent of all companies surveyed report a skill gap in the industry, while 100 per cent of retail sector employers agree that there is a skill gap to be filled in the coming year.

"Hunger for education has grown significantly; however, it is facing a famine of options, which is making the problem bigger," says Tandon. "On the capacity side, though, some good moves have been made in online education regulations but meeting this demand at a capacity level is a challenge."

MULTIDISCIPLINARY MOVE

The NEP plans to set up one large multidisciplinary college in every district by 2030. Within the same time frame, the policy aims to make all higher education institutions in the country multidisciplinary with at least 300 student enrolments. Experts feel these steps can go a long way in solving the capacity and employability problems that have been plaguing Indian education.

For instance, an engineering student can opt for a subject from humanities. It, therefore, provides an opportunity for students to build diverse perspectives from different disciplines to better understand a theme or a subject. "When they go out, a science student needs humanities and a humanities student needs science. We work with a lot of engineering organisations and it is a very common critique by employers that the Indian higher education system does not produce holistic individuals," says Tandon.

Following the NEP recommendations, the University Grants Commission (UGC) has also recommended Vice Chancellors of all colleges and higher education institutions to implement 'multidisciplinary and holistic education' across disciplines. Thanks to the NEP, future models can be expected to offer imaginative and flexible curricular structures that can accommodate creative combinations of disciplines for study and multiple entry and exit points. It will allow students to focus on a major subject while exploring across the arts, humanities and sciences for minors.

Manish Mohta, Managing Director of online examination solution provider Learning Spiral, says along with such core changes, the methodology of assessment needs intervention. "If you are not measuring the skill gaps and learning outcomes, how will you ever have a plan to improve these? We need to revamp the methodology of assessing students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and bring digital intervention in assessment," he says.

EXPERIENCE MATTERS

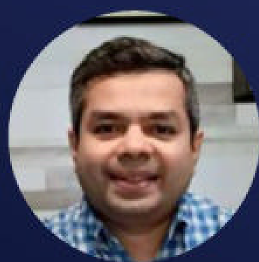
Experts advocate that experiential learning and conceptual understanding have to become the foundation of our education system as we transition from a conventional marks-based assessment model to one that pushes innovation and creativity to the maximum. Also, emotional quotient needs to be incorporated into the learning process. Parag Diwan, Chairman of Paradigm Consultants & Resource Management, a management consulting firm, explains that experiential learning requires the learner to act in the real world, rather than learn only from lectures. This type of learning pushes students beyond the traditional classroom walls, by focussing on inquiry, application, and authentic learning opportunities.

"Experiential learning is mandatory, otherwise education amounts to only theoretical learning," says Diwan, who is closely associated with the education sector and was previously President and CEO of Great Lakes Education Group. "Experiential education teaches students to examine their actions and their thought processes, and even their emotional responses. This internal reflection prepares students for the workplace and helps them make major life choices, improve their personal relationships, and address their emotional needs."

NEP's recommendation to bring vocational education programmes into mainstream education is expected to have far-reaching positive impact on how the Indian workforce will shape up over the next decade. The policy aims to introduce at least 50 per cent of learners to vocational education courses. Teaching of vocational courses from Class VI, mostly in the form of internships and practical activities, could become transformational in many ways.

"Experiential education teaches students to examine their actions, thought processes, and even their emotional responses"

PARAG DIWAN
CHAIRMAN, PARADIGM CONSULTANTS



"If you are not measuring the skill gaps and learning outcomes, how will you ever have a plan to improve these?"

MANISH MOHTA
FOUNDER, LEARNING SPIRAL

"There should be a model where educational institutions can work with an employer to collaborate in educational experiments"

RAJIV TANDON
CEO – EXECUTIVE EDUCATION, BITS PILANI, WILP

Educationists and academics call for merger of different skill and trade sectors and increased participation of industry bodies in educational experiments to create better employment opportunities. "Our ITIs, polytechnic and community colleges should be merged into one trade school, so that at least 30-40 per cent of our school leavers would be able to go to trade schools," says Diwan. "The vocational programmes should cover new and emerging industries."

On the other hand, Tandon of BITS Pilani says employers cannot just demand job-ready people; rather, they need to collaborate with institutions to build the next generation of talent. He urges policy interventions that encourage industry to work with institutions and also inspire institutions to go beyond their campuses to create future-ready talent. "Industry is also intensely looking for the right people to recruit. There should be a policy or a model where educational institutions can work with an employer to collaborate in educational experiments," he says. "It can be a long-term solution beyond finishing school programmes or short courses to help people get their first job. Top employers and institutions are able to foresee 5-10 year trends; they can join hands with educational institutions and create that talent for the future."

The pandemic, though not by design, has fast forwarded innovations. Initially, innovation was focused on learning continuity. And now, the learnings from the pandemic in terms of access and quality need to be scaled to a new level and new models of hybrid learning built to suit the hybrid-work world. With a powerful demographic edge and a potentially transformational education policy at work, India can hopefully look forward to finally evolving an education system that works for all. **BT**

@binu_t_paul

Business Today

An IMPACT Presentation

LEADING Women ENTREPRENEUR

Ms Arpita Vinay

Managing Director and Co-Head, Centrum Wealth

Q1. Tell us about your organization, including how you came up with the concept and the path you took.

Centrum Wealth is barely a decade old, but its client base and assets under management have surged fast within this timeframe. We specialize in providing complete wealth management services to high-net-worth individuals (HNWIs), corporate treasuries and family offices. The asset management offering includes products across private debt, public equity, venture capital and real estate.

I was part of the founding team which moved over from some very large organizations. Each one of us in the core team has had an experience of at least a couple of decades across large formats. We saw a great opportunity and wanted to build a boutique platform around bespoke client requirements and importantly we did not want to be product-led or take a one size fits all sort of an approach.

I am very confident that the firm could double its AUM to the equivalent of USD7 billion within the coming three years by expanding and making even more relevant its product offering, by enhancing the range of services, by increasing and further empowering the firm's coveted talent pool, further investing in its technology and digital capabilities and all at the same time maintaining the culture and collegiate environment.

Q2. What particular advice would you give to young women who aspire to be entrepreneurs?

I truly believe that success for me means to look back and take pride in what I can say has been my creation – something that I sowed the seed of and nurtured to grow in line with my dreams and passion.

I also think being a dreamer is extremely important. I would strongly urge every person to follow your dream. It is a world of enormous opportunities out there. If I were to look at just the financial services business that I am part of, I can see so many "personal brands" being created and that requires enormous faith, conviction and self-belief. As part of this journey one also needs to develop the skills and tenacity to deal with adversity and challenges maybe even setbacks and failures. Learning from these is as important to success as is the courage and competence to aim and achieve.

Q3. Are there any special advantages or drawbacks to being a woman entrepreneur?

I do not look at this as woman versus man or me versus someone else. I think both the Bank that I worked for earlier and my current firm embrace diversity to the fullest and it's been a very fulfilling journey working with extremely competent and supportive colleagues. I have found the environments driven and extremely competitive but also sensitive and with empathy towards the individual.

As a woman, I find myself fortunate to be high on traits like detail consciousness, high EQ, empathy, passion, tenacity and mentorship. I value these traits but that's not to say that others (my male colleagues) may not have it or have it lesser. As a leader/entrepreneur, as long you are able to inspire your team towards the larger purpose and work with each team member within his or her specific context, you are able to perform to potential across the firm that you lead.

Q4. Is there anything you wish you had done differently?

I feel blessed and would not have wanted life to be different from what it has turned out to be.

I grew up in a small town - growing up in a smaller place has its own charm and challenges. It provides a very firm grounding and instils a very healthy and powerful mix of dreams, ambition and the strife to achieve and excel. There are sacrifices and hardships that are par for the course like changing locations for each stage of higher studies as also for projects and jobs, living in hostels and PGs and staying away from family for long periods of time. Looking at where I am placed today and when I connect with my friends from school and college, I find that we have done rather well for ourselves and are on paths that we have dreamed and worked very hard for since our formative years.

Q5. Who or what inspires you? Why?

Countless people have influenced me over time both personally and professionally. There are many people who have inspired me both personally and professionally. Reading is a passion and I have a natural interest in reading biographies and accounts of interesting and successful personalities. I try to learn and imbibe whatever I find useful and inspiring.

It is one life and I feel very driven and inspired by the idea of creating something from scratch, to make a difference and more importantly a legacy beyond oneself. For example at Centrum Wealth, I have had the opportunity of setting up a business in an extremely competitive landscape and with large, well-entrenched and blue-blooded institutions as competitors.

Leadership is not about titles and positions, it is a journey that inspires. Leading the world of textiles with exemplary passion, unparalleled commitment and unyielding approach is Ms Suchita Oswal Jain, the third generation of the Oswal family who is nurturing a legacy - an organization that is delivering excellence for nearly 6 decades.

Ms Suchita Oswal Jain

Suchita Oswal Jain is the Vice-Chairman & Joint Managing Director of Vardhman Textiles - India's largest vertically integrated textile manufacturer exporting to 75+ countries and providing employment to about 30,000 people. A billion-dollar organization, Vardhman is a leading manufacturer of Yarns, Fabrics, Acrylic Fibre, Threads, Garments and Special & Alloy Steels.

Suchita started her journey with Vardhman in 90s when the country was embracing globalization and opportunities were being explored. Despite being a newcomer, she took a brave step to make the most of it and initiate the forward integration of Vardhman Textiles. She took several noteworthy decisions that changed the work landscape for the organization, including centralizing the marketing team and setting up dedicated cells for new product development and technology. It was her tireless efforts that today, the Group is a preferred partner for global brands including GAP, Uniqlo, Marks & Spencer, Target, H&M, Kohl's, Calvin Klein and Muji for their fabric requirements besides being a major supplier of yarns to companies/brands like Toyobo, Australtex, Decathlon and Aditya Birla Group.

Suchita has an impressive educational background. She worked hard to achieve this success and she has worked even harder to achieve so much more since then. Her determination to deliver nothing but excellence has earned her an admirable reputation in the realm of fashion textiles. A textile magnate and a role model for many, Suchita is an entrepreneur to the core. Under her aegis, Vardhman has evolved as a proactively responsible organization that addresses the triple bottom lines of Sustainability and is zealously working to not just meet but exceed customer expectations.

Suchita believes in continuously working towards a goal and as soon as she accomplishes one, her eyes are set up to achieve another. At present, she is involved in crucial business decisions including long-term strategy, planning for the company, corporate services, and governance policies. Suchita actively participates across different functions and departments and engages herself in CSR initiatives as well.

An avid believer in creating opportunities, Suchita is a formidable advocate of women empowerment through skill development. Her approach towards bringing more women to mainstream and transforming them into confident decision-makers is practical and effective. "As a woman entrepreneur leading the corporate affairs and a family business, I feel blessed to be capable of bringing about a change in the lives of other women. I wish to send this message to my fellow sisters that there's nothing you can't do, the power, the zeal, the passion, the strength, it's all within you", Suchita shared.

Suchita says that Vardhman is an organization rooted in values and this value culture is a strength she dearly nurtures. For the same, she has also launched a drive called 'Respect for All'. The campaign, while being a step towards women empowerment, also sends a reminder about the organization's code of conduct and the fact that Vardhman is a family where every individual is treated with dignity.

Ms Jain strongly believes that every journey is unique and for every business, there would be a different kind of challenges. Instead of trying to fit into a standard mould or searching for a roadmap, one should be dynamic and willing to explore; since quick adaptability is a pre-requisite in the world of entrepreneurship. She says that "The beauty is in choosing the challenges and overcoming them."

Dr. Satya Ramani Vadlamani

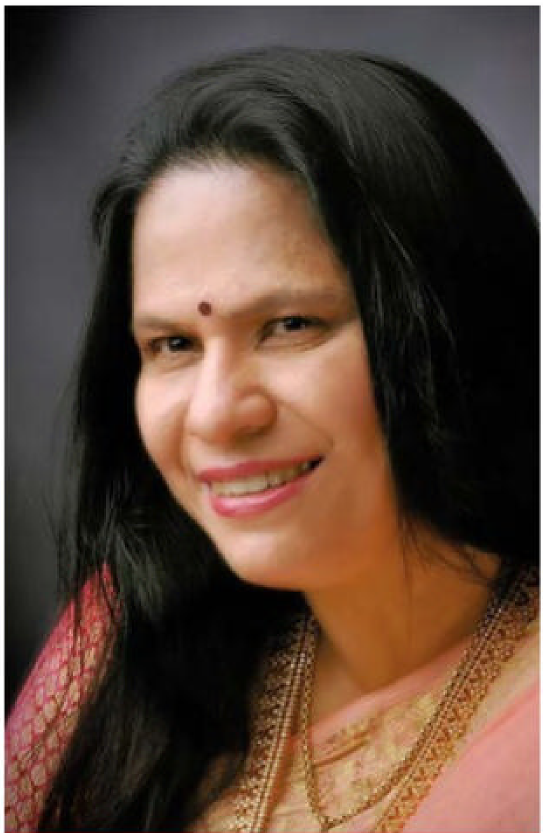
Chairperson & MD, Murli Krishna Pharma Pvt Ltd

This opening statement by Dr. Satya Ramani Vadlamani, Chairperson & MD, Murli Krishna Pharma Pvt. Ltd. is testimony to her lofty ideals and vision. An Electrical & Electronics engineer by education, she has carved a niche in global marketing of pharmaceutical products. She started her career in marketing at Armour Chemicals Ltd. in the year 1992, moved on become the youngest woman GM in the pharma industry to and finally give it all up and launch her own pharma export company in 1998 and then a pharma manufacturing company in 2004.

It was while working at Armour Chemicals, that Satya discovered her skillset and roots in the world of pharmaceuticals. As she reminisces, "Pharma is a very live industry. The molecules and its working on the human body was something that excited me and so I ventured into setting up Murli Krishna Exports. As I was adept at marketing, the going was very good with exporting bulk API's and semi-finished formulations to many countries across the globe. However, around 2003 there was a complaint about one of our shipments sent to China. It was then that I called my friend, Dr. Vijay Shastri who probed the issue, suggested the solution of setting up my own manufacturing unit - Murli Krishna Pharma."

THE MAKING OF MURLI KRISHNA PHARMA

Born to a IIT Physics professor and a retired school teacher, getting into entrepreneurship was definitely a big challenge for Satya. As she fondly recalls, "When I told my father about the need for a 1.5 crore loan, he asked me whether I even knew how many zeroes are there in a crore." But Satya's never say die attitude and determination convinced her parents and husband to part away with their savings and help her realise her dream. Thus was born Murli Krishna Pharma in 2004 with a plant at Ranjangaon. The first shipment of pre-finished formulations manufactured by Murli Krishna Pharma was sent to Greece and the US in 2005, with an audit certification from the European Union. Today the company has approval for 42 products and is a Novel Drug Delivery System (NDDS) company in the truest sense of the word. As the company ventures into finished formulations, Satya has placed innovation as the key. Whether it is a micro nutrient fortified oil for anaemia, a less invasive drug for asthma or venturing into the field of 'Janaushadi', the company works with the aim of bringing world class drugs at affordable prices to the Indian populace and expand it to the world.



Believe you can... and success is yours

"The journey is not yet over. I am probably at the foothills of the mountain that I want to climb."

AS A WOMAN ENTREPRENEUR...

"Life is like a binary equation of ones and zeroes"

Satya believes that being a woman does not give her any advantage or disadvantage in the field of business. While there could be an opportunity for first entry, your second, third and all entries after that will be defined by your business sense and ethics. Reiterating this fact, Satya says, "The purchase order does not come if a beautiful woman goes out there to sell. It is only your product, your conviction and belief that will take you forward. If I make a product that I cannot give my children or my parents or my staff, then I cannot stand in the market."

She feels young women who want to get into entrepreneurship should take their time to plunge into the sea. They should first take up a job, unlearn their academic lessons, and actually garner experience. Once they are convinced about their goal, they need to look for two more people with skillsets that you do not have – from either marketing, financial acumen and technical knowledge. But she also cautions, "Take risks but calculate what will happen if you take the risk. Take stock of the people who have invested in your dreams and also be ready for two things – one is a point of no return, where you take off and do well throughout. The other aspect is that you should also be aware about when to cut your losses and be ready to shut shop."

FOOTPRINTS ON THE SANDS OF TIME...

"Every path takes us to another set of snakes and ladders"

Despite some major setbacks and haunting mistakes, Satya feels that there is nothing that she would want to do differently. "No! even if I had taken those decision correctly, I may have come up with the same result. If it has to happen, it will eventually. But what is important is that even when I hit rock bottom, my parents, my husband and my children stood by me like a rock and helped me bounce back. Whether it has been my professional blocks or personal setbacks, my support system of my family and friends ingrained in me the thought that my company and my employees should always be my first priority."

It is this commitment that keeps Satya motivated to conquer new milestones for both the company and herself. Leading by example, she went to the factory everyday during the pandemic period. She utilised her time to do a Ph.D. in Strategic Management with reference to the Pharma Industry. As she says, "Change has to be permanent, for people to evolve. Everything is good. So whether it is karaoke singing, listening to music, writing blogs, trekking or reading, I am always willing to explore new avenues. And yes, bungee jumping and para gliding is still on my wish list. Afterall, life is too short and we need to just keep moving on."

Ms. Aparna Reddy

Executive Director, Aparna Enterprises Ltd.

INITIATIVES WHICH DISPLAY PROOF OF CONSISTENT PERFORMANCE THROUGH BUSINESS ACHIEVEMENT –

Unispace – Ms. Aparna Reddy started Unispace division in 2012. The division aimed at selling branded premium sanitary ware in Hyderabad and started with products from several renowned brands. During these years the division has not only expanded its product offerings from sanitary ware to Bathroom Furniture, Bathroom Tiles, Elegant Modular Kitchens, Wellness & Spa products and Wardrobes, but has also become regional and national distributor for various European brands.

Alteza – Aparna Enterprises Limited entered premium Aluminium windows and doors segment and launched Alteza window and door systems in Year 2019. Within a short span of time, the brand quickly gained traction and is becoming a reputed name in Aluminium window and door industry. During this short span itself, the brand has introduced products like Slimline sliding doors with 19 mm interlock, which caters to pressing customer needs.

Other initiatives -

- Association with global brands – Aparna Enterprises has partnered with several global brands to provide unique offerings to its customers. - The Unispace division partnered with German Kitchen maker Nolte, European faucet brand Paffoni & Fantini to expand its product basket. With these additions Unispace has not only created a niche for itself but has also created a long list of satisfied customers. Aparna Enterprises shook hands with Craft Holdings, Hong Kong to cater to growing demand for Exterior Facades and Aluminium products. The company will soon be exporting its products to Asian and European markets.
- Production capacity expansions during 2021, the production capacity of Vitero Tiles was doubled to 30,000 sq meter per day. The RMC division produced the highest ever quantity of RMC – 1.4+ lakh cu mt in December 2021. The company soon is in process to expand its capacities further to handle the growing demand in this sector.
- Aluminium window and door systems – To handle the increasing demand the organization is in process of setting up a fabrication unit to design and fabricate aluminium windows and doors with 3 times the current capacity
- Crossing borders – Aparna Enterprises started exporting Vitero tiles to Asian countries and is in process of exporting its products to Middle East region
- CSR activity - ANSWER (Aparna Novel Society for Welfare and Research), the CSR wing of Aparna Enterprises was established in 2007 and is constantly involved in helping deprived children, economically handicapped or physically disadvantaged youth and elders. Since its inception the unit has created measurable, repeatable and systematic methods to ensure that disadvantaged and orphaned children are fed loved and have a home where they feel safe and grow up to become responsible citizens of the country.

Other awards won

- 40 under 40 award by Times group in 2021
- Black Swan award for Women Empowerment by Asia One in 2020
- India's Most Inspirational Leader award by White Page India in 2019
- Women Entrepreneur award by Zee Business in 2018.

Ms. Aparna Reddy is the Executive Director of Aparna Enterprises Ltd, a flagship company of Aparna Group and a leading player in the country within building material segment. Under her able guidance, Aparna Enterprises continues to grow and is today a highly diversified organization. Being a second generation business woman, Ms Aparna paved her own way to gain trust and acceptance in her company. "Its people that matter at the end of the day and I could contribute to the company's growth for them to accept me". In her own words "It's a different challenge altogether for the first generation. For the second, third and the generations to come, I think you should be well accepted in the system to find success. Due to her unrelenting drive for setting high standards, AEL has been able to sustain multi-fold growth year-on-year. Ms Aparna Reddy holds a degree in Electronics and Communication Engineering from MJCET and has undergone a Master's program at Indian School of Business.

Ms. Roma Priya

Founder, Burgeon Law

Boosting start-up ecosystem

*For a young lawyer starting as an entrepreneur was never an easy task; but her determination and dedication towards achieving her dreams has made her firm today one of the most sought-after law firms with investors and start-ups in India. In an exclusive interview with **Business Today**, the founder of Burgeon Law, **Roma Priya** talks about how her firm is leaving no stone unturned in boosting start-up ecosystem amid challenges…*

Q1. Can you brief us about your journey and your venture into start-ups?

I am a third-generation lawyer from a family of litigators; so, law was an easy choice for me. However, the path and practice of law that I chose was very different from what my family practiced. I developed an interest in new businesses that were being built on the foundation of innovation and technology, especially the start-up ecosystem while working with Sand Hill Counsel (a well-known law firm between India and Silicon Valley catering to emerging companies and venture capital investors).

After spending nearly four years with Sand Hill, I started my own firm by the name Burgeon Law - a boutique law firm focused on India's evolving start-up ecosystem with an aim to support growth, change and innovation. Being the brain behind the company, my role is to advise, mentor and represent high growth start-ups, accelerators, angel investors, family offices, and venture capital/private equity funds. And in my decade-long career in the venture capital space, I have worked with over 500 plus clients.

Q2. What advice would you give to the young women entrepreneurs?

For women aspiring to become entrepreneurs, I would like to say that passion and perseverance are the two key driving forces that will help you succeed in your entrepreneurial journey. No two days in a business are alike and my suggestion to them is to keep pushing the boundary limits everyday despite uncertainties. Also, women entrepreneurs should build strong support groups, including their families and friends, who can help make climbing the career ladder easy.

Q3. What are the pros and cons of becoming a women entrepreneur?

The challenge for women entrepreneurs in the country lies in crossing the threshold, overcoming society barriers, building their own support groups and discovering their own potential and identity. However, women entrepreneurs have a strong instinct, high emotional intelligence and possess good interpersonal skills which can be a great asset for their businesses. Nonetheless the statistics are very promising and the world is turning to women to be the new thought leaders.

Q4. How did you go about launching your own business and how was the experience?

I started Burgeon Law in 2015 as a solo business owner with only five years of experience after graduating from Law school with no business plan and very little exposure of how to run a law firm. I have tried to learn every day on the ground and do my best. Our growth is the last 6 years has been largely organic and our clients have been our biggest brand ambassadors. Building Burgeon Law has been an extremely enriching and fulfilling experience for me both personally and professionally. I cannot thank my team and our Partners enough in their contribution in making Burgeon Law a sought after law firm in the start-up and PE/VC sector.

Q5. Who is your inspiration and why?

I feel deeply inspired by Jacinda Ardern, the prime minister of New Zealand. In October 2020, Jacinda Ardern won a second term as the Prime Minister of New Zealand, also becoming the youngest ever female prime minister. In 2018, she became the second world leader to give birth while in office.

I feel though her work and choices in life, she is painting an inspiring picture of a young modern woman who can achieve anything that she desires and does things on her own terms without being bound by the conventional standards set by society.

Q6. What are the challenges of becoming an entrepreneur in the service sector?

Entrepreneurship is never easy! Especially, when it comes to professional services, maintaining relationships and building a strong network is a tough challenge. However, for those who dream of having their own firm in the service sector, their success depends on being able to deliver quality services, their capacity to build a self-motivated and talented team and ensuring that every client is satisfied. There is no instant formula for starting your own business and becoming an entrepreneur- it does take time to build your network, be visible, and establish yourself/your company as a trusted source/ partner.

Mandhira Kapur

Chairman & Managing Director, Sona Mandhira Private Limited

The Driving Force

Shattering the male-dominated bastion, Mandhira Kapur, Chairman & Managing Director, Sona Mandhira Pvt. Ltd., has created a niche for herself in the automotive aftermarket segment with her strong value-based system and innovative ideas…

A name synonymous to the automotive sector, Sona Mandhira Pvt. Ltd. (SMPL) today is a brand to reckon with. Single-handedly steering the company to what it is today, Mandhira, as an entrepreneur, has created a brand for herself in the automotive industry through her innovative products, design and an eye for efficiency and reliability. Presently, SMPL's brand adheres to the most stringent quality standards that are benchmarked by highly skilled and experienced professionals. But above all, the company offers unmatched value to its consumers with a range of finest products in the aftermarket segment.

LEADING FROM THE FRONT

The group has successfully achieved new milestones under the guidance of super woman Mandhira who has meticulously positioned SMPL as a brand that offers unmatched value to its consumers. As a dynamic leader, she has made a mark in the automotive aftermarket segment with her strong value system and innovative perspectives. Following in the footsteps of her legendry father late Dr. Surinder Kapur (founder and chairman of Sona Group of Companies), Mandhira has seamlessly worked her way to the top by building brand values and keeping intact the core values of integrity, safety and quality.

Her commitment and never-say-die attitude has made it possible for the company to venture into other components within the four-wheeler segment unlike traditional business of suspension and steering components, in a very short span of time.

But Mandhira believes her 'magic mantra' to grow as an entrepreneur has been investing in people, processes and values over the years. She is of the opinion for any company or organisation to grow the employees need to feel motivated and empowered to work as owners/founders in their respective roles. This belief reflects clearly from company addressing everyone as part of Sona Mandhira Parivaar, imbibing the values of ownership at every level.

TALENT FIRST – GENDER NEUTRAL

Mandhira feels that it has been challenging for her when she entered into the automotive ancillary business as it was a man's dominated world. Of late, the automotive sector is working towards making a gender diverse workforce and its definitely showing the results, its still a long way home. Mandhira has been striving to make workplace more women oriented and has been working towards addition of women at all level with organization. She believes that automotive industry is a gender-neutral industry where men and women can co-exist together in the design and manufacturing of automobiles as it will add a new dimension to the products which will then be well accepted by the consumers. Moreover, it will also generate revenue and increase profitability for the organisation. Keeping this in mind, Mandhira says, "We at SMPL are trying to tap the best talent, regardless of gender, and make women an important and valued member of the team."

VALUES-BASED ORGANISATION

"It is challenging to don the role of an entrepreneur as there are many pros and cons to it", says Mandhira. "Secondly it becomes imperative that you have the right people with you whom you can trust and believe in if you have to achieve your goal… And fortunately I have been lucky to have a strong team in place that has stood through difficult times."

Since childhood Mandhira was fortunate to imbibe critical values from her father viz. discipline, integrity and commitment in life. She always believed that one has to keep educating oneself in order to grow with the changing times. "My father taught me that 'Success is not a coincidence… in fact it is perseverance, trust and hard work' provided you are true to your dreams to achieve goals and constantly learning under rapidly changing business environments," claims Mandhira. "My only advice to people taking up entrepreneurship, especially the youth and women, is that if you are working for money and not for what you have passion for, then don't do it… and importantly, if you don't wake up each morning with excitement to go to work, then you are in the wrong profession," she advocates.

Bhavna Udernani

Founder, Adhaan Solutions

Q1. Tell us about your business and how did you come up with the idea and the journey travelled?

"Nothing we do is more important than hiring and recruiting people"

Adhaan Solutions was founded in 2010, in response to the growing demand for cost-effective, flexible and tailored recruitment services, and since then Adhaan has not looked back. With the support of cutting-edge technology, a master database and a dedicated team, the business has grown to a level that today Adhaan is a leading multi-industry recruitment consultancy catering to all levels of custom-made recruitment needs. Adhaan Solutions specializes in temporary or contractual recruitment along with permanent and fixed employees at various levels.

Our value is derived from the way we work- Transparency, Integrity, Respect and Passion together makes us create extraordinary experiences for our clients. Our clients and candidates benefit from our broad industry experience, expertise and comprehensive database which are the result of our relentless teamwork of 11 years.

Q2. For women entrepreneurs, what specific advice would you have for young women who would like to become an entrepreneur?

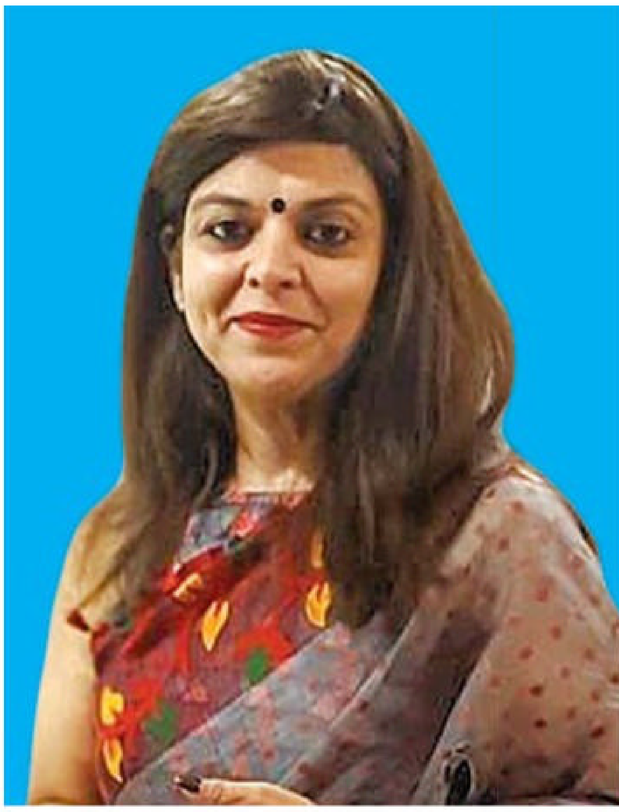
Business is a niche where there are no biases, we as entrepreneurs stand on the same platform to grow our businesses and grow alongside the business so I would advise all the young entrepreneurs that passion will play the most important role to drive you where you want your business to be, having a strong vision and a clear goal will make you reach your goals easier, through the journey, alongside with staying grounded.

"The two most powerful warriors are patience and time." - Leo Tolstoy

Being aggressive will take you long, but patience makes the journey easier, alongside the understanding of the dynamics of the business and the ecosystem.

Q3. Are there specific advantages, disadvantages to being a woman business owner?

I will not mince words – Yes, it is still a tough journey for a woman entrepreneur. It's 2022 and still women face problems that men don't have to - not being taken seriously, not being accepted by the fraternity, not feeling welcome, having to work thrice as harder just to prove ourselves worthy enough to be trusted with the business are just a few. Men are better at converting social conversations into business deals, whereas a lot of women still find it uncomfortable to talk business in more casual set ups.



With 12 years of experience in the HR industry and an ability to manage people and staffing business, Bhavna was kindled with the desire to add her distinctiveness in a process to learn, evolve and transform people's lives to extraordinary and that's how She picked this noble industry to venture a unique business model where humans are the core focal point of their products and services.

"The industries are in indefinite race for hiring, developing & retaining talent. Candidates are looping in a vicious circle to find jobs in India, and recruiting agencies like us are aiming to bridge this gap to help them reach their goal. I take this as my responsibility towards society to pay back by assisting individuals to get best jobs and employers to get the best talents from the pool of opportunities that are scattered around

I have personally faced most of these, specially working in the labour- oriented markets. There have been times, where my opinions were not considered on union matters or certain authorities were just not comfortable discussing matters with me just because I am a woman.

Having said that, every coin has another side: There are several advantages as well. Women do bring in a perspective to the table and when we get the seat at the table, and we are forthcoming with an opinion, we are respected across the board.

Q4. Is there anything you wish you had done differently?

There is no decision or any step I would have wanted to be in a different manner, if I would have to go back and change anything, there would have been not a single thing I would have changed, but I did wish to have a couple more hands, it might have been easier, might be not, but it would have helped me and Adhaan in different ways. I always believed all the right decisions were made at the right time.

Q5. Who is your inspiration? Why?

Ratan Tata has always been someone I have looked up to, someone's work says a lot about what kind of a person they are, looking how he built his empire, he inspires that there is a lot that is to be done, and a long journey is still ahead. Else than him I look up to a better me, an improved me, will be someone who I am looking up to as an inspiration to the present me, will be working towards a grown me, a better me in my workspace.

Q6. What advice would you give to somebody else who wanted to start a similar business?

The advice I want to give anyone who is starting with a similar business is that contractual staffing is a ginormous industry, it is growing at a rocket speed and we as a community shouldn't be here to snatch each other's business but instead, we should be working to get this industry to a more organized sector, starting now we should be moving forward in a direction to create more jobs, as India is a massive market, with the huge population and the industry level, till date, India has been dealing with staffing in a very unorganized manner, there a lot of valuations that are to be added to the industry, for the betterment of the country as well as the economy and making staffing industry a recognised industry.

India Needs Greater Innovation in Education

Technology-backed innovations are key to redesigning the education environment in which schools and institutes are operating

BY **MAYANK KUMAR,** CO-FOUNDER & MD, UPGRAD

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THE EDUCATION ecosystem currently is at the intersection of the offline and online modes compelled by external factors. This has greatly accelerated digital adoption in education delivery. With such changes, comes the need for creativity and faster improvements to ensure there is no gap in the skilling process for both learners and learning providers.

Just like any other sector, innovation is essential to introduce and improvise the qualitative changes in educational content, teaching methods, and practices. Technology-backed innovations are key to redesigning the education environment in which schools/institutes operate. The government has adopted various initiatives towards educational support for children who lost their parents to Covid-19, children with special needs, integrated teacher training programmes, and so on. It is the responsibility of private edtech players to join the bandwagon and innovate together, forming better public-private partnerships.

Online education has the advantage

According to recent industry reports, India's online education market is poised to grow by $2.28 billion during 2021-2025, at a CAGR of 20 per cent. This growth is driven by macroeconomic factors including government initiatives, disposable income, internet penetration, increasing importance of skill development and employment, and rapid digitalisation in education. According to KPMG, India has also become the second-largest market for e-learning after the US. The edtech space has seen strong growth globally, including in India, with the Covid-19 pandemic serving as an inflexion point.

The four growth drivers

Today, with online education being the core medium for learning across elementary, medium, and higher education, there are four focal points for continuous innovation and growth of the sector.

1. Accessibility: Data released by the Unified District Information System for Education for the academic session 2019-20 shows that 78 per cent of schools in India don't have internet facilities and more than 61 per cent do not even have computers. While online education platforms can make learning accessible to learners beyond the barriers of geography, it is also imperative to ensure access to the supporting infrastructure that enables them to pursue education.

2. Quality of faculty: In e-learning, there is always a bunch of challenges that learners may face such as not being able to focus and maintain self-discipline throughout the training modules. And this is exactly why it is critical to have regular mentorship/feedback sessions, and discussion forums by industry leaders who understand the market conditions and can handhold learners to overcome the challenges. The other aspect is the quality of education in terms of content and services. With the rise of virtual learning, more experienced and qualified faculties can be onboarded to produce quality content.

3. Affordability: The National Education Policy 2020 launched by the government is in line with the 2030 Agenda for UN SDG which outlines affordability as one of the core tenets. Among the sectors that bore the brunt of Covid-19, the plight of private and other offline institutions is perhaps one of the least recognised. The pandemic has brought significant shifts in the job market and pushed professionals to accept digitisation as the only means to operate. Professionals are rethinking their careers and upskilling choices. To address the rising demand for quality affordable education, edtech players in India are working constantly to make global learning possible for millions.

4. The 3L model: Life Long Learning is the concept that essentially rests on the online education model

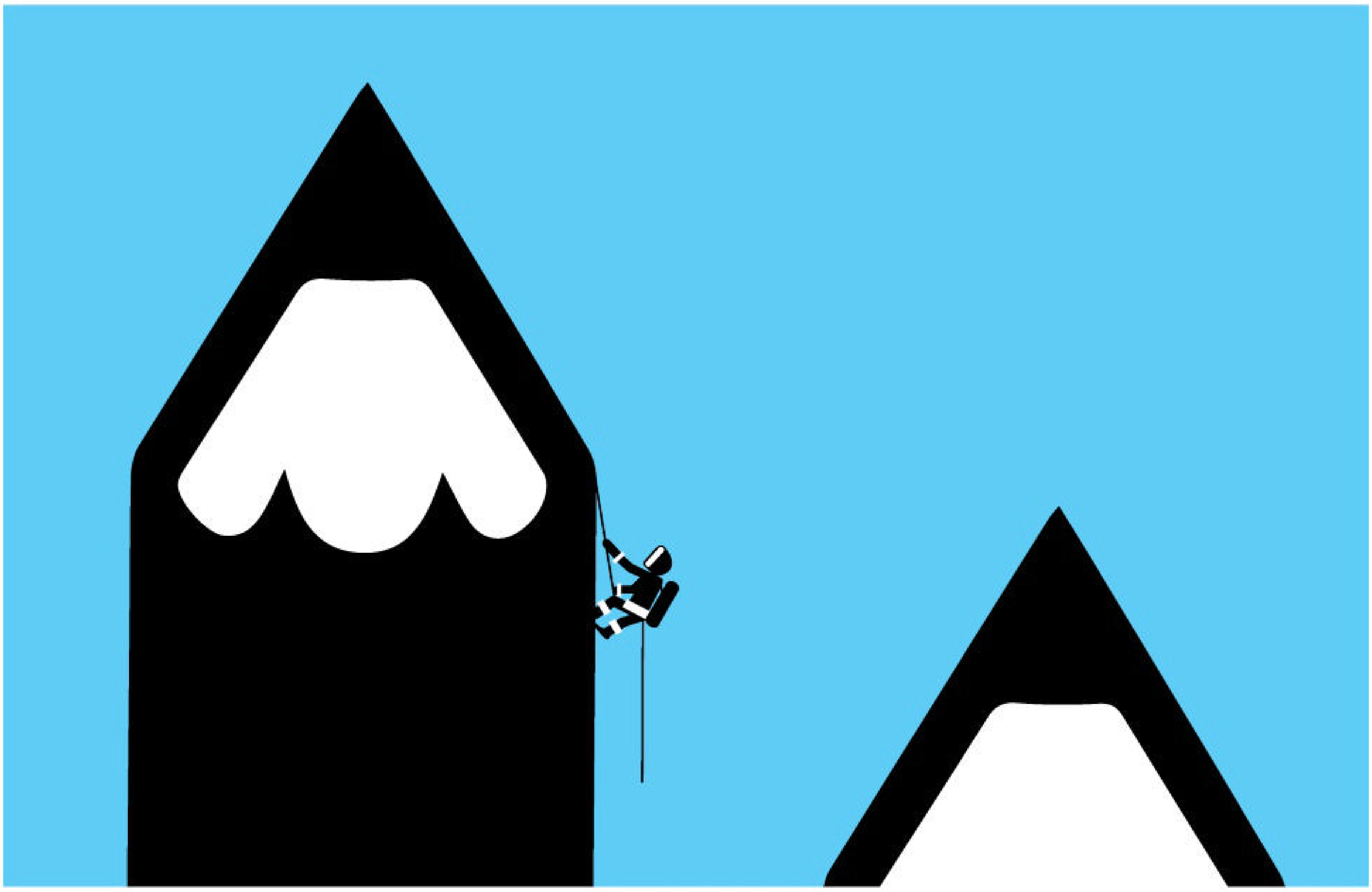


ILLUSTRATION BY **ANIRBAN GHOSH**

and will evolve the continuous learning process for individuals as well as corporate firms. The adoption of learning for life cuts across all age groups driven by three needs: employability, social learning and entrepreneurship. The concept of 3L has been deployed by most firms partially, with a focus on individual learning but there is ample opportunity for it to mature by exploring newer avenues of delivery relevant to a consumer segment and online education channel.

Changing perception pushes need for innovation

While individuals from Tier I cities were aware of educational trends, those from Tier II and Tier III cities weren't. Now, there is significant demand coming from smaller towns. Working professionals , too, are exploring career development programmes. 'Reskilling and online certifications' is the largest category today at $93 million, largely backed by employers' preference for certain experts and the changes in employment trends. Another shift is the changing mindset of India's students who perceive convenience, flexibility with commencement dates and variety of study material as key motivational factors to adapt to the online channel. Another trend is personalisation.

Rapid innovations have invited investments into the edtech sector from foreign bodies, government, public and private firms

Innovation calls for investments

The pandemic accelerated the adoption of technology in India's education sector, a traditionally slow-moving space. Investors started pouring funds into a sector with the country becoming home to five edtech unicorns in just 12 months; about $42 billion in 2021 has been raised by the Indian startups, up from $11.5 billion in the previous year.

We are witnessing an era where the rising tech-tonic shifts have accelerated growth avenues for businesses. Rapid innovations have invited investments from foreign bodies, government, public and private firms. Technology-based developments will require regular R&D innovations backed with data analysis to keep the growth curve moving and bring equilibrium in the education system across the four pillars mentioned above. BT

Every morning 36 lac women across 18,600 villages bringing in milk worth ₹150 crores, are now celebrating their economic independence. Thanks to the co-operative movement called Amul.

Amul
75
YEARS OF
MILK & PROGRESS

11716220

GETTING

SMARTER

Large companies have already got on to the smart manufacturing bandwagon. If that was 4.0, they are now gearing up for the 5.0 story

BY **KRISHNA GOPALAN**

SHOP FLOOR DYNAMICS

How smart manufacturing is fundamentally going to change the production ecosystem

1. Companies are readying themselves for Industry 5.0, where people and robots work together

2. Smart manufacturing enables access to real-time data for smarter business decisions

3. It also leads to savings. For example, Schneider Electric has seen power costs drop by 15% and operational costs by 20%

4. Investing in smart manufacturing guarantees product quality

5. AR, VR along with cloud computing, big data, IoT, AI and Saas will define smart manufacturing

6. Cobots will be a game changer to boost process efficiency and effectiveness

ON A HOT SUMMER DAY in 2014, Sunil Mathur had a bit of a problem on his hands. His business development team told him competition was taking away market share. It's not as if their quality was better. "They are just producing more variants than us," was the response. As MD and CEO of Siemens Limited, this was not a great situation to be in. Mathur, an old company hand, decided to get to the bottom of it. The demand was for more production lines for which there would be significant capex. The chartered accountant in Mathur came to the fore and when queries related to return on investment came up, it was obvious that the numbers did not add up. Nevertheless, the issue needed to be addressed.

"That's when we decided to drink our own champagne," says Mathur with a laugh. What stared him in the face was a 50-year-old factory in Kalwa, an industrial location outside Mumbai, manufacturing circuit breakers (a device that automatically stops the flow of current in an electric circuit) using serial production (referring to large quantities that are made in the same way). In terms of actual numbers, there were 77 variants of the product across three production lines. "We decided to apply smart manufacturing to see if it works well," recalls Mathur. In July 2017, the new-look factory was inaugurated and as the results trickled in, it was obvious the effort was worth it. Now, 180 variants could be made on one production line. That's not all. "We went from a production time of 21 seconds on three lines down to nine seconds on one line with multiple variant mixes and no need to stop the production line. Now, higher volumes and a lower cycle time meant we could look at a global market."

4.0

INDUSTRY 4.0 USES TECHNOLOGY WITH MACHINERY THROUGH THE INTERNET

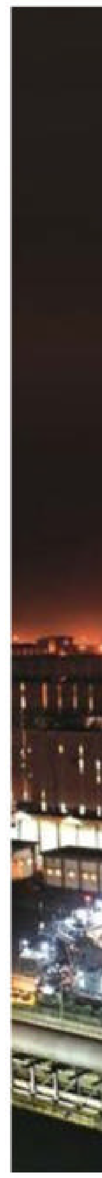
Like Siemens, many companies have hopped on to the smart manufacturing bandwagon with success. The phase, called Industry 4.0, uses a lot of technology with machinery connected through the internet. The next phase that companies are readying themselves for is Industry 5.0, where people and robots will work together.

SMART AND GETTING SMARTER

So, what is the smart manufacturing buzz all about and why is the future so dramatically poised? With all the potential that comes with it, companies are understandably excited and see a way to increase productivity, create a more skilled workforce with a belief that the investment made in this area will handsomely pay off. Veejay Nakra, CEO-Automotive Division, Mahindra and Mahindra, explains 4.0 has been the foundation to enable the integration of physical and digital manufacturing and unlock the real potential of smart manufacturing. "Smart manufacturing is transforming the whole manufacturing industry by building upon the solid 4.0 framework and integrating that with cutting-edge technologies such as AI, ML, Digital Twins, predictive and prescriptive analytics to efficiently deliver high-quality products and delight customers," he points out. If 4.0 was about the change to predictive from reactive, smart manufacturing takes it one step further. "It is getting more integrated with the value chain. Smart manufacturing enables access to real-time data and insights needed to make smarter and faster business decisions."

Nakra is speaking having experienced the benefits of smart manufacturing. "We have been able to reduce our repair and spare costs in the significant double-digit per cent range by investing in IoT (Internet of Things) capabilities four years ago and connecting over 80 per cent of our critical machines with sensors and edge analytics," he says. At the core of all this digitisation journey, lies the ability to generate data, an invaluable weapon, which, to him, improves both products and processes. "It has enabled us to launch the XUV700 with upcoming launches too expected to gain from this." The improvements are evident across the board. "By setting the right conditions in the paint booths, through an AI model, we have clearly improved the performance. Reliability, too, has improved with a reduction of 90 per cent in the testing costs for engines using algorithms."

Jayanta Banerjee, Group CIO, Tata Steel, is clear that the investment in technology will have to deliver a manifold return. "The real challenge lies in contextualising technology and making that work. How technology and business come to a point of convergence is what a lot of time is spent in," he



THE FUTURE **A lot of processes are done in factories by robots now. Going ahead, what is repetitive should be left to robots, with skilled labour doing more value-added tasks, experts say**

says. For the steel major with a global presence, a target to create $2 billion worth of EBITDA impact was undertaken. “This is through a process of business transformation where digital will be leveraged.”

Contrast this with an MNC and the advantage of being part of a global network makes a visible difference. Top that up with superior technology and the story can look very good. In the instance of Bosch, its software division, Bosch Global Software Technologies, is a big part of the story. “In addition to building smart factories, Bosch leverages a unique ‘dual strategy’ to build an ecosystem of business and technology partners to create localised and affordable digital solutions for SMEs and customers,” says Karsten Mueller, Senior VP (Manufacturing & Quality), Bosch India. The advantages in areas such as manufacturing, product, service quality and R&D help in crafting an India-specific strategy, with digitalisation and automation at the forefront. “Besides disrupting business models through the power of data, making healthcare accessible or empowering farmers to make efficient decisions, our 4.0 principle allows us to apply our own digital solutions,” he adds.

For Schneider Electric, the factory in India makes products that go all over the globe. “In that sense, we are a part of one global supply chain, since that is a global function,” explains Javed Ahmad, the company’s Senior VP (Global Supply Chain). Take the case of a factory acceptance test (a verification process that a customer conducts to make sure the equipment is exactly what was ordered). In the past, it would take two to three days. “Today, with augmented reality and using Google glasses, a physical visit is not required and everything is done virtually,” says Ahmad. For Schneider, he points out, power costs have dropped by at least 15 per cent, while operational costs are down 20 per cent. Making smart manufacturing work is easier when one is speaking of scale, plus the ability to invest in technology as well.

Speaking of benefits that accrue, pharma major, Dr. Reddy’s Laboratories decided to leverage six of the eight technologies that have defined Industry 4.0, among which are advanced analytics, robotic processing and digital performance management. “We are in the second year

"We went from a production time of 21 seconds on three lines down to nine seconds on one line with multiple variant mixes and no need to stop the production line"

SUNIL MATHUR
MD AND CEO, SIEMENS

"Smart manufacturing is transforming the whole industry by building upon the solid 4.0 framework and integrating that with cutting-edge technologies"

VEEJAY NAKRA
CEO, AUTOMOTIVE DIVISION, MAHINDRA AND MAHINDRA

"The real challenge lies in contextualising technology and making that work. How technology and business come to a point of convergence is what a lot of time is spent in"

JAYANTA BANERJEE
GROUP CIO, TATA STEEL

"Big data, IoT, AI, SaaS and cloud, along with AR and VR, backed by IT infrastructure will play a key role in transforming manufacturing"

KARSTEN MUELLER
SENIOR VP (MANUFACTURING & QUALITY), BOSCH INDIA

of our transformation and have managed a 30 per cent improvement in cost efficiency and a 2x improvement in people productivity, though the big outcome is the movement towards a digitally native organisation," says Sanjay Sharma, the company's Global Head (Manufacturing). Dr. Reddy's, according to him, invested heavily in electronic data capturing across manufacturing and quality control laboratories, examples being batch records, usage logbooks and laboratory information management systems. "It involved storage and management of data to create layers or stacks to ensure data is used to potential."

Across companies a lot of processes are done by robots today. To Ahmad, what is repetitive should be left to robotics with the skilled labour doing more value-added tasks. "We already use 5.0 with cobots (or collaborative robots)."

5.0
INDUSTRY 5.0, WHERE PEOPLE AND ROBOTS WILL WORK TOGETHER

The pandemic has hastened the process of adopting technology. According to Jayakeerthi Anand, Senior Vice President, ABB, a breakdown earlier had the maintenance person in the middle of it. "However, a remote application today using data means I can track the performance of the equipment—that means foreseeing a problem." Citing the example of additive manufacturing, Anand thinks it may have been advanced by two years. "Any job that took four months earlier is now down to 15 days." Humans working with robots, to him, will be the theme of the 5.0 story. "4.0 was robots working with machines," he says. Anand picks up the instance of the AGV (automatic guided vehicle), which had a defined path. "With AI, it can take the best possible route and move with the humans," he adds.

TAKING THE PLUNGE

A little over two years ago, when the pandemic was still largely unknown, Shashi Arora spent a week in China visiting factories manufacturing air-conditioners. The story of mass production was in line with what one has come to expect of the dragon nation. For every unit of this consumer durable that came out of India, China made at least 10 more. Arora, CEO, Lloyd, a company that Havells had acquired in February 2017, saw an opportunity. "While we could not match them on scale, there was an opportunity in manufacturing," he says. In the consumer durables industry, it is the norm to outsource large chunks of the manufacturing process, which leads to plants really doing little more than assembling. Back in India, there were some rounds of brainstorming before the big idea emerged. Lloyd would set up a fully robotised and automised unit. "This would be our new-age plant," says Arora. Housed in Ghiloth, an industrial area in Rajasthan, the plant has its machines and production processes integrated with AI and IoT. In all, there are 70 robot-

"Technology costs have dropped and the trick here is to pick and choose what you want to use. We use 5.0 with cobots (or collaborative robots)"

JAVED AHMAD
SR VP (GLOBAL SUPPLY CHAIN), SCHNEIDER ELECTRIC

"Any job that took four months earlier is now down to 15 days... turnaround time has dropped and we focus most of our energies on improving customer deliverables"

JAYAKEERTHI ANAND
SENIOR VICE PRESIDENT, ABB

"It comes down to remote monitoring or high levels of productivity at each leg of the plant. Today, precise details on shrinkage and wastage are easily available"

SHASHI ARORA
CEO, LLOYD

"We're in the second year of transformation... [We've]managed a 30 per cent improvement in cost efficiency and a 2x improvement in people productivity"

SANJAY SHARMA
GLOBAL HEAD, MANUFACTURING, DR. REDDY'S LABORATORIES

ic points, while material handling is taken care of by AGVs.

Arora admits that his company was spending a lot more but with complete awareness. "It was a conscious decision where we would manufacture everything. The advantage is that it leads to high levels of quality control," he says. To him, smart manufacturing and an investment in it is a guarantee of product quality. "It scores on low costs and high quality. It comes down to remote monitoring or high levels of productivity at each leg of the plant. Today, precise details on shrinkage and wastage are easily available."

LOOKING AHEAD

The opportunity in digital has seen many an organisation wanting a big slice of the pizza. Tata Steel's Banerjee speaks of a hyper-personalisation approach, an imperative for the future. "We should have a situation where any retail customer with a specific requirement can place an order online directly with us." The time and effort benefits courtesy 4.0 has not missed his attention. Banerjee takes the example of the roofing sheets business, where his company sees digital as a strategic way to grow. The traditional way to do it was to look for houses individually. "Now, satellite imagery throws up high levels of accuracy at minimal costs by using analytics."

Everyone is looking in the direction of what 5.0 can do for them. Lloyd's Arora is clear about how it can be a big moment for his company. With a capacity of one million units at the Rajasthan plant, a decision has now been taken to expand operations in Andhra Pradesh's Sri City. The IoT gets a lot sharper with the ushering in of the next phase of smart manufacturing. For instance, an issue that the consumer faces with his air-conditioner, such as a gas leak, will come through in the form of an error code. "That will be relayed back to us and can be read on the app carried by the service engineer," he explains. By the time he enters the customer's home, the job on hand is quite clear. "Everything gets resolved in one visit and there is a less service cost for the customer," he adds.

As the digital future gets set to write another script, just how different will 5.0 be? Bosch's Mueller maintains there will be a lot of pressure on manufacturers to optimise their operations and supply chains while increasing their domestic production. "Big data, IoT, AI, SaaS, and cloud computing along with AR and VR, backed by IT infrastructure will play a key role in transforming manufacturing. The inclusion of cobots will be a game changer to boost process efficiency and effectiveness." How companies rise to the occasion is what will differentiate the men from the boys. "To get it right with 4.0 or 5.0, nothing is more important than the company's approach. Failure is often on account of deploying a piecemeal method. Only an integrated strategy making a difference across the company is what will work," says ABB's Anand. That sounds like a pretty smart thing to do. BT

@krishnagopalan

Fuelling the 4th Industrial Revolution

Organisations would need to get their technology, talent and governance strategies right to be able to ride the ensuing wave of Industry 4.0 and reap timely and meaningful benefits

BY **T.V. NARENDRAN,** CEO & MD, TATA STEEL

A

ABOUT A DECADE ago we stood on the brink of a technological revolution that was to fundamentally alter the way we live, work and communicate. The lines between the physical, digital, and biological have been substantially blurred by a fusion of technologies that are enabling the 4th Industrial Revolution (4IR). Unlike previous Industrial Revolutions, the 4th one has scale, speed and scope that have not been seen or experienced earlier. Having said that, the basic element that's enabling this transformation is not unknown to us, it is data.

Data is fuelling 4IR. The ability to generate, store, process and consume data has grown exponentially. For industries, it has held the promise of unparalleled efficiency and productivity gains across the value chain, at a fraction of the investment. With the onset of Covid-19, the rate of this transformation has only accelerated, and every aspect of our daily lives today is enabled by digital technologies—communication, travel, shopping, working, learn-

ILLUSTRATION BY **ANIRBAN GHOSH**

ing, to list a few. Organisations cutting across industries and purposes are riding this wave of change with varying degrees of success. The ones who were the early adopters have been able to tide over the pandemic-induced economic environment with far better results than the rest, who are now scampering to catch up.

For those who are starting now on this journey, the need of the hour is clear. Others like us, who began early, had to go through a long process of creating a belief system and altering mindset towards the new technologies. Having done that, the first step was to assess and access the right mix of technologies that would be value accretive to the business. The no-regret move was, and still is, to strengthen the organisation's ability to generate, capture, store, secure, and process data, within all regulatory stipulations, of course. These foundational elements entail a judicious investment in sensorisation, cloud computing, connectivity and cybersecurity followed by simplification and synergising of IT applications to break data, as well as, process silos.

The second critical component of the transformation is talent. Since these technologies are here to stay, it would make sense to build a critical mass of certain capabilities in-house but that would be time taking and hence, to begin with, it's ideal to partner with organisations who can fill the talent gaps to kick-start the transformation. Organisations must also be discerning on what capabilities they would want to build and retain while buying the others as services, given that these skillsets are high on demand and often hard to acquire and retain. Skills like data engineering, data science, data visualisation and business process re-engineering with digital as the core enabler, are in high demand as businesses across industries are awakening to the possibilities. While these niche and deep tech skills are necessary for the transformation, they are, however, not sufficient. For the transformation to be sustainable and irreversible, it is also crucial that the consumers of the technologies are also re-skilled, hence a broader capability building exercise needs to be undertaken to bring about better understanding and appreciation for digital technologies across business functions.

The third and possibly the most critical component of the transformation is business centricity. Business goals must always remain the focus of the transformation. For this to happen, leadership would need to lead from the front while fuelling bottom-up ideation and innovation. A concept like Reverse Mentoring, which was recognised as an industry best practice by the World Economic Forum (WEF), can help stimulate leadership thinking. Under this programme, a senior leader is mentored by a millennial/ zoomer (Gen Z) on the possibilities of how digital technologies can be used in business functions. Additionally, robust programme governance brings in the required amount of time and mind share of the leadership to build and sustain the momentum for change.

Organisations would need to get their technology, talent and governance strategies right to be able to ride the ensuing wave of Industry 4.0 and reap timely and meaningful benefits. So, what are these benefits that the businesses must target to achieve? The key to success for any business is the ability to get decisions right, and on time, and for that to happen the decision-makers across levels must have access to the right information and insights at the right time. Digital technologies allow us to do just that. Quality and quantity of data coupled with data science techniques provide decision-makers with insights from the past as well as reasonably accurate predictions. Hence, the differentiator for businesses today and going forward will be their ability to harness the latent strength of data. It has the potential to significantly uplift operational efficiency, productivity, throughput and organisational agility to deliver a seamless and hyper-personalised experience to all their stakeholders through their products and services.

As we continue to leverage the power of data and ride the 4th wave of the Industrial Revolution, it is increasingly becoming apparent as to the steps businesses need to take to stay relevant and be more conscious in their business processes and dealings. Whether it is environmental sustainability or people centricity, a sustainable and profitable business would need to assimilate further into the conscience of the community they operate in, all of which are possible through the application of Industry 4.0 technologies. These aspects of sustainability and community centricity coupled with harmonised human-machine interface and responsible usage of digital technologies would be the defining themes for the 5th Industrial Revolution. While the jury is still out on how the rest of the story will unfold, the subsequent phases of the revolution promise to usher in a world with greater economic prosperity and better standards of living. BT

While the jury is still out on how the rest of the story will unfold, the subsequent phases of the revolution promise to usher in a world with greater economic prosperity and better standards of living.


High
Open

THE TECH **TRADER TRIBE**

A FEW YEARS FROM NOW, INVESTORS COULD USE VOICE COMMANDS TO TRADE IN THE STOCK MARKET. OR, ALL INVESTMENT ADVISORY COULD BE POWERED BY AI/ML WITH ZERO OR MINIMAL HUMAN ELEMENT. TECHNOLOGY AND PRODUCT INNOVATION WILL BE THE CONSTANTS, BUT WHAT WOULD THESE MEAN FOR INVESTORS AND THE MARKETS AT LARGE?

BY **ASHISH RUKHAIYAR**

THE TECH MACROS

1. More complex asset agnostic algorithmic trading tools
2. Robo-advisory completely eliminating human touch
3. Voice commands and smart gadgets to execute trades
4. AI/ML powered personalised nudges to influence trading behaviour
4. Natural language processing; gamification features within trading apps

A

A FEW DECADES AGO, buying and selling shares in the Indian stock market was all about hand signals and strong lungs. Surprised, eh? Indeed, it was. A thumbs-up signal meant the person had 50 shares to trade, the palm facing outward meant he was a seller, and palm inward was the sign of a buyer. Flashing a victory sign in a particular manner in the trading ring meant he had 20 or 200 shares to trade. The trader had to shout throughout the trading session to attract the attention of other traders and, of course, had to be physically present in the trading ring of BSE, Asia's oldest stock exchange.

Those days have become the subject of coffee table books. Today, Indian capital markets are counted among the most advanced and secure in terms of technology. Let's take an example. The Indian stock market is fast moving towards a T+1 settlement cycle—if you buy shares today, the securities will be credited in your demat account the next day. And if you have sold shares then the money would be credited in just a day's time. So what? Well, digest this: this is a technological achievement that the more advanced markets are yet to achieve—the US currently follows the T+2 settlement cycle.

While India's capital markets have seen a fair share of innovation and technology-driven initiatives, the future has a lot in store that will not only make trading easier but also empower investors with more information and domain knowledge while making markets more secure.

IIFL Securities' Chief Digital Officer Nandkishore Purohit believes that some of the key technology-driven themes that would influence trading behaviour in the coming years would include instant account opening, rise of niche trading platforms, hyper personalised nudging, instant settlements, and real-time resolution of client queries.

Indeed, instant account opening has made investor onboarding even in the hinterlands a completely digital and quick process. Nothing corroborates it more than the entry of a record number of new investors in the recent past—nearly 16 million in the January-November 2021 period.

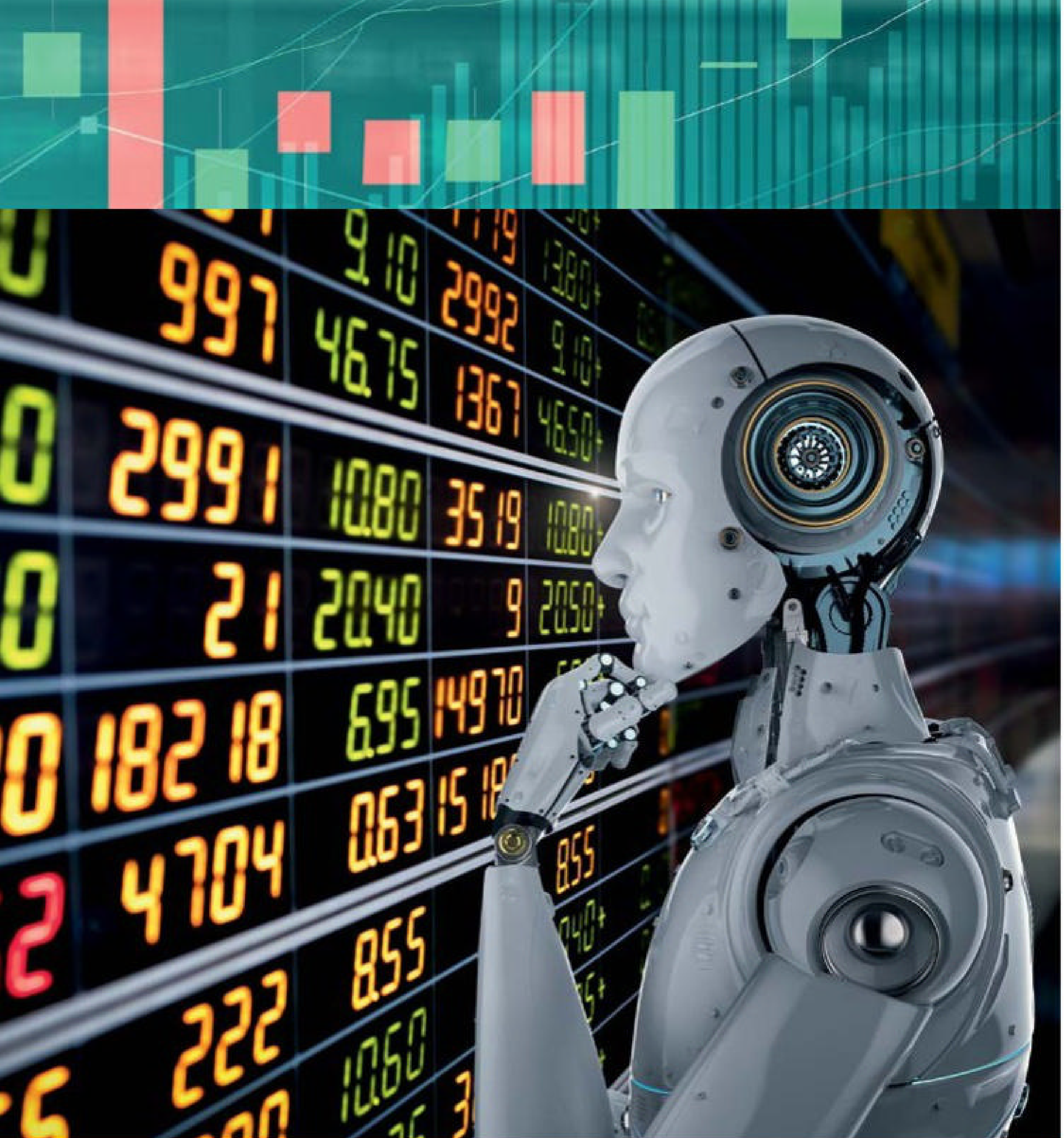
Market participants believe that the coming years could see Indian investors benefiting from a long list of innovations that could even

SPEED BREAKERS

1. Scaleability could be a challenge in some segments
2. Increased risk of data thefts, technical downtimes
3. Increased competition will increase cybersecurity risks
4. Growing clout of unregulated advisory on social media
5. Technical debt caused by easy approach instead of best solution

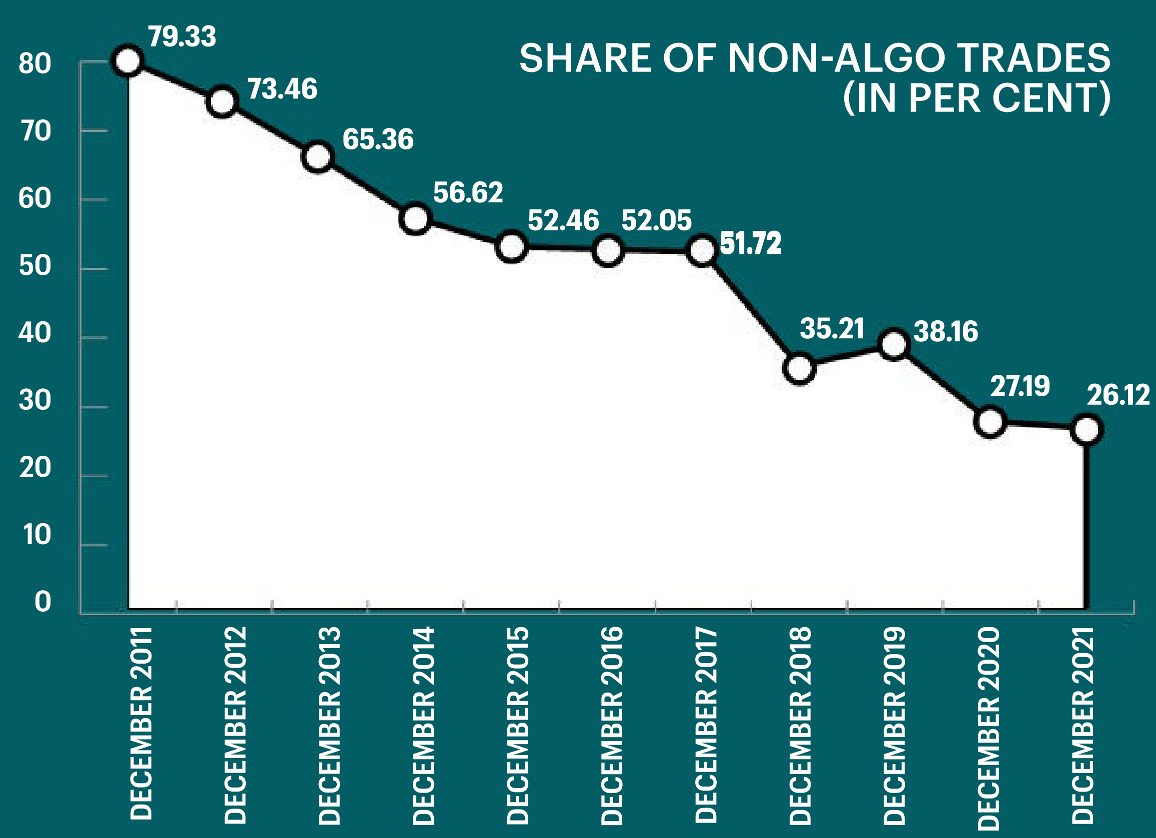
19.06 PER CENT

Share of trades done through mobile phones in Dec '21



ADVANTAGE ALGOS

Share of non-algo based trading is fast moving towards insignificance



Source: BSE

make voice commands a reality in the stock market arena. Further, algos combined with the power of bots could see both trading and advisory spaces being taken over by machines with very little human touch. Not that it is not already happening, but experts believe the coming years would only see such tech-driven tools further cementing their place.

Simply put, algos are software codes that execute trades based on pre-determined parameters, without any human element. Robo-advisory refers to AI-powered investment advice based on inputs by the investor—without any human touch. Then there is the heightened interest in tools like AI, ML, natural language processing, gamification and autonomous finance.

SAY IT; I CAN PREDICT IT

"The Gen Z and millennials are already at ease using gadgets like Alexa, Google Home or mobile voice assistants," says Subhash Kelkar, Chief Technology & Digital Officer at ICICI Securities. "If technology and regulatory advancements move in tandem, the coming years could see trade orders being given by way of voice commands as biometrics in 2fa (two factor authentication). AI algorithms and machine learning will help computers action the real-world data by inputs through social media feeds, photos and videos, text and voice," he explains.

Incidentally, capital markets regulator Securities and Exchange Board of India (SEBI) has laid down certain checks that are required for any order to be processed and, hence, voice commands are not a reality currently. Experts, however, believe given the rapid pace at which technology is entering one's life and homes, voice commands would be a reality soon. "Some of the macro themes that would drive the Indian stock markets in the coming years would be algo trading and strategies, robo-advisory, voice technology, natural language processing, generation (NLG), understanding (NLU) and interpretation (NLI), and use of low code/no code," says Kelkar. Interestingly, market experts say that even if someone does not want to use voice commands, AI/ML tools will be able to predict or pre-empt the order after analysing queries or chat histories of the individual.

A December 2021 report by McKinsey Analytics titled 'The state of AI in 2021' highlighted the fact that India leads other economies in terms of AI adoption. The same month, Deloitte, in its report 'State of AI in India', said that "start-ups are in a position to use AI for high-impact areas, such as building customer relationship, creating new products and services, and enabling new business models... from inception".

"Fintech is a fast-growing industry and is constantly evolving, but the next 10 years will be the most exciting years and will witness majority of the innovations. The first trend will be 'Autonomous Finance', which will impact how users make decisions about money," says Smriti Tomar, Co-founder, Stack, a personal finance app for millennials.

HUMAN, ANYONE?

While a beginning has already been made in terms of trading and advisory being handled by a combination of a software and bot, the coming years could see the human element go down further. "It is already happening in some of the bigger markets, led by the US," says Kelkar. "Most trades are through algos. While algos take out human emotions and bring discipline in trading, half-baked algos can run into errors... So, while algos are fast gaining popularity... there will be a space for traditional advisors who could build the back-end on technology and front-end will be human—sort of a hybrid model."

Bigger markets may be seeing a larger share by algos, but India is no more in its infancy when it comes to such trades. Data from stock exchanges clearly show that nearly 50 per cent of the trades are through algos currently. Interestingly, algos, which were considered to be the domain of big institutional investors, have already marked their entry in the retail space. It did not come as a surprise to many when recently SEBI issued a consultation paper, proposing ways to rein in third-party algos that are being widely used by the retail investor community.

While algos are removing the human element from trading, robo-advisory is doing the same in the investment advisory space. An individual has to just answer a few queries related to her investment horizon and risk appetite, among other things, and the AI picks up the best investment instrument in a matter of seconds. Experts believe the coming years will see a combination of algos and robo-advisory reduce the human quotient and while a hybrid model could be the dominant force, the underlying element will be mostly powered by AI/ML.

"Algo based trading or robo-advisory based on superior algorithms have much better chances of success as they are less prone to error. Hence, there is going to be a much bigger adoption of these services among the masses where cost of investment is a big factor," says Tomar. There will be a role of humans as well, but it will be limited to the communication part and the systems will predominantly become an interoperable autonomous vehicle, just like Tesla, she adds. In a similar context, Purohit of IIFL Securities believes that the human element cannot be ignored but also adds that "with the rise of AI/ML techniques, we strongly believe contextual and hyper personal nudges will drive user behaviour to more informed decisions".

"Going ahead, one could see voice recognition though there are regulatory challenges. Also, one could see some players making investing a social experience within the apps, though this has been tried in the US but without much success"

NITHIN KAMATH
FOUNDER & CEO, ZERODHA

APPS +

In the capital markets, apps have become the most popular way to trade among the new breed of investors; the coming years could see apps with a host of features built in. "We may see increased engagement through gamification, interactions with social media influencers, and individuals sharing ideas and trades with friends, contacts and customer communities," says Kelkar.

A large section of market participants believes that product innovation in the coming years could see investing through apps becoming a social experience wherein one could see in their feed their friends and family or anyone they choose and also their posts on stocks—maybe even what they buy or sell if they have made it public. However, Zerodha CEO Nithin Kamath has a different view, though he believes that innovation will still happen. He feels that while trading platforms have simplified in the past 5-10 years, there has

"There are risks when you depend on humans, there are risks when you depend on technology. If we hadn't taken risks, we wouldn't have computers today or online trading or even exchanges today. Tech is the future, there is no denying it"

NANDKISHORE PUROHIT
CHIEF DIGITAL OFFICER, IIFL SECURITIES

"If technology and regulatory advancements move in tandem, the coming years could see trade orders being given by way of voice commands as biometrics in 2fa (two factor authentication)"

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SMRITI TOMAR
CO-FOUNDER, STACK

hardly been any "spectacular innovation" apart from the fact that business has moved to mobile phones. "I fail to see what further innovation can be done. While decision-making tools have democratised, the actual art of trading has remained the same. Going ahead, one could see voice recognition, though there are regulatory challenges. Also, one could see some players making investing a social experience within the apps, though this has been tried in the US but without much success," he says.

Interestingly, it is widely believed that the coming years would see broking firms focus on tech-driven innovations that would help investors take informed decisions and make money. Nudge features, for instance, caution or alert investors if they are mulling a sell order and if holding back for a few days could net them a higher profit. "Features of the future should be aimed at reducing the fundamental mistakes of investors as the chances of greater participation is only if investors make money," says Kamath.

CHALLENGES & RISKS

While market participants are unanimous in their view that the coming years would see many tech-driven innovations in the Indian capital markets, they also say that the journey is fraught with challenges and risks. The biggest challenge, Kamath says, is scaleability while ensuring that tools powered by technology help investors make money. "Technology will increase participation but we need to scale so that the platforms do not go down when there are more users. The capital market is very centralised with huge dependence on just two-three categories of institutions (exchanges, clearing corporations, depositories)," he says. The other big challenge, he adds, is to keep clients active and help them make money so the industry grows by word-of-mouth publicity.

Stack's Tomar feels that over-dependence on technology could increase the risk of data theft and investors need to be cautious while using different platforms. This is already evident from the lending industry, which got exposed to major threats in the past decade, she says.

There are enough instances in the capital market space as well with broking firms seeing downtime due to technical issues; even stock exchanges have witnessed glitches that have brought trading to a halt. That doesn't mean the capital markets will not focus on technology and innovation. "There are risks when you depend on humans, there are risks when you depend on technology. If we hadn't taken risks, we wouldn't have computers today or online trading or even exchanges. Tech is the future... That said, we are investing heavily on improving information security," says Purohit. BT

@ashishrukhaiyar

Tech to Power Growth of Capital Market

India's capital markets technology is today at a crossroads, with the markets developing and tech defining the future of the industry

BY **NIKHIL KAMATH,** CO-FOUNDER, ZERODHA AND TRUE BEACON

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PICTURE THIS: Early 1980s London, brokers and traders jostling in the early hours of the morning, shouting out the buying and selling orders on the floor of the stock exchange.

Though this on-the-floor trading went on for many years, it didn't take long for the scenario to turn on its head, thanks to the 'Big Bang' on October 27, 1986. With sudden deregulation of the markets, the trading floor now wore a desolate look.

While having all those real traders in one place provided a sense of community and continuity, brokers and traders who used to rely on fast reflexes were now dependent on computer programs.

London's switch from traditional face-to-face share dealing with electronic trading not only helped it outpace its European competitors but also cemented the city as the world's most important financial centre.

ROLE OF TECHNOLOGY IN CAPITAL MARKETS

As businesses adopt innovative financial solutions in payments and financing, technology is reshaping economies. Capital markets, too, have come under its realm, with the sector continually evolving and transforming.

With rapid innovation, AI platforms are also enabling real-time detection of complicated trading patterns across various marketplaces. Not just this, by opening the doors for investors to top stock suggestions every day, the trading community has increased earnings by providing optimal trading opportunities.

Due to stiff competition, both legacy and new-age companies need to continually evolve and scale up their technology to stay relevant and grow the capital markets ecosystem in the coming years

FUTURE TRENDS IN CAPITAL MARKETS

Capital markets are already using data and analytics to improve security, fraud detection, as well as for identity verification to meet regulatory and compliance requirements. Machine learning, the evolution of data analytics, is currently being deployed in trading, where volumes of data are leveraged in milliseconds.

Many firms analyse speech patterns from recorded calls at investment banks, brokerages, and even on the customer side. These smart algorithms can detect new trade trends or system abuse in the fast-paced financial trading industry, where the speed of judgement is critical, and automating the decision-making process is the way to go.

These algorithms have evolved to understand financial goals and risk profiles to come up with tailored investment portfolios that reallocate funds, book profits, and square off positions based on self-learning algorithms.

Diving deeper, machine learning has a myriad of use cases from analysing stock performance to deciphering relevant information from volumes of data from textual material such as press releases, earnings reports or even tweets!

Additionally large data samples

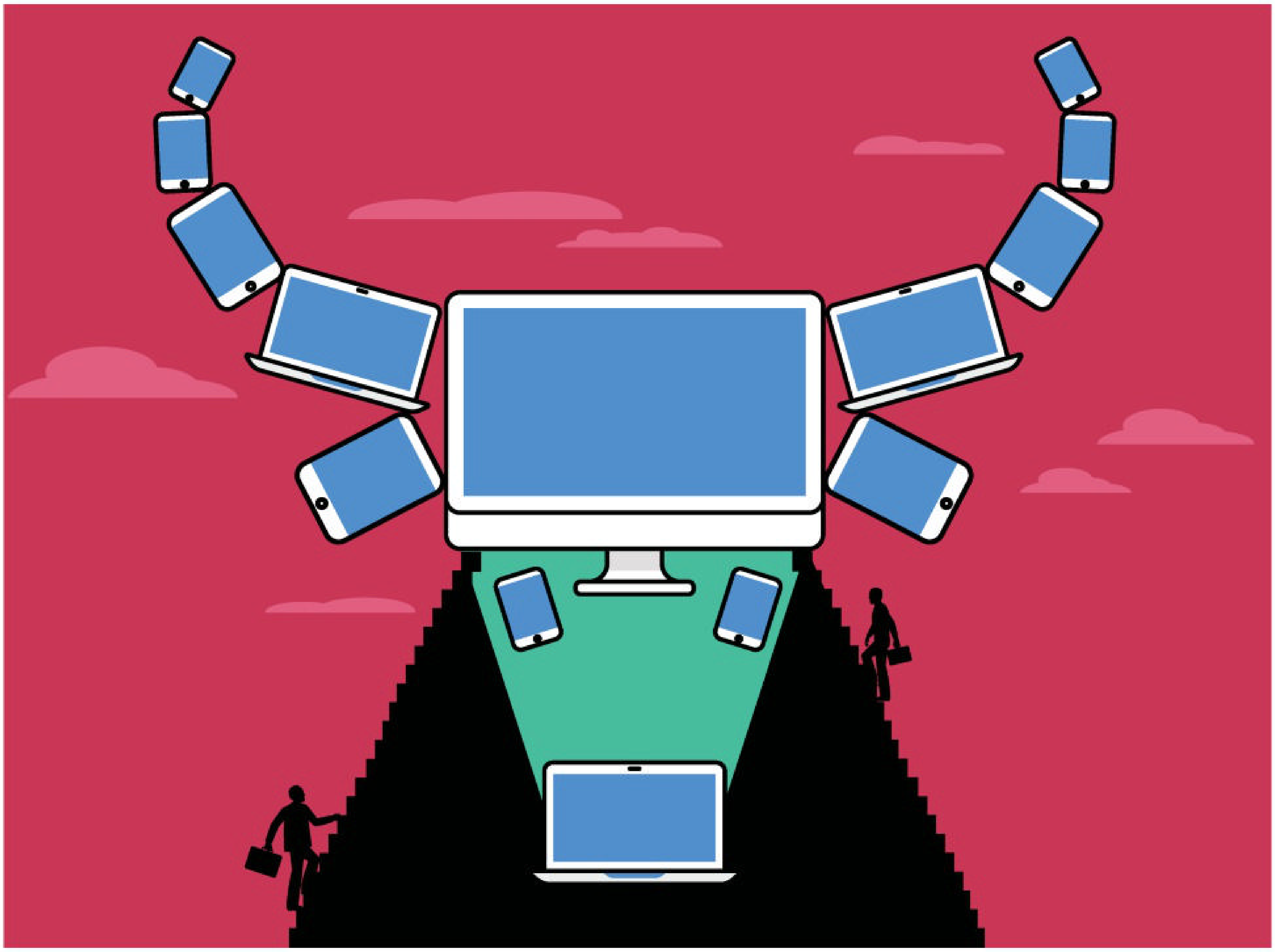

ILLUSTRATION BY **RAJ VERMA**

require advanced storage and are ushering in the next generation of cloud architecture.

Blockchain or distributed ledger has the potential not only to store but also provide relevant information to a new scale, along with being cost effective. Distributed ledgers have already had success in bond issuances in global markets, loan syndication and securitisation or any process that requires a chain of evidence.

THE OTHER SIDE OF THE PICTURE

Like everything else in the world, technological advancements tend to often have a flip side. Great tech transformations come with great risks such as cybersecurity, technical product glitches, et al. The stock market meltdown of 1987 was in part due to the immaturity of the new technologies.

Closer home, as recently as June 2021, a serious data breach on a leading online trading platform in India caused customers' data to be put up for sale on a data-sharing platform.

While these incidents may be few and far between, being cautious and taking steps such as upgrading security, initiating password systems, 24x7 monitoring, and additionally ring-fencing the network will help towards keeping such instances at bay.

Remember, technological innovations take time but developing communication technologies holds the promise of making capital markets more efficient with faster and more effective means of exchanging information.

DRIVING THE FUTURE

India's capital markets technology is today at a crossroads, with the markets developing and tech defining the future of the industry. Due to stiff competition not only from around the globe, but especially on the home turf, both legacy and new-age firms need to continually evolve and scale up their technology to stay relevant and grow the capital markets ecosystem in the coming years.

Data and computing are important accelerators for technology-driven capital market reforms and the way forward is to make use of technology and apply it in novel ways to grow the markets. BT


Safe Wear Face
Safe Wear Face
HCL
HCL FOUNDATION
COVID-19 Response
Face Shield

IN FINE FETTLE

COVID-19 HAS OPENED UP NEW OPPORTUNITIES FOR PHARMACEUTICAL COMPANIES, PRIVATE HOSPITALS AND MEDICAL DEVICE MANUFACTURERS IN INDIA, AMONG OTHERS. INDIA'S HEALTHCARE INDUSTRY LOOKS SET FOR HIGH GROWTH MOMENTUM IN THE NEAR FUTURE

BY **NEETU CHANDRA SHARMA**

PHOTOGRAPH BY **RAJWANT RAWAT**

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AS INDIA REELED under the impact of the Covid-19 pandemic, its healthcare sector rose to the challenge. India was hailed as the world's pharmacy and the government also reoriented its policies towards making the country self-reliant in terms of vaccines, drugs, medical devices and equipment. Meeting the challenges posed by the pandemic has helped build a foundation for the healthcare sector to gather pace in the future.

India is not only manufacturing all the vaccines under the national Covid-19 immunisation programme but is also exporting them. Hyderabad-based Bharat Biotech has developed and is manufacturing its vaccine Covaxin; Oxford-AstraZeneca developed Covishield is being manufactured by Serum Institute of India (SII); and Dr Reddy's Laboratories, the main distributor of Russia's Sputnik V vaccine, is soon planning to locally manufacture it. Bharat Biotech exporting Covaxin is a reflection of the boosting of home-grown vaccine capabilities. "We will continue to grow our partnerships beyond India and hope to foray into the US market when Covaxin gets the EU's nod. Our plans include setting up manufacturing facilities in other nations as well," a Bharat Biotech spokesperson says.

At least a dozen Indian firms are either developing Covid-19 vaccines or antiviral therapeutics. The Union health ministry has approved two more vaccines—Covovax and Corbevax—and antiviral drug Molnupiravir. Covovax, developed by US biotech firm Novavax Inc., will be manufactured and marketed in India by SII. Corbevax, developed by the Baylor College of Medicine in Houston, Texas, and the California-based Dynavax Technologies, has been licensed to Indian biopharma firm Biological E. for development and production. Molnupiravir will be manufactured by 13 firms in India.

The Indian government has also financially supported the vaccine makers through various schemes. "The Indian pharmaceutical industry will grow. Going forward, one of the underlying economic fundamentals is that countries will increasingly invest more in healthcare," says K.V. Subramaniam, President of Reliance Life Sciences, adding that Covid-19 vaccines have opened up new opportunities for the Indian pharma sector. Reliance Life Sciences is also working on a protein sub-unit Covid-19 vaccine, currently in Phase I clinical trials.

"Various policies and packages such as production-linked incentive scheme for APIs/KSMs and medical devices, the recent scheme for pharmaceuticals, and promotion of bulk drug parks were introduced by the government. [This]... encouraged domestic and international players to invest in the sector," says Charu Sehgal, Partner, Life Sciences & Health Care Leader, Deloitte India.

India is an outsourcing destination for clinical trials of vaccines and for the manufacture of anti-viral therapeutics by other countries. This trend is expected to rise as several nations are developing vaccines and drugs against highly infectious diseases.

ANALYTICS, AI & ML

"The Indian healthcare sector has witnessed many changes during the Covid-19 outbreak, one such being in the area of online consultations. Convenience and safety... have emerged as the major reasons behind the rise of teleconsultations," says Vikram Thaploo, CEO, Apollo Telehealth, a unit of Apollo Hospitals Group. He adds that telemedicine is also getting the necessary push through the government's telemedicine practice guidelines published in 2020, which made telehealth a legitimate delivery channel. As per Invest India, the national investment promotion and facilitation agency, the telemedicine market is expected to touch $5.4 billion by 2025, growing at a CAGR of 31 per cent. Thaploo says

Opening Horizons

RAMPING UP HOME-GROWN VACCINE CAPABILITIES

OPPORTUNITIES FOR PHARMA COMPANIES FOR NEW DRUGS AND THERAPEUTICS LIKE MOLNUPIRAVIR

TELEMEDICINE

MEDICAL DEVICES

NUTRACEUTICALS

teleconsultations have risen almost by 10 times since November 2021. "The online doctor consultation market is expected to be over $800 million by FY24 growing at a CAGR of 72 per cent. The growing adoption of tech-based solutions due to the pandemic has helped in providing a significant impetus," he says.

According to Invest India, the country's digital healthcare market was valued at ₹11,661 crore in 2018 and is estimated to reach ₹48,543 crore by 2024, expanding at a CAGR of 27.41 per cent in 2019-2024. Over the next 10 years, Invest India data says, the National Digital Health Blueprint can unlock the incremental economic value of over $200 billion for the healthcare industry.

"The next wave of growth for online consultations is more likely to be driven by new-age technology-enabled solutions like AI and ML," says Thaploo. He adds that telemedicine and remote patient monitoring are being increasingly adopted by service providers to virtually manage patients, predict and prevent illnesses, and improve clinical outcomes.

SUPPLY CHAIN, STANDARDS

Pharma companies have also started adopting advanced systems for transparency that are expected to go a long way in ensuring genuine medicines, vaccines, and equipment reach the patients. Over 750 companies have adopted GS1 standards since the start of the pandemic to ensure their products such as sanitisers, masks, drugs, medical devices, test kits, etc. meet global standards. GS1 standards help in addressing the need for a traceable vaccine and medical products to address supply chain safety and help tackle the issue of counterfeit products. "It is intended to become a foundational framework to identify specific requirements of the businesses and help them manage healthcare costs more accurately," says Sachidanantham Swaminathan, CEO, GS1 India. "They enable medical devices to be traced and located more efficiently throughout the supply chain through the point of use. Tracing backwards identifies the history of the transfers and locations of a product, from the point of manufacture onwards," he adds.

HEALTHCARE, DEVICES

Medical devices are yet another burgeoning industry. According to government estimates, the current market size of India's medical devices industry—which happens to be the fourth largest in Asia—is about $15 billion and has been growing at a CAGR of 15 per cent over the last three years. The market is expected to reach a size of $50 billion by 2025.

"AI-based diagnostics and remote healthcare management are gaining importance and that will drive India's future. The healthcare sector has become more focussed on innovation and technology over the past two years... 80 per cent of healthcare systems are aiming to increase their investment in digital healthcare tools in the coming five years," says Rajiv Nath, Forum Coordinator at Association of Indian Medical Device Industry. Experts believe the Indian healthcare sector is diversifying and opportunities are emerging in every segment. With growing competition, organisations are aware of new challenges and are looking to explore the latest business dynamics and trends impacting their segment.

"India is full of opportunities for players in the medical devices industry. The country has also become one of the leading destinations for high-end diagnostic services with tremendous capital investment for advanced diagnostic facilities, thus catering to a greater proportion of the population," says Nikkhil K. Masurkar, Executive Director, Entod Pharmaceuticals. "The country's competitive advantage lies in the increased success rate of Indian companies in getting ANDA approvals. India also offers vast opportunities in R&D as well as medical tourism. After the pandemic, governments and organisations are more focussed on building digital infrastructure and preventive healthcare which will surely pave the

FAST FACTS

1

The healthcare market is expected to reach $372 billion (~₹27.6 lakh crore) by 2022

2

Telemedicine market has the maximum potential among e-health segments in India. It is expected to touch $5.4 billion (~₹40,000 crore) by 2025, growing at a CAGR of 31 per cent

3

The digital healthcare market in India is estimated to reach ₹48,543 crore by 2024, expanding at a CAGR of 27.41 per cent during the 2019-2024 period

4

The medical devices industry in India is fourth largest in Asia after Japan, China and South Korea. The market is expected to grow to $50 billion by 2025

5

According to the International Trade Administration, India's nutraceutical industry is expected to hold at least 3.5 per cent of global market share by 2023

Source: Invest India

"The healthcare sector has become more focussed on innovation and tech over the past two years; 80 per cent of healthcare systems aim to increase their investment in digital healthcare tools in the coming five years"

RAJIV NATH
FORUM COORDINATOR AT ASSOCIATION OF INDIAN MEDICAL DEVICE INDUSTRY

"PPE kits and N95 masks are now being exported from India, and this has become a new billion-dollar industry, which helped in protecting the healthcare and frontline workers, apart from the general population"

DR HARSH MAHAJAN
PRESIDENT, NATHEALTH, HEALTHCARE FEDERATION OF INDIA

way to a brighter future for the healthcare industry."

Even as Covid-19 has led to the rise of diagnostics and equipment along with an impressive rise in virtual and homecare-driven device segments, there has been an increased emphasis on making low-cost lifesaving devices such as ventilators and oxygen concentrators. "There is no doubt that in the years to come, India will see more action in terms of state-of-the-art technologies such as big data, AI and ML with disease prediction finding more traction through these technologies," says Ashok Patel, CEO and Founder, Max Ventilator. He believes ventilators will become mainstream with AI-based ones becoming more and more common. "With Chinese products getting bad press for quality, Indian products would increasingly take that space," he says.

According to India Brand Equity Foundation, by FY22, Indian healthcare infrastructure is expected to reach $349.1 billion and the size of the e-health market is estimated to reach $10.6 billion by 2025. According to Invest India, the healthcare market is expected to reach $372 billion by 2022 from $190 billion in 2020, at a CAGR of 39 per cent. Public health experts hold that the pandemic was a huge challenge but also provided India with an opportunity to become self-reliant in healthcare.

Healthcare providers, including hospitals and diagnostic labs, rose to the occasion and increased capacity manifold to tackle the huge numbers infected. New and innovative healthcare delivery models were quickly scaled up, like telemedicine and home health, providing access to treatment for millions affected by Covid-19. The medtech industry came into its own with new test kits, ventilators and vaccines being indigenously manufactured, many for the first time. "PPE kits, N95 masks are now being exported from India, and this has become a new billion-dollar industry, which helped in protecting the healthcare and frontline workers, apart from the general population," says Dr Harsh Mahajan, President, NATHEALTH, Healthcare Federation of India.

NUTRACEUTICALS

According to the International Trade Administration, India's nutraceutical industry is expected to hold at least 3.5 per cent of the global market share by 2023. The nutraceuticals market in India is expected to grow to $18 billion by the end of 2025. The dietary supplements segment constitutes over 65 per cent of the nutraceutical market and is growing at a rate of 17 per cent. It is likely to grow at 22 per cent per year, especially since preventive health has become the focus in the current pandemic.

Currently, India imports $2.7 billion worth of nutraceuticals. This sector also has opened significantly to attract foreign investments. Reflective of the fast-growing adoption of AYUSH products and services by the public in the wake of the pandemic, Indian Medicines Pharmaceutical Corporation Ltd, the public sector manufacturing unit of the Ministry of AYUSH, recorded a turnover of ₹164.33 crore in 2020-21, the highest in its history.

While FMCG direct selling firms like Amway India have entered into Ayurveda products, Sun Pharma Consumer Healthcare, a division of Sun Pharmaceutical Industries, recently announced its foray into the nutrition bar segment in India with the launch of Revital NXT. The market for nutrition bars in India has been growing rapidly, with an increasing focus on fitness and healthy lifestyle, especially among millennials and GenZs, the company says. "The nutraceutical sector offers significant opportunities for India across the value chain from farms to formulations. The industry helps in strengthening the overall healthcare sector by preventing diseases and acting as a gatekeeper," says Sanjaya Mariwala, Executive Chairman and Managing Director of OmniActive Health Technologies and Founder President of the Association of Herbal and Nutraceuticals Manufacturers of India. He calls for equal importance to the nutraceutical sector and asks for more progressive taxation in line with pharma products. Currently, pharma products are taxed at 5-12 per cent while nutra products are taxed at 18 per cent.

While the pandemic was disastrous for most, it has helped put the Indian healthcare sector on the fast track, laying the groundwork for future growth. BT

@neetu_csharma

Scripting a Global Leadership Role for Indian Pharma

In the post-Covid-19 world, India must transition from being a volume player to a substantial value player in the global pharma market

BY **KIRAN MAZUMDAR-SHAW,** EXECUTIVE CHAIRPERSON, BIOCON

I

INDIA HAS BEEN at the forefront of the global pharmaceutical and healthcare industry's fight against Covid-19. As the pandemic left the world in disarray, the Indian pharma industry rose to the challenge and quickly developed cost-effective diagnostics, vaccines, and therapies for millions of people at home and across the world.

While Indian drug makers took on the pandemic head-on by ramping up drug innovation and production, they continued to supply a global patient pool with a diverse range of medicines to prevent and treat non-Covid-19 health threats such as cancer, diabetes, heart attacks, HIV infections, malaria, tuberculosis, etc.

U.S. President Joe Biden's top medical adviser Anthony Fauci acknowledged the role played by the industry, saying: "India's contributions to the global scientific knowledge are well known to all, with strong government support and a vibrant biopharma sector, this knowledge is already yielding solutions to Covid-19 prevention and care."

In 2021, India supplied 115 million doses of Covid-19 vaccine to developing countries, of which almost 70 million were in the form of grants.

Thinking Fast, Acting Fast

Protecting a billion-plus population from a pandemic in a country that traditionally spends insufficiently on research was never going to be easy. Yet, the Indian pharmaceutical industry proved itself resilient and resourceful. As early as March 2020, the industry set up consortiums to swiftly pool complementary skill sets. Task forces hunted for promising leads for Covid-19 vaccines and treatments. R&D labs, academic institutions, start-ups, and small enterprises came forward with innovative ideas, found industry partners, and scaled up quickly.

India is today the world's second-largest manufacturer of personal protective equipment (PPE) kits. From an actual shortage to manufacturing 200,000 PPE kits and 200,000 N-95 masks every day, India took less than a year to accomplish its Atmanirbhar vision.

The industry delivered, first with diagnostic tests, then with PPEs, masks, and ventilators, followed by antipyretics, antimalarials, antivirals, steroids, and antibiotics, and finally with vaccines. At the same time, the country was able to build a robust information technology backbone to track and trace infections, create databases and real-time dashboards to map the pandemic, and deploy vaccines at scale.

To minimise disruption because of the Covid-19 pandemic and the consequent lockdown in India, the industry adopted innovative ways to support physicians and ensure that patients continued to receive life-saving medicines. Many companies set up helplines for patients and their field staff worked diligently during the lockdown to facilitate medicine supplies to far-flung areas, ensuring the well-being of patients.

Repositioning 'Brand India'

India's pharmaceutical industry, ranked third worldwide in terms of volume, is the largest supplier of generic drugs globally. We produce 60 per cent of the world's vaccines and account for 60-80 per cent of the UN's annual vaccine procurement. India is also emerging as a significant supplier of biosimilars such as insulins, therapeutic antibodies, etc. In 2020-21, we exported over $24 billion worth of pharmaceuticals to the world.

India's reputation as the 'Pharmacy to the World' has come on the

ILLUSTRATION BY **RAJ VERMA**

The Indian pharma industry needs to capitalise on this momentum to establish 'Brand India' as one that stands for value, innovation and the highest impact in global healthcare

back of long-term investments. In the last 10 years, the Indian pharma industry has invested at least $10 billion in setting up global scale manufacturing infrastructure. Today, the country has more than 3,000 facilities approved by various regulatory bodies of which ~400 have U.S. Food and Drug Administration clearance.

India's pharmaceutical exports are not only 11th in terms of dollar value of exports, they are also amongst the cheapest due to our relative cost advantage.

The Covid-19 pandemic is an inflection point for India to introspect on its global leadership potential. We have a unique opportunity to position Indian pharma's global equity to reflect innovation, scale, affordability, and impact. We need to transition from being a volume player to a substantial value player in global markets by leveraging scientific know-how and enhanced research and development. In the post-Covid-19 world, India must identify its true strengths and develop a global brand position that effectively conveys the value addition we provide to the world. We must project the country internationally as a 'valuable' partner rather than just a 'low cost' vendor. While investing in opportunities that can be scaled up at a reasonable cost, we also must build strong intellectual property.

Several policy boosts by the government have potentially set the stage for the growth of the pharma sector. The Union Budget for FY22 more than doubled the outlay for healthcare including allocations towards Covid-19 vaccination and initiatives to strengthen the country's primary, secondary and tertiary health infrastructure.

Moreover, the government's Performance Linked Incentive (PLI) scheme can bolster local manufacturing of pharmaceuticals and bring within our reach the vision of achieving self-reliance as a nation. The scheme's focus on biopharmaceuticals and complex generic drugs plays to the Indian pharma industry's evolving strengths. The associated incentives, coupled with homegrown cutting-edge capabilities, can help India stay ahead of global competitors. The recent thinking around Research Linked Incentives to drive innovation and garner a greater share of the value of the global pharma market needs to translate urgently into policy implementation.

The Indian pharmaceutical industry needs to capitalise on this momentum to establish 'Brand India' as one that stands for value, innovation and the highest impact in global healthcare. **BT**

GETTING TO $5 TRILLION

ATTAINING THE MUCH-HYPED GDP SIZE IS TAKING LONGER THAN ANTICIPATED. WITH SEVERAL POLICY LEVERS NOW IN PLACE, THE TARGET SHOULD BE SNARED SOON

BY **TEAM *BT***

PHOTOGRAPH BY **CHANDRADEEP KUMAR**

43.7 BILLION The volume of digital transactions in 2020-21, a surge of 88% from 23.26 billion in 2018-19

22 BILLION The number of UPI transactions in 2020-21, which has quadrupled over the last three years

IT TOOK THE Indian economy eight years to double to $2 trillion in 2014 and another seven to grow to just under $3 trillion currently. At that rate, the leap to a $5-trillion economy by 2024-25, as envisaged by Prime Minister Narendra Modi's government—seems unfeasible, especially after the Covid-19 pandemic and its lingering aftereffects.

The pandemic delayed the timeline by about 3-4 years in an 'optimistic' scenario, estimates EY Chief Economist D.K. Srivastava, and until 2029-30 in the worst-case outcome. Irrespective, India will become the world's third-largest economy by the end of the decade, according to the Centre for Economics and Business Research (CEBR), a UK-based economic think-tank.

Indeed, the latest government estimate is for a 9.2 per cent expansion this fiscal year, recovering from a historic contraction last fiscal and setting India up to claim the mantle of the fastest-growing economy in 2021. But the growth has to accelerate for the GDP to climb from ₹222.9 lakh crore in FY22 (pegged in last year's Budget) to $5 trillion, or ₹375 lakh crore in current prices—a 68 per cent increase in three years.

India already has several policy drivers including the 500-gigawatt (GW) green energy plan, production-linked incentive (PLI) manufacturing push, digital economy drive, ₹145 lakh crore-plus infrastructure pipeline, and targeted incentives for micro, small, and medium enterprises (MSMEs) to set the pace of growth. Besides, sound taxation policies, like the rationalisation of GST rate slabs, and improved compliance measures will provide the government with adequate revenue buffers to drive fiscal policies. Finance ministry sources say the government's priorities for the upcoming Budget will be capital expenditure and spending on health infrastructure.

"The objective of touching the $5-trillion target is surely in sight with several new enablers, reforms and prudent policy push," says Chandrajit Banerjee, Director General of industry body CII. "A key driver for the economy in this decade will be the emergence of a competitive manufacturing sector. The creation of good quality infrastructure in roads, rail and logistics will lower the cost of doing business for firms and enable higher exports."

Digital transactions have plugged tax leakages, resulting in better-than-expected tax mop-ups that will buffer the government's spending

BUILDING BULK

To help its transition from an agrarian to a service sector economy, India launched the $1.9-trillion National Infrastructure Pipeline (NIP) in 2020. That was complemented by the launch of the ₹100 lakh crore Gati Shakti plan last October. The government is aiming to increase the length of the national highway network to 200,000 km, create more than 200 airports, heliports and water aerodromes, and double the gas pipeline network to 35,000 km by 2024-25. In addition, it aims to set up 11 industrial corridors, two new defence corridors, 4G connectivity in all villages, and increase renewable energy capacity to 225 GW from 87.7 GW.

The Gati Shakti digital platform brings the infrastructure projects of 16 ministries under NIP, sharing resources such as satellite images, infrastructure, utilities, and logistics to alleviate the time and cost overruns. For perspective, government data in October showed as many as 438 projects, each worth ₹150 crore-plus, had cost overruns topping ₹4.3 lakh crore, while 563 were delayed by an average of 47 months.

Investments in physical infrastructure, besides health and education, will be among the key engines of growth, says S. Mahendra Dev, Director and Vice Chancellor, Indira Gandhi Institute of Development Research. "But, the impact on growth will depend on how successfully these infrastructure plans are implemented. The medium-term growth can be higher at 7-8 per cent if the big drivers are fulfilled and some of the bottlenecks are removed. Otherwise, medium-term growth may be around 5 per cent."

EXPANDING EXPORTS

Speaking of exports, the government has aligned its "Make in India for the world" and "Local goes global" visions in a road map to achieve $1 trillion worth of merchandise exports and $700 billion in services exports by 2028.

The commerce department has already started a drive to identify

Key Targets

The government set a target of achieving a $5-trillion economy by 2024-25. Here are some of the other targets as part of that objective

$1 TRILLION
Merchandise exports by 2028

$700 BILLION
Services exports by 2028

500 GW
Installed capacity of non-fossil fuels and 50 per cent of energy requirement from renewables by 2030

₹143 LAKH CRORE
Investment in National Infrastructure Pipeline by 2024-25

$300 BILLION
Electronics manufacturing by 2024-25

$1 TRILLION
Target for gross value added (GVA) from manufacturing and increase share to 20% of GDP by 2024-25 from current 17%, as per draft DPIIT paper

Sectoral Push

The government's PLI schemes for these 15 sectors are expected to help grow their contribution to India's GDP

1. Mobile manufacturing and specified electronic components
2. Critical key starting materials/drug intermediaries and active pharmaceutical ingredients
3. Manufacturing of medical devices
4. Automobiles and auto components
5. Pharmaceuticals drugs
6. Specialty steel
7. Telecom and networking products
8. Electronic/technology products
9. White goods (ACs and LEDs)
10. Food products
11. Textile products: MMF segment and technical textiles
12. High efficiency solar PV modules
13. Advanced chemistry cell (ACC) battery
14. Drone manufacturing
15. Semiconductors

$81.97 BILLION

Foreign direct investment inflow into India in FY21, the highest-ever annual FDI figure

and push 31 commodities through 200 countries, targeting $400 million in exports for FY22. It plans to cultivate 700 districts to become export hubs. But India should fit into the global value chain and become export competitive, says Arpita Mukherjee, Professor at Indian Council for Research on International Economic Relations (ICRIER). "At present, Indian companies are losing their market share in key export markets like the US, EU or the UK to companies from countries like Vietnam."

There is also a growing concern that while the value of exports has stayed constant over the last decade, the withdrawal of export incentives has trebled. Moreover, 70 per cent of India's exports comprise only a 30 per cent share of the world's traded commodities, indicating a lot of exports are raw materials and low-value products. The government has plans to monitor imports in real-time to identify high-value products it could manufacture in-house, aiming to kill two birds with one stone.

MAKE IN INDIA

Nothing highlights India's manufacturing drive more than the "Make in India" campaign. The government rolled out a ₹1.97 lakh crore PLI scheme to boost manufacturing in 13 key sectors ranging from mobiles and textiles to food and pharma products. Companies have committed or invested ₹12,960 crore since April 2021, with pharma firms topping the list, government data shows.

Over and above the 13 sectors, PLI schemes have also been launched for drone manufacturing and semiconductors.

The PLI schemes are also expected to give a fillip to MSMEs and help meet the government's aim of increasing MSMEs' GDP contribution to 40 per cent, from 30 per cent.

"Given that around 80 per cent of our industry is in MSMEs, promoting them will be a key driver of the economy and create employment. There is a need to create jobs to increase the purchasing power of the consumers," says Mukherjee.

While quality infrastructure will lower the cost of doing business and enable higher exports, the remaining cost disadvantages can be offset by the PLI schemes, says CII's Banerjee.

DIGITAL DRIVE

Banerjee is especially buzzed about the potential digital advancements. "I believe that high-end manufacturing such as semiconductor production will begin in India. This will be supported by the availability of skilled workers to work with advanced technologies such as AI, IoT and machine learning," he says.

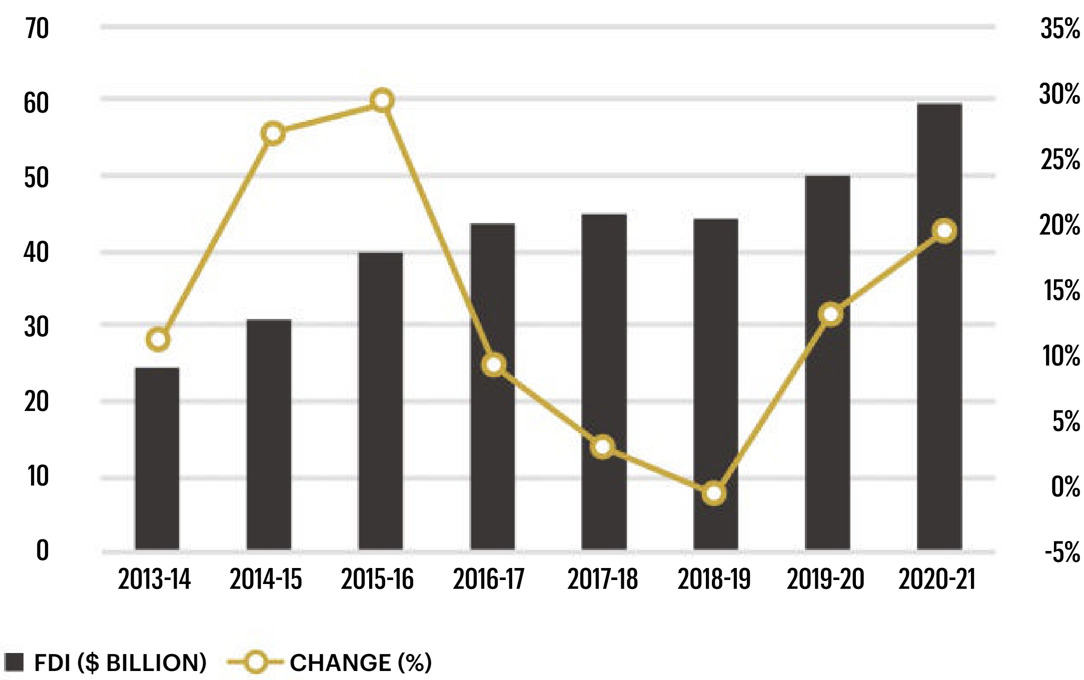
But India's digital economy already has a home-grown hero. The volume of digital transactions surged 88 per cent from 23.26 billion in 2018-19 to 43.7 billion in 2020-21, according to government data. UPI alone registered over 22 billion transactions during 2020-21, quadrupling over the last three years. Moreover, Aadhaar-Enabled Payment System (AePS) inter-bank transactions have also grown ninefold over the past four years.

Digital transactions have also plugged tax leakages, resulting in better-than-expected tax mop-ups that will buffer the government's spending. The net tax revenue between April and November of FY22 is 65 per cent higher than FY21 and is already 73 per cent of this fiscal's target.

There is much more to come, says Rakesh Nangia, Chairman of advisory firm Nangia Anderson India. "India's trillion-dollar economic growth in the next decade can come from ancillary digital assets and related businesses that are yet to be invented. India can leverage the digital asset opportunity by adopting blockchain technology, which is self-sufficient for digitising India's financial ecosystem."

THE FOREIGN HAND

Foreign investments have been rising, and will play a key role in advancing GDP growth



Source: *Ministry of Commerce and Industry*

GOING GREEN

India is ahead of the curve in green energy. Its total non-fossil fuels based installed energy capacity hit 156.83 GW last November, achieving its target of 40 per cent of total installed capacity nine years before schedule. But it is still some distance from its target of 500 GW of installed capacity and 50 per cent of energy from renewables by 2030, as PM Modi committed at the Glasgow climate change summit last year.

That kind of commitment would require technological advancements across areas such as solar, battery storage, and mobility, Amitabh Kant, CEO of public policy think-tank NITI Aayog, told *BT* recently. "India needs to have a top-class grid to manage this Indian storage facility. India needs to do pumped storage. India needs to ensure that it can use its renewables to crack water and do green hydrogen," he said.

While electricity dominates the public discourse, it accounts for only 18 per cent of India's total energy demand. The remaining 82 per cent from sources such as coal, oil and gas, and biomass needs to be converted into green energy, and that, said Kant, is a key challenge.

India's imports of fossil fuels will double to $320 billion in the next decade, he estimated. "Now, to ensure that we become not an importing, but an exporting country, we need to become not merely a producer of green hydrogen but to become the world's biggest producer of electrolysers, green steel and green ammonia. All this would require a massive amount of financial resources," Kant said.

TAX ANOMALIES

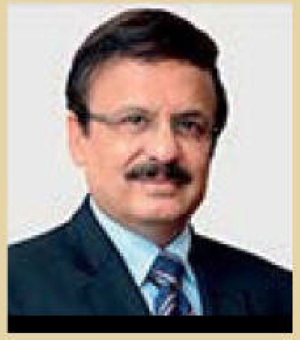
It is imperative India attracts foreign investment in diverse sectors, especially in areas like green energy and infrastructure, which is

"Given that around 80 per cent of our industry is in MSMEs, promoting them will be a key driver of the economy and create employment"

ARPITA MUKHERJEE
PROFESSOR, ICRIER

"The creation of good quality infrastructure in roads, rail and logistics will lower the cost of doing business for firms and enable higher exports"

CHANDRAJIT BANERJEE
DIRECTOR GENERAL, CII



"Trillion-dollar economic growth in the next decade can come from ancillary digital assets and related businesses that are yet to be invented"

RAKESH NANGIA
CHAIRMAN, NANGIA ANDERSON INDIA

limited at present, says ICRIER's Mukherjee. For that, "the tax regime should be simple and there is a need for greater transparency, predictability and clarity in policy," she says.

Nonetheless, India remains a top destination for foreign direct investment (FDI), and recorded its highest-ever annual FDI inflow of $81.97 billion in FY21. But India still lags many competing countries in the ease of doing business and in tax laws, Mukherjee found in a recent study she conducted. "In many product categories, there are inverted duties which increase the cost of production." In some cases, they deter investments.

The GST Council has already started fixing this inverted structure—where the tax on raw materials is higher than on finished goods—for several products, including renewable energy devices, pharmaceuticals and tractors. This anomaly for mobile phones was corrected in March 2020. The Council is also looking at reducing the number of tax slabs from four to three.

India has also amended some of its corporate tax laws in the past few years, to help trigger investments. In 2019, the government cut the corporation tax to 15 per cent for manufacturers that set up shop after October that year and started production before the end of FY23. Last August, it settled its nearly decade-old and much-maligned law on retrospective tax.

But there is more to be done, like correcting the anomaly in the trade tax for special economic zones (SEZs), Mukherjee points out. Goods and services from an SEZ to the domestic market are considered imports and subject to customs duties. Conversely, there is nearly no import duty on goods and services from countries with which India has signed free trade agreements.

Perhaps the most cautionary note comes from Biswajit Dhar, Professor at Jawaharlal Nehru University, who says the agricultural sector should no longer be sacrificed at the altar of a services-driven economy. "Among the most significant failures of India to realise its economic potential has been the abject neglect of this segment of the economy, which continues to support about 60 per cent of the workforce. If the income levels of this workforce increase as it should, the target of making India into a $5-trillion economy can be realised before the end of the decade."

India will eventually become a $5-trillion economy. The only question is if that will happen sooner rather than later. BT

Time to Ride the Reform Wave

After seeing 5X growth in less than two decades, the Indian economy encountered the pandemic speed-breaker, but with inclusive policy reforms and enabling infrastructure, we can get back on track soon

BY **AJAY MAHAJAN,** MD & CEO, CAREEDGE (CARE RATINGS LTD)

ILLUSTRATION BY **ANIRBAN GHOSH**

F**ROM POLITICAL** campaigns to prime-time news debates, the phrase $5-trillion economy has been stressed upon so many times that Indians cannot possibly forget it. It took our economy nine long years—from FY06 to FY14—to double its size from $1 trillion to $2 trillion. Another five years to reach $2.9 trillion. And as our leadership has often suggested, we were set to achieve the coveted $5-trillion mark by FY25. For any nation, 5X growth in less than two decades is a matter of pride. But then, the pandemic happened.

What followed was a record contraction in the Indian economy, reversing years of progress and gains. The country still has tenable economic growth prospects thanks to a stable and democratic political landscape, favourable demographics, a large captive domestic market, and sustainable external debt. However, the frailties of the Indian economy are equally evident. Not only were the pre-existing inequalities in terms of income and pervasive poverty exacerbated, but the low rate of employment, huge infrastructure gaps, slow pace of reforms, and issues of ease of doing business were also brought into the spotlight.

To transform the economy and boost its long-term potential, the Indian government has come up with laudable policy initiatives such as the Production Linked Incentive (PLI) Scheme, PM Gati Shakti National-Master Plan, and the Atmanirbhar Bharat Mission.

Build Infrastructure, Enable Growth

The road to a $5-trillion economy and beyond will essentially be paved by infrastructure. Infrastructure creation and upgradation need to be all-encompassing—from physical infrastructure that constitutes roads, railways, ports, airports, power, and irrigation to social infrastructure comprising health, sanitation, education and housing to digital infrastructure involving telecommunication and broadband to transport networks. All these entail substantial investments and given the persistent lull in private investment in recent years, the funds essentially need to be government-led.

In December 2019, the government unveiled the National Infrastructure Pipeline (NIP) that set targets for infrastructure building over six years (till FY25) across various sectors and regions by the government in conjunction with the private sector at a cost of around ₹76 lakh crore.

The major part of this investment (around 80 per cent) is proposed to be undertaken by the central and state governments. However, their ability to do so effectively and in a financially prudent manner remains a challenge due to the continued slowdown and the resultant lower revenues. The fact that over 75 per cent of government expenditure is committed in nature, lesser revenue generation could lead to rationalisation of expenditure towards (discretionary) development of infrastructure.

A back-of-the-envelope calculation based on our projection of economic growth indicates that the Indian economy could reach the $5-trillion mark by FY27 with an annual average nominal GDP growth of 12.3 per cent during FY22-27. The infrastructure investment required for this, which would be an average of 26 per cent of GDP, would have to progressively increase from ₹56 lakh crore to ₹106 lakh crore during FY22-27, taking the total investment to ₹478 lakh crore during the six-year period to FY27.

India needs to act upon structural reforms across sectors and facilitate ease of doing business to attract private investments. Further liberalisation of FDI policy and measures to attract foreign funds, viz. pension and sovereign funds could help in this.

Focus: Manufacturing and Exports

Alongside infrastructure creation, key policy reforms and measures such as the PLI scheme rolled out to boost the manufacturing sector are set to propel economic output in the coming years. Not only will the PLI scheme significantly change the manufacturing landscape, but it will also make India more competitive for integration in the global supply chain. This could in turn enhance the country's exports, push job creation, and aid demand. The Gati Shakti programme for multimodal connectivity of infrastructure, too, has the potential to strengthen local manufacturing and facilitate exports. However, the success of these programmes hinges on enabling infrastructure and structural reforms.

The country should focus on sustainable and equitable growth as the central theme while striving to achieve the dream of a $5-trillion economy

Digital Drive

One of the major transitions that the pandemic gave impetus to is the digitisation of the Indian economy. According to a Reserve Bank of India report, the total digital transaction volume in FY21 stood at ₹4,371 crore, as against ₹3,412 crore in FY20, signifying the increased electronic shift. Technology and digitisation are set to dominate the narrative of the Indian economy in the coming future. However, despite the fast and widespread adoption of digital technology in the last two years, there are shortfalls and challenges in terms of accessibility and ability to use digital technology. Though the government has been undertaking programmes to bridge this disparity, the foremost requirement is to improve upon the telecom and broadband infrastructure and to improve digital literacy in the country.

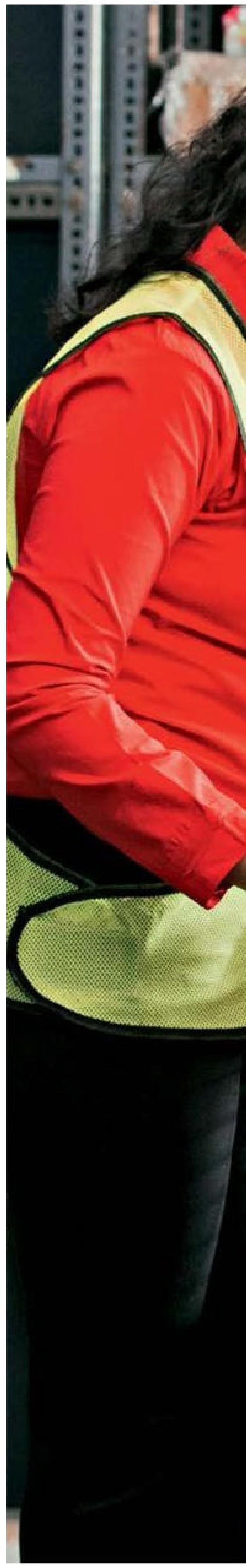
Images of the crumbling healthcare infrastructure during the second wave of Covid-19 and the plight of workers in the informal sector during the first lockdown are still fresh in everyone's memory. This nerve-wracking disruption to the lives and livelihoods of people—especially the ones with lesser resources must serve as a reminder to make sustainable and equitable growth the central theme that the country should focus on while striving to achieve the $5-trillion dream. BT

REWIRING THE SUPPLY CHAIN

HOW LARGE COMPANIES ARE PUTTING TOGETHER A ROBUST SUPPLY CHAIN TO ENSURE BUSINESS IS NOT AFFECTED AND ALSO READYING THEMSELVES FOR THE FUTURE

BY **KRISHNA GOPALAN**

PHOTOGRAPH BY **RACHIT GOSWAMI**



L**ESS THAN A WEEK** after the government announced a nationwide lockdown in March 2020, Seshagiri Rao M.V.S. came to terms with a harsh reality. "We realised how fragile our supply chain was," says the Joint MD and Group CFO of JSW Steel.

For as long as he can remember, the norm in the industry was to have inventory to last for three days. "There was never a need to have it for a week or anything more," he explains. The nature of the problem now meant that while the product needed was available, it could not be supplied. For someone who had spent decades in the manufacturing industry, the need to strengthen his supply chain stared him in the face. A lot of good work had been done so far but the level of preparedness for a different business environment was a big challenge.

You just need to pick a sector at random and the disruption of the supply chain and putting together a new one is the dominant story. Be it FMCG, pharmaceuticals, paints, auto components, steel or anything for that matter, it plays out in the same manner. A serious transformation is necessary for sheer survival and if it involves an overhaul of the status quo, so be it. The rewiring of the supply chain will be the overarching theme for a long time as busi-

FLEXIBLE STRATEGY Over time, the supply chain strategy has to be flexible for organisations depending on the environment and their learnings

nesses attempt to keep themselves relevant in the present and robust in a volatile future.

As things are playing out, one is witness to how a shortage of semiconductor chips has had a crippling effect on the automobile sector. Companies are now forced to relook at their vendor base, a key component of the supply chain, and question their own strategy of having a limited base. The past had a structure of many vendors before making way for a limited number. Now, there is a very good chance that a mix of the two approaches will be the way forward.

SCOUTING AROUND

At the centre of the supply chain headline is China. Companies from across the globe work with the dragon nation for sourcing a host of products. In that scenario, Covid-19 was not just a bolt from the blue but a clear warning that businesses needed to look at this part of the story differently.

Quite clearly, the task on hand is to work towards reducing the level of dependence on China. For pharma major Cipla, it is putting in place an alternative vendor development (AVD) plan. This is for the company's active pharmaceutical ingredients and intermediates, both of which now come from China. "Our AVD strategy ensures uninterrupted supply of raw materials. We have completed 58 AVD processes aimed at de-risking and serviceability during FY21, compared to 56 in FY20 and 28 the year before. We are also exploring the feasibility of developing in-house manufacturing as an alternate source for some APIs," says Swapn Malpani, Cipla's Joint President & Global Head (Supply Chain & Procurement).

For years now, there has been sound logic across industries to procure from China. "Very few players outside of China offer that kind of economies of scale," says Rao. That does not take away the need to work on a Plan B as his company is doing. He takes the example of steel rolls, where Europe and Japan are emerging as good bases for sourcing the product. "Our experience so far has been good with no significant rise in overall costs."

The pandemic threw up a host of learnings for companies and speaking of China, global manufacturing, directly or indirectly, was linked to it. "With India's political problems with China and travel also being affected, it made sense to reduce the level of dependence," elaborates Rao.

In many ways, it is going back to the basics. Vineet Sahni, Group CEO, Lumax, an auto components manufacturer, maintains that a

For years now, the economies of scale offered by China have provided sound logic across industries to procure from there. But the task on hand now is to work towards reducing the level of dependence on China

CHANGING SCENARIOS

How supply chains are going to look in the future, given the shocks and lessons that the pandemic has wrought

1. Companies across industries need to reduce the level of dependence on China
2. Companies are forced to relook at their vendor base, a key component of the supply chain
3. Covid-19 has hastened the process of achieving self-reliance with many companies looking at localisation
4. Companies are embracing the latest digitalisation of supply chain, modelling and simulation techniques

deeper understanding of supply chain has taken place in a post-pandemic world. "It never took place before, barring the tsunami, but that was largely restricted to Japan. Now, we have been forced to do in-depth study on the subject." For many like him, it has been worth the effort. Sahni takes the example of an intricate manufacturing process an auto component goes through, where a good part of it could be made in China and then assembled in Japan or Taiwan before finding its way into India. "All that was invisible to us earlier," he adds.

On the specific issue of China, Sahni agrees that a combination of large scale and low costs have been factors that worked well for the country. "There is no doubt that a high level of dependence on one country is a bad idea but the whole process of validation or making that change also takes 2-3 years," he points out. For his group, the proportion that comes from China is in the low single digits but these are for critical parts. "This includes the projectors [part of the headlight that go into the lamps] or just tooling, which is the heart of the process. Today, we are looking at localisation in a big way. Covid-19 has hastened the process of achieving self-reliance."

INVEST OR PERISH

From being a buzzword a few years ago, supply chain is now the oxygen for any organisation. The inherent complexity of businesses topped up with technology is a key differentiator. Abhijit Roy, MD & CEO, Berger Paints, opens up on his business quite succinctly. "We have many SKUs [stock keeping units] and a large dealer network. The challenge is to get the right SKU to the right dealer and that is not easy," he says.

The good part for him was that work on an integrated business planning software for Berger Paints had started in late 2019. "It would have brought critical functions such as sales and marketing, logistics, raw materials and manufacturing, among others on one platform through ERP. It got operational in the nick of time and was a huge help post the lockdown," points out Roy. The pandemic, he describes, was a hurdle at many levels. "It affected the supply of raw materials coupled with us having to face fluctuating demand. This is apart from the localised lockdowns depending on where one was."

The decision to invest in strengthening the supply chain (most often, it is technology) does yield rich dividends. For Berger, a key part lies in ASRS (automated storage and retrieval system where products can be placed and retrieved), which is integrated with the warehouse management system. "In a multi-storied structure, it is most useful and impossible for manpower to perform that function," elaborates Berger's Roy.

Over time, the supply chain strategy has to be flexible for organisations depending on the environment and their own learnings. For Berger, it is a "China+1 approach" for sourcing raw materials as it is for JSW. In the case of Panasonic Life Solutions India, a company known for electrical equipment, there has been a desire to make as much as possible in the domestic market but that is not cast in stone. As much as 90 per cent of its lighting products are now manufactured in India but it has had to be flexible with the EV charging infrastructure. "This is a highly price-sensitive market and the products are sourced from China," says the company's Joint Managing Director Dinesh Aggarwal. Again, in the case of products such as bulbs and tube lights, where technology is not that critical, the vendor base has been broadened to avoid any disruptions. "We worked with two for a long time but that number has increased to 10 now," he explains.

Anshuman Singh, CMD, Stellar Value Chain, one of the largest third-party supply chain companies, believes a relook at the existing vendor structure for companies is inevitable. "If they work with two now, it will increase to four or if work is done out of one country, we could see one more. There will not be a spike in the vendor base but tweaking," he says.

To him, this marks the emergence of a dynamic supply chain. "Digital is at the core of this transformation. Today, e-commerce, food delivery, D2C or payment systems are resulting in new consumption patterns. With big-ticket investments flowing into the supply chain business at all levels, companies will need to reconfigure their strategy on a weekly basis rather than the long-term approach of the past," explains Singh.

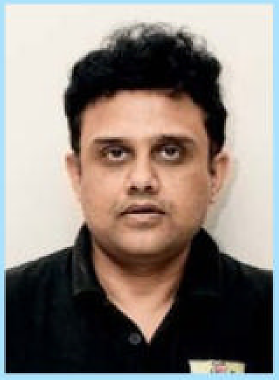
In the midst of all this, the unforeseen is not just a jolt but ensures even the most comprehensive business plans are pushed to the limit. The floods in Thailand around a decade ago was one such event for Aggarwal. Panasonic sourced a good part of its industrial plastics, a key raw material, from the country and straightaway, the company widened its vendor base from what was 1-2 to five today. "Nothing is predictable today and we have to constantly look for ways to increase efficiency," he says. All one needs to do is to tweak a little bit here and there to reap the benefit. According to him, the efficiency part kicks in quickly. "We have seen it with our turnaround time. If an order is placed before noon, we can deliver it on the same day, else it will reach the following day."

The investment is always sizeable and takes off sharply with scale. JSW Steel's Project Sampark, a complete automation and digitisation of the logistics process, will give real-time visibility to the plant management. Rao declines to share numbers at this point. Push him on the payback and he is clear that it is more of a necessity. "A company that does not invest in its supply chain will have to ready itself for [having] no future," he says.

The expectation is that a lot of infrastructure will get created and not without reason. Stellar Value's Singh says India's story here will mirror those of Hong Kong or Singapore in terms of large warehousing facilities. "Land prices are only

"Now, organisations can forecast true capacity, identify and eliminate bottlenecks, and develop optimal solutions for their supply chains with greater accuracy"

SWAPN MALPANI
JOINT PRESIDENT & GLOBAL HEAD OF SUPPLY CHAIN & PROCUREMENT, CIPLA



"The pandemic affected the supply of raw materials coupled with us having to face fluctuating demand. This is apart from the localised lockdowns depending on where one was"

ABHIJIT ROY
MD & CEO, BERGER PAINTS

In the post-pandemic world, the choice left to organisations is simple and yet telling. They have to be quick and make the right moves. Rewiring the supply chain is very much the story

"With India's political problems with China and travel also being affected, it made sense to reduce the level of dependence [on China]"

SESHAGIRI RAO
JOINT MD & GROUP CFO,
JSW STEEL

"We have broadened the vendor base to avoid any disruptions. We worked with two [vendors] for a long time but that number has increased to 10 now"

DINESH AGGARWAL
JOINT MD, PANASONIC LIFE SOLUTIONS INDIA

going up and India will have to go vertical. Size can easily increase by 3-4x by doing that." To his mind, there is a good chance that manufacturing out of China for the rest of the world will also reduce over time. "They have a very large consuming class and at some point, a good part of what is produced will be enough for the local market. India can easily benefit with the PLI scheme and the focus on self-reliance. Over time, every geography could become a large manufacturing cluster."

A FRESH APPROACH

Just how much has the thinking changed? To Sahni, it is nothing short of a transformation and he opens up on how conversations progress now. "A customer in the past was comfortable taking the safer route when we pushed him to look at something new and preferred to look at it later. Likewise, we would perhaps not have something they wanted. Now, we work more in tandem and take decisions collectively and quickly."

No conversation on the topic is ever complete without digital and how smartly it is used. For FMCG major Marico, moving the needle on supply chain means getting it spot on with digital. According to Jitendra Mahajan, the company's COO (Supply Chain, IT & MENA Business), it helps in improving consumer engagement, drive sales through e-commerce and also build capabilities in data analytics. "We will continue to focus on building analytics and AI capabilities to enable data-driven prioritisation, resource allocation and decision support. These brands are available through the online marketplace apart from direct-to-consumer websites and apps." Being a part of "essentials" did help Marico and during the pandemic, it partnered with companies such as Delhivery, Shadowfax and Lalamove "to streamline our supply chain and ensure that our products are delivered to distributors".

Of course, being in the logistics business had to be among the toughest jobs. To R.S. Subramanian, Senior VP & MD, DHL Express India, it hindered the flow of raw materials and finished goods and in the process, interrupted industry and trade. "There were delays in customs clearance apart from changes in government policies like GST, E-way bills, e-invoices, digitalised exports, and imports," he says. That's not all. Social distancing meant there were challenges when it came to picking up and delivering goods. "It was clear businesses had to re-calibrate their operations and adopt a digital-first strategy," he says. Subramanian's expectation is that by 2024, half the organisations in the supply chain business will invest in applications that support artificial intelligence and advanced analytics capabilities. "The pandemic has amplified the need for these organisations to seek tools with the objective of making better and more informed decisions faster," he points out.

In the post-pandemic world, the choice left to organisations is simple and yet telling. They have to be quick and make the right moves. Rewiring the supply chain is very much the story. Cipla's Malpani thinks it delves into embracing the latest digitalisation of supply chain, modelling and simulation techniques. "Now, organisations can forecast true capacity, identify and eliminate bottlenecks, and develop optimal solutions for their supply chains with greater accuracy," he sums up. That is what will make companies win in the market in the future. BT

@krishnagopalan

From Backend Support to Core Competence

Covid-19 has forced companies to bring supply chains to the front and centre of their strategy. Going forward, successful firms will be those with strong supply chains

BY **MOHIT MALHOTRA,** CEO, DABUR INDIA

T**HE WORLD AROUND** us changed rapidly, and drastically, with the sudden spread of Covid-19 in March 2020. To call it a Black Swan event would be an understatement. During the lockdowns, it was not just brands competing with each other to reach consumer households. It was more a battle between their supply chains. The brands that won the race, won it on the back of the success of their well-oiled supply chains.

Covid-19 has forced many companies, and in fact the entire industry, to rethink and transform their supply chain model. The focus over the past two years has been on creating systems and processes that help the supply chain—regarded as the backbone of any organisation—have the ability and the flexibility to absorb such disruptions and shocks.

As companies looked at developing supply chain strategies to gain a sustainable competitive advantage, the key pillars on which these strategies were built were: agility, resilience, collaboration and networking with customers, suppliers and other stakeholders. As they continued on this path, higher investments were made in supply chain technologies. This is contrary to the traditional industry practice of firms slowing down technology investments to a trickle in a volatile and uncertain economic environment.

Digital Transformation

The birth of e-commerce in India a few years ago added a completely new dimension to the way of doing business. While e-commerce had been growing at a steady pace, the pandemic accelerated this. In the post-Covid-19 world, e-commerce has emerged as the most-preferred contactless method of making purchases among consumers. And this trend is likely to stay. This has put the focus on the importance of customer delivery experience, which encompasses everything from speed and accuracy to real-time traceability and quality of on-time delivery. These are today crucial for consumer satisfaction.

Having tasted success with e-commerce, a growing number of companies are now experimenting with newer models of delivery like D2C (direct-to-consumer) and D2R (direct-to-retail). These models will gain importance in the next 3-5 years and will only contribute to incremental growth for organisations. These models give organisations greater control over the delivery mechanism, thereby reducing the impact that disruptions such as Covid-19 would have on traditional brick-and-mortar channels, besides allowing businesses greater control over the delivery experience they want to give their consumer. That's where digitisation has become imperative. It is today a must for ensuring cost-effective and agile supply chain management.

Over the past two years, the traditional linear supply chain has witnessed a digital transformation, leveraging advanced technologies to focus on end-to-end visibility, agility and optimisation, and be better prepared to deal with the unexpected.

Digitisation of supply chains or creation of digital supply networks will gather pace going forward as firms look to address the new and emerging requirements of their customers without losing focus on ERA (efficiency, resilience and agility). End-to-end digitisation from demand to supply planning, from procurement to manufacturing and logistics, would become commonplace. This will help integrate processes, increase operational transparency, improve visibility and make them more efficient.

Agility in supply chain is also acquiring a new form with companies realigning their strategies to meet the changes in global trade flows, emergence of new trade agreements, country incentives, etc. A successful supply chain operating model of the future will be one that can periodically review what work should get done locally, regionally and globally, including warehouses and manufacturing sites. While there may be considerable

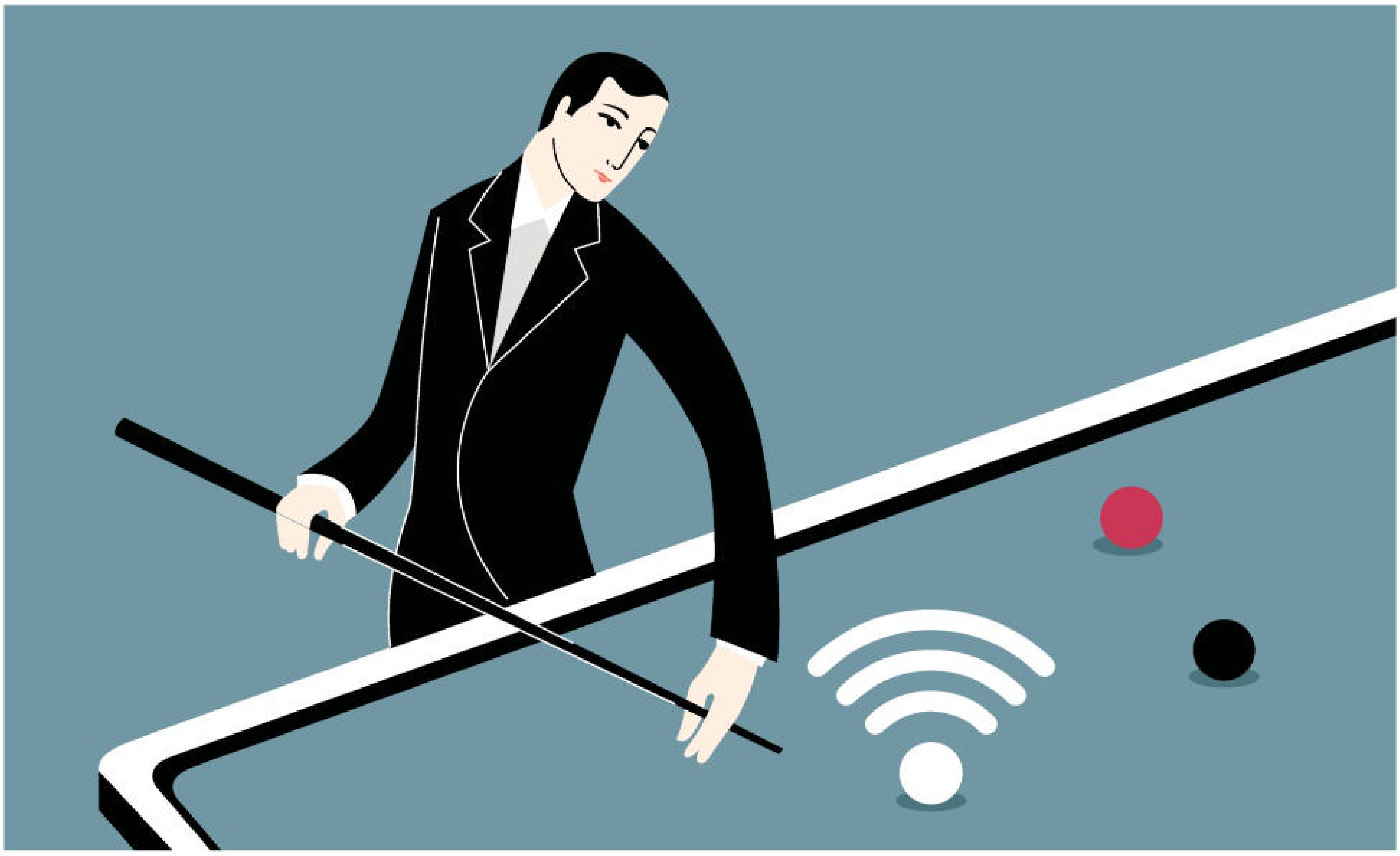


ILLUSTRATION BY **RAJ VERMA**

tax implications here, such a model will keep the organisation ready for any future disruptions. There is also growing focus within businesses on retraining and reskilling the workforce to ensure that they adopt digital and adapt to new ways of working.

Adding the ESG Focus

ESG-focussed business strategies are no longer a feel-good concept. They are emerging as a necessity for every aspect of business. Millennials want to work for companies with sustainability built into their mission statements; consumers are increasingly seeking products that are environment-friendly; and governments are enacting regulations and compliance requirements that are pushing firms to focus on ESG issues as a business strategy.

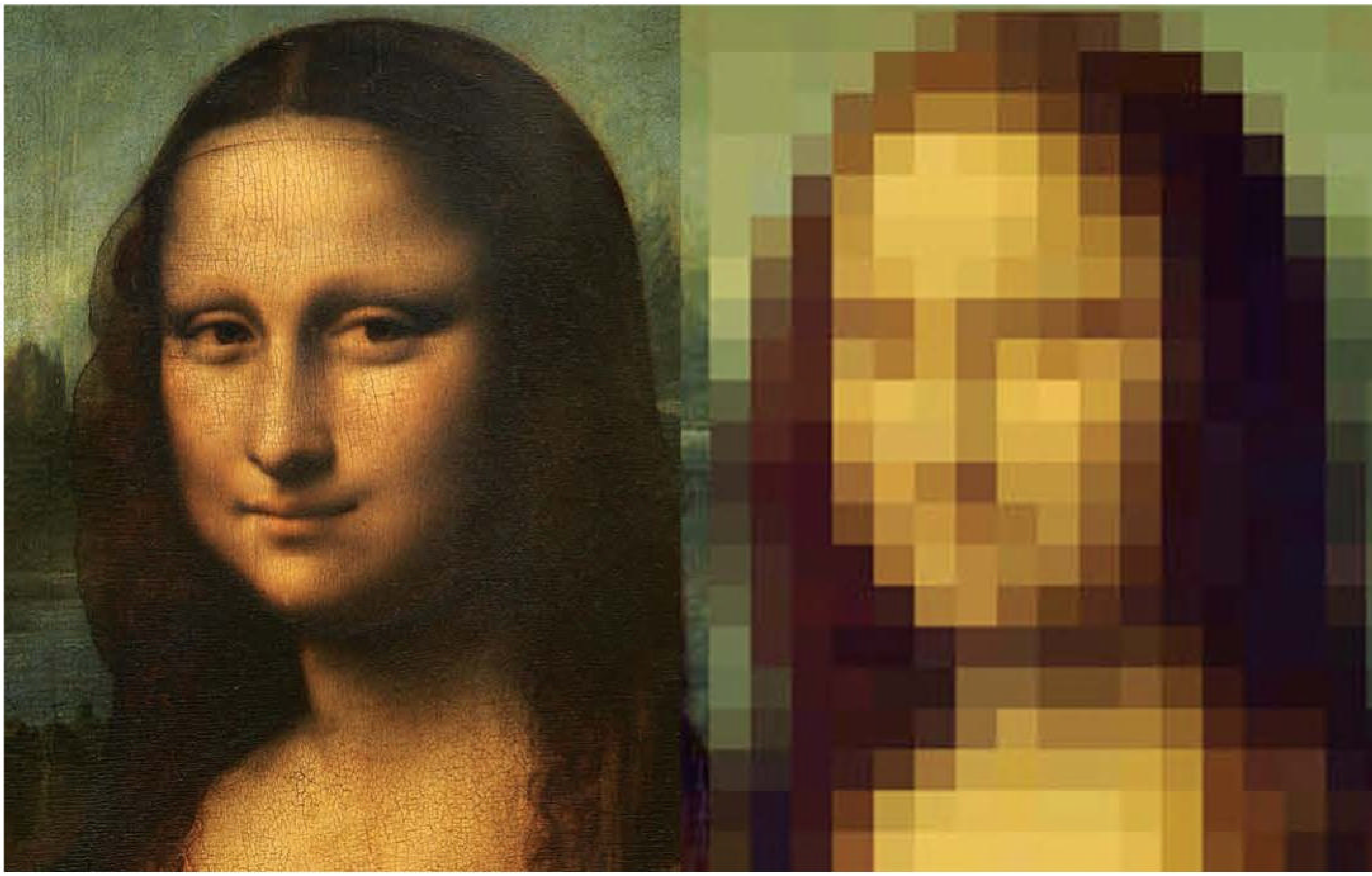
Supply chain transformation is going to be central to the sustainability targets being set by firms in the years ahead. We would increasingly see enterprises sharpen their focus on creating a more sustainable business by addressing the environmental, social and corporate governance concerns, and managing the ESG impact across their supply chain. That would, in the process, unlock the opportunities that this sustainable supply chain brings.

Enterprises will focus on creating a more sustainable business by addressing the environmental, social and corporate governance concerns, and managing the ESG impact across the supply chain

Supply chains have the tendency to expose firms to hidden and uncontrollable risks that can negatively impact their ESG scores. Since managing vendors and other third parties in the supply chain will not only be important but also tricky for firms, there is a crucial need for developing and implementing metrics to assess the ESG practices of suppliers, contractors and vendors. Effectively integrating ESG goals into supply chain operations would also require frequent communication with all third-party partners.

Sustainable sourcing would be the cornerstone of any approach to drive sustainability throughout the supply chain, covering all partners. Technologies such as blockchain and AI can be explored to improve visibility and traceability of supply chains, and ensure that partners operate fairly and ethically. Companies must also work with suppliers and business associates to reduce GHG emissions.

Going forward, the most successful firms will be those that embed ESG throughout their supply chains, working with suppliers to find solutions that meet both business needs and the greater good. BT



DISRUPTING TH

The physical art world—from auction houses, galleries, museums to artists—wants a part of the NFT universe

BY **SMITA TRIPATHI**

ILLUSTRATION BY **NILANJAN DAS**

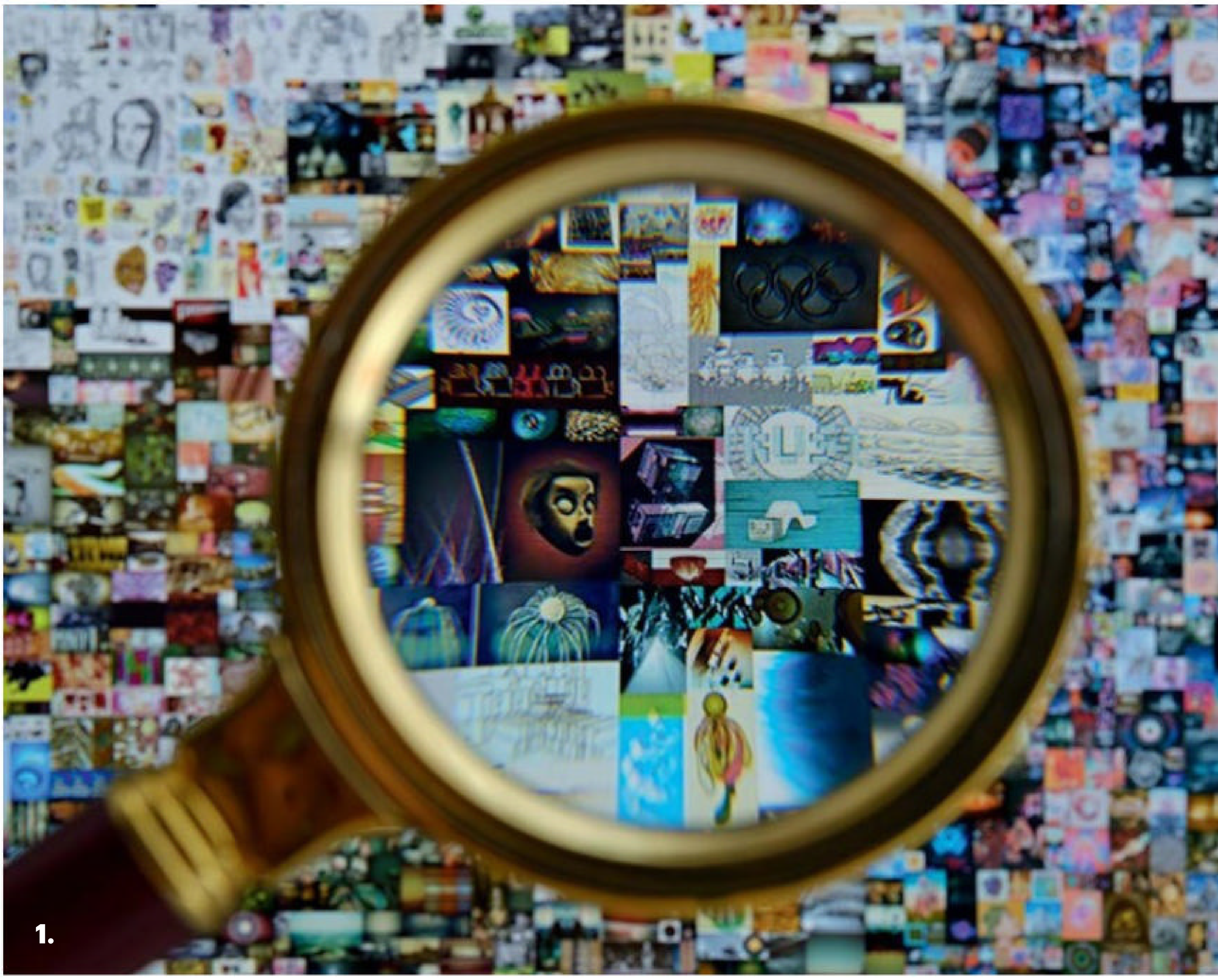
HE ART WORLD

IN DECEMBER 2021 when London-based *Art Review*, one of the world's leading international contemporary art magazines released its much-coveted Power 100 list—the annual ranking of the most influential people in the field—the art world went into a tizzy. That's because the latest list is not topped by an artist, a gallery, a curator or even a museum. It is topped by a bit of code that has taken the art world by storm—NFT or non-fungible token.

An NFT represents a digital work of art that is completely unique and whose authenticity can be verified through blockchain technology. A non-fungible token means it is not interchangeable or replaceable and is non-identical to any other token in the world, making it 100 per cent original and unique.

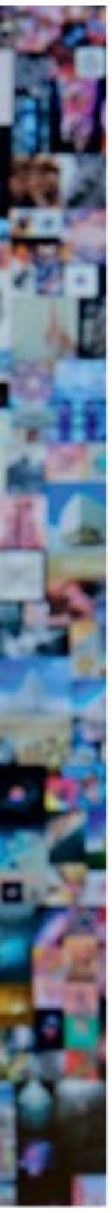
1. Digital artist Beeple's *Everydays: The First 5000 Days* was sold by Christie's for $69 million in March 2021, marking the auction house's foray into the NFT space

2. Auction house Sotheby's, which sold NFTs worth $100 million in 2021, has launched Sotheby's Metaverse—a proprietary, custom NFT marketplace


1.

2.

While NFTs have been around since 2014, it was in 2021 when they really created a buzz in the art world. It all started when in March, Christie's sold an NFT called *Everydays: The First 5000 Days* by digital artist Mike Winkelmann, better known as Beeple, for $69 million. Christie's had been thinking of making NFTs available to the larger art world but felt that both the artist and the work had to be perfect. "Given the combination of Beeple's leadership within digital art, strong pre-existing market and tremendous artistic ingenuity, we knew that he was the artist that we wanted to work with. However, it took a little more time to decide on the right work... Beeple came to us with the idea of offering *The First 5000 Days*, we immediately knew that this was the only option... The mere fact that he is able to represent 13 years of artistic evolution into



a single image speaks to the limitless nature of digital art," says Alexandra Kindermann, Senior Communications Director, Christie's EMEA. Christie's went on to sell a 100 NFTs for $150 million in 2021.

"With staggering prices achieved for Beeple's work in the last year, the art market has discovered a new generation of collectors, while artists around the world have discovered a way to market their art that bypasses the old art-dealer system," says the *Art Review*. This new generation of collectors is younger—the average NFT buyer is 42, 12 years younger than a collector of traditional art, according to Christie's. Moreover, 75 per cent of the NFT buyers were new to Christie's, enabling the auction house to reach a wider audience.

NFTs are disrupting the art world by changing the way art is traded. Creators of digital artworks can sell directly to collectors through platforms such as OpenSea and Foundation, cutting out dealers and galleries. Little wonder auction houses are keen on being a part of this big revolution. In October, Sotheby's, which sold a $100 million worth of NFTs in 2021, launched Sotheby's Metaverse—a proprietary, custom NFT marketplace. This will evolve to include a full suite of marketplace features including primary offerings, dynamic auctions, open editions and capabilities to mint generative artworks.

"Currently, we live in a world driven by the idea that access denotes ownership, and that things need to be scarce to be valuable. However, with NFTs the inverse is true. Just because an NFT—that anyone can view digitally—is widely accessible, this does not mean that the artwork depreciates in value. This creates a more equitable arrangement for the artist, collector, and consumer which is very exciting," says Michael Bouhanna, Co-head of Sotheby's Digital Art Sales.

Even museums, the custodians of traditional art, are jumping in. The British Museum has tied up with French start-up LaCollection to produce NFT versions of some of its artworks. It has turned 20 artworks of English painter William Turner into NFTs, which will soon go up for sale and auction on the start-up's website.

NFTs are disrupting the art world by changing the way art is traded, with creators of digital artworks being able to sell directly to collectors

NFTs have also made an appearance at art shows such as Art Basel, Miami. This year's India Art Fair too will showcase NFTs. "The fair is a perfect place to reflect on and give shape to current art world trends... we will have a selection of NFTs presented by Terrain.art, showing works by artists like Amrit Pal Singh and Laya Mathikshara," says Jaya Asokan, Fair Director, India Art Fair.

With NFTs being all pervasive, even art world bigwigs such as British artist Damien Hirst and American street artist Brian Donelly, better known as Kaws, have signed up.

"I think that we are at the very beginning of this fast-growing market... I believe that when we'll be able to hang a digital work as a painting, this medium will become way more accessible by our current audience that is very attached to the physical experience of the art," says Bouhanna.

As per a report by market tracker DappRadar, in 2021, the NFT space generated over $23 billion in trading volume (this includes all NFTs, not just related to art). NFTs are a powerful trend in the crypto space, with people starting to view them as a way to diversify their holdings.

But there is also a raging debate on whether NFTs are a bubble. After all, there is a possibility of excess supply. While each individual object is unique or in limited supply, potentially unlimited amount of NFTs can be created. From Hollywood to Bollywood to sports stars, everyone is jumping on to the bandwagon but not all of these NFTs will hold their value.

There's also uncertainty about valuation. For traditional art, one is aware of the price hierarchy of artists because of decades of information from galleries, auction houses, etc. But a lot of the NFTs being sold are by artists who don't have a sales history.

As the *Art Review* says: "It's hard to predict the long-term upset this bit of code will cause. But in 2021, all the old assumptions of the art market and art culture have been thrown into chaotic, creative uncertainty." BT

@smitabw

The Best Advice I Ever Got

VISHESH CHANDIOK | NATIONAL MANAGING PARTNER | GRANT THORNTON BHARAT LLP

Grant Thornton Bharat is helping shape various industry ecosystems through its work across Assurance, Tax, Risk, Transactions, Technology and Consulting

'Always do what's right ahead of what's easy'

What was the problem you were grappling with?
Two decades ago, Grant Thornton Bharat wasn't seen as 'big enough'. As a challenger, how do you get noticed whilst also be seen as balanced and committed to reshaping values for the better?

Who did you approach and why?
During my initial years as the CEO of Grant Thornton Bharat, pearls of wisdom from three individuals—my grandfather, my father and one of the global Grant Thornton CEOs I worked with—showed me the way.

What was the advice you received?
My grandfather taught me the importance of reputation. My father taught me to always ask as many questions as necessary. Lastly, one of our past global CEOs taught me that without expressing an opinion you cannot be noticed.

How effective was it in resolving the problem?
I encouraged our firm to speak out, to always stand by our clients in their times of need, and to have confidence in our values of always 'doing what's right ahead of what's easy'. Asking the right questions has helped display genuine interest in our clients which has helped build lasting relationships. Our moves such as putting client feedback ahead of billing, work from anywhere forever and unlimited leaves have helped in making Grant Thornton Bharat a preferred and trusted business partner for the best of Indian and global brands. BT

—ALOKESH BHATTACHARYYA

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