

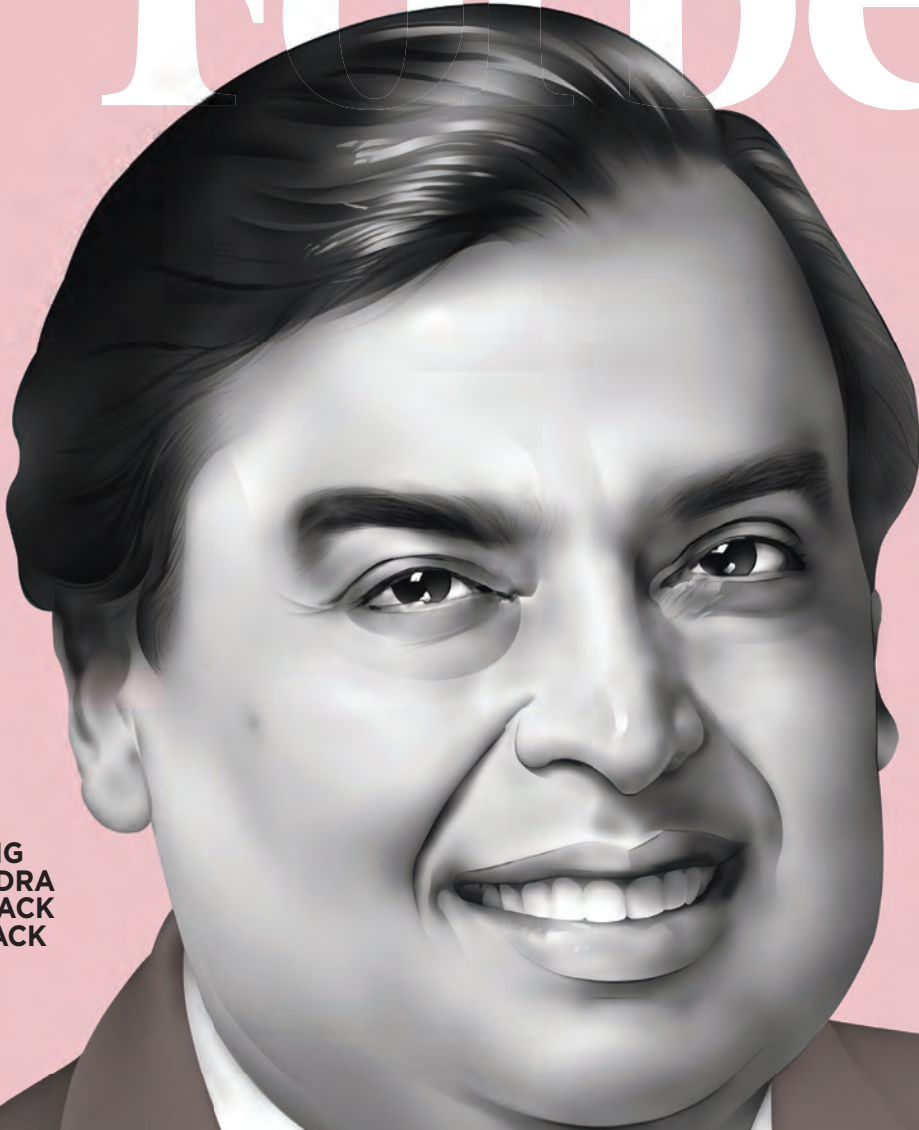
COVID-19 TESTING INNOVATIONS

HEALTHTECH
SPECIAL

STARTUPS IN FEMTECH

INDIA
Forbes

PRICE ₹200
JULY 30, 2021



MUKESH AMBANI
Chairman & Managing Director

**GREEN
GAMBIT**

**DECODING RELIANCE
INDUSTRIES' AMBITIOUS
RENEWABLE ENERGY ROADMAP
TOWARDS NET CARBON ZERO
STATUS BY 2035**

PLUS

**GETTING
MAHINDRA
SUVs BACK
ON TRACK**



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Forbes INDIA

Matters of Life

Perhaps one way to gauge India's focus on health would be to look back at the ministers in charge of the crucial portfolio post-Independence.

It seemed to have started well. The country's first minister of health and family welfare was Amrit Kaur, a follower of Mahatma Gandhi, a member of the Constituent Assembly, and an advocate for women's rights.

As health minister when nation-building was the priority, the Oxford University-educated Kaur was pivotal in setting up the All India Institute of Medical Sciences (AIIMS). She was also at the forefront of campaigns to rein in malaria and tuberculosis and spearheaded the world's largest BCG vaccine programme.

Another Gandhian in charge of the portfolio in the Nehru regime was Sushila Nayyar who, armed with degrees in public health from the Johns Hopkins School of Public Health, set up the Mahatma Gandhi Institute of Medical Sciences, India's first rural medical college.

Yet, when it came to expenditure on health, it may have been meagre in the early days of the nation. The 2017 Economic Survey reckoned that "given the pressing need to redistribute, India did not invest sufficiently in human capital—for instance, public spending on health was an unusually low 0.22 percent of GDP in 1950-51". It may have risen since but, as the Survey pointed out, the "little over 1 percent" of GDP is well below the world average of 5.99 percent.

Try recollecting the last time, pre-Covid, an election campaign that had health as an issue. What is more, but for a handful of notable exceptions, health ministers rarely had backgrounds connected to health, and an actor in charge of the portfolio in the early 2000s was clearly not what the doctor ordered.

Last fortnight's rejig of the Union Health portfolio has to be seen in the context of an impending Covid-19 third

wave. The inability to control a devastating second wave coupled with flip-flops on the vaccine front may have called for a change in guard, but a bigger takeaway and hope is that health may finally find its place in the sun.

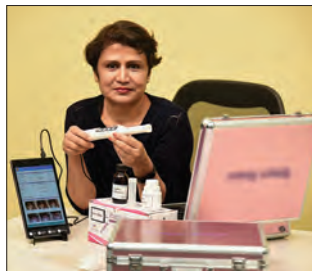
Innovation and entrepreneurship to solve India's pressing problems are core to *Forbes India*, and this Special Issue on health (and healthtech) delves into areas that are both immediate and futuristic. That means deep dives into new solutions to make Covid-19 testing quicker and more accessible, and a bunch of ventures focussed on femtech (which is much more than reproductive health), along with a peek into the strides taken in genome sequencing.

The Covid-19 pandemic may have driven home the short point that investing in health will help save lives. Just as a shift from fossil fuels to cleaner energies will ensure life lasts on earth.

The *Forbes India* cover story is on an oil and petrochemicals tycoon who has committed to such a radical transformation. Mukesh Ambani, chairman of Reliance Industries (owner of Network 18, which publishes *Forbes India*), announced at the conglomerate's 44th annual general meeting last fortnight a green energy plan that calls for an investment of ₹75,000 crore in the solar and hydrogen fuel sectors. The end game: To become a net carbon zero business by 2035.

Similar ambitions of global energy giants (but with longer time horizons) of eliminating carbon emissions, from Royal Dutch Shell to BP, have had a section of investors sceptical about the potential for returns. But then the bigger picture is less about return on investment in the short term and more about the war to save the planet. For more on the four pillars on which Reliance's Green Gambit will rest, don't miss Samar Srivastava's 'Eyeing Greener Pastures' on page 20.

STORIES TO LOOK OUT FOR



▲ (Left) Mukesh Ambani, chairman and MD, Reliance Industries, has launched an ambitious green energy roadmap; (Right) Veena Moktali is the co-founder of Periinkle Technologies, which works in the cervical health screening space



Brian Carvalho

Editor, *Forbes India*

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Best,

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FamPay, a neo-banking startup for teenagers, has whipped up excitement, but can navigating the regulated fintech ecosystem be child's play?



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EYEING GREENER PASTURES

Reliance Industries' bold plan to move into the green energy space—with an investment of ₹75,000 crore—is in keeping with its 2035 net carbon zero commitment. It also has the potential to catapult RIL into the largest green energy business in India

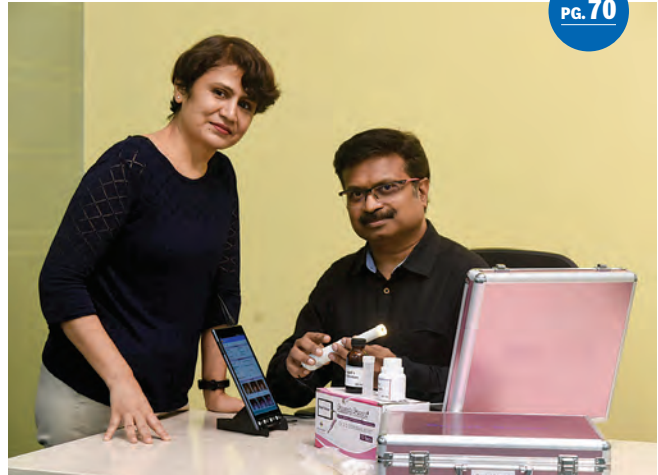
Chairman and Managing Director Mukesh Ambani is bullish about Reliance Industries' green gambit



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The Supreme Court recently said that CoWin creates a digital divide in vaccine access

ANIRUDHA KARMAKAR FOR FORBES INDIA



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Veena Muktali (left) and Koustubh Naik, co-founders of femtech startup Periwinkle Technologies

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Even as genetic-sequencing technology becomes cheaper and faster, the adoption of precision medicine remains limited in India

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Network 18

TO OUR READERS

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DR. MONICA SOOD: A WOMAN WHO BELIEVES THAT KNOWLEDGE IS GROWTH, NO ONE IS EVER OLD ENOUGH TO LEARN



Dr. Monica B. Sood

“ ‘Every patient suffers differently,’ as the finger prints of any two people in the entire human race never tallies with each other; similarly the physical and mental peculiarities of any two patients suffering from a common disease seldom coincide.

Nurtured in a household infused with familial issues, stress has always been one element that has watered her skills and personality.’ Dr. Monica B. Sood - a qualified Physician in Ayurvedic Medicine & Surgery, with a Master’s in Business Administration - Human Resources, International Business and Law is the epitome of the phrase ‘diamonds form under pressure.’ Her current skillset constitutes of skills gained by her fellowship course` in Thoracic Oncology from University of Michigan and Course in Cancer Metastasis from John Hopkins University, U.S.A. She has recently been accorded with Woman of Excellence Award 2020 – 2021 by Indian Achievers Forum and Global Healthcare Awards 2021 – Outstanding & Remarkable Contribution to the Health Sector (Ayurvedic Medicine & Surgery).

With a keen interest in herbology in relation to medicinal plants since the age of 5, her attention to detail was procured when she closely ascertained each characteristic of different medicinal herbs and minerals

linking them with deadly chronic diseases. She unlocked her potential in healing, understanding and problem solving under the guidance of her father and grandfather, who were the face of Navjivan during the time.

‘She not only thinks, but makes it happen.’ At the age of 18, she became the youngest CEO of Navjivan Health Service, a 98 year old Ayurvedic organisation, established in 1923 by her Grandfather Dr. Amarnath Sood during British rule. Navjivan was the first one to introduce Ayurvedic System of medicine in foreign lands and treats patients worldwide, this contributed to the amount of maturity in her communication and decision-making skills. Navjivan Health Service is not a company, but a child that she has been nurturing since 23 years. Committed to this organisation and various establishments under Navjivan Group, she solely trusts that alleviating suffering of the downtrodden can create peace among the different nations.

Dr. Monica acknowledges the trouble of every individual who seeks help from her, she deciphers the diagnosis and puts immense effort in finding the appropriate solution for the same. The depth of not only physical ailment but also mental ailment is engraved in her work. With the ability to console coupled with her super power to heal and diagnose has helped her treat countless patients with deadly diseases. ‘Every patient suffers differently,’ as the finger prints of any two people in the entire human race never tallies with each other; similarly the physical and mental peculiarities of any two patients suffering from a common disease seldom coincide.

A widely travelled woman with an ambitious mind and a thirsty soul, she believes that knowledge is the only thing that can create water and quench her thirst. A supporter of neuroplasticity, she states that hardly any day goes by when she does not stimulate her neurons with new information, the only way to keep your mind young is to keep introducing it to new ingredients of life. These experiences have amplified her communication, emotional intelligence, professionalism and leadership skills.

Another experience that has moulded her personality to a great extent is her role in National Unity & Security Council as the Chairperson. Playing a multifaceted role in the field of medicine, entrepreneurship and politics, her socio-cultural activities for promoting solidarity and national cohesion in India

While campaigning for World Peace, she is devoted to the patriotic mission of revitalising the country’s economy by proposing direly-needed reforms to the Government and suggesting new policy and programme which will conduce to wholesome changes in Socio-economic infrastructure. Being based on a scientific approach, her policies will yield desired results with almost absolute certainty by making the Indian economy truly dynamic and vibrant.

The ability to learn is a gift of life, knowledge is one fragment that makes a person whole, it can be in any field that they admire, any element that they are interested in. Regarding the future plans for her company, she states that in the coming years she would like to strengthen the research methodologies of her organization and provide more opportunities for youngsters to flourish, especially in times of coming epidemics.

'Communication is Underrated'

Serial entrepreneur Ronnie Screwvala on his latest book **P/10**

Leader Of The Pack

How to build a champion mindset, from sport to the boardroom **P/14**

Tech-tonic Boost to India's Farm Sector

Tech startups and new laws can disrupt India's agri sector **P/18**

SECOND INNINGS

Riding Multiple Moon Shots

Jeff Bezos stepped down as Amazon CEO on June 5, and is focusing on space rockets and climate change

ANDREW HARRER / BLOOMBERG VIA GETTY IMAGES



IN JULY, AMAZON'S FOUNDER

CEO Jeff Bezos, 57, plans to go into space in a capsule atop a rocket, all built with his own money—symbolising the rise of one of the most influential human beings in the modern world. Mid-life distractions and all. Earlier in June, he handed over the reins of Amazon to his trusted lieutenant, Andy Jassy, who is now CEO.

Bezos's fame today as the world's richest person has, of course, made his first job famous too—flipping burgers at a McDonald's outlet as a 16-year-old. But it was his entrepreneurial venture—over the last 27 years—that changed the world. Bezos went from selling books online from his garage to selling everything online,

catalysing the invention and planet-scale commercialisation of cloud computing, and building a media and entertainment business that wants to give Netflix a run for its money.

People in markets far away from Seattle, Amazon's headquarters, are now used to same-day and next-day deliveries of everything from daily essentials to refrigerators, from local sellers using Amazon. In the US, Amazon is also an online pharmacy.

In India, Amazon is both loved and seen with suspicion. Bezos wore a beige bandhgala when he visited the country in 2014, the first time since his ecommerce platform launched in India the previous year, and leaned out of a lorry driver's cabin for pictures. He has invested billions of dollars in the

market, and installed one of his trusted S-team executives as the country head of its operations.

Amazon has created hundreds of thousands of jobs and facilitated over a billion dollars in exports from local sellers. It is also facing investigations over allegations that it favours some sellers over others, and is building up its own brand of products in many categories.

In fact, Bezos is stepping back from the day-to-day running of Amazon at a time when big tech faces the most scrutiny at home, where lawmakers have introduced a raft of bills to reign them in. And Lina Khan, the new chairperson of America's competition authority, the Federal Trade Commission, is one of Amazon's biggest critics.

Bezos's personal life too, in recent times, has caught attention. His divorce from the mother of his children, MacKenzie Scott, made her one the richest women on the planet.

In addition to Blue Origin, the space tech company that Bezos has funded, which is building rockets and space modules, he has also committed billions of dollars to fighting climate change. "I'm committing \$10 billion to start with and will begin issuing grants this summer. Earth is the one thing we all have in common—let's protect it, together," he said on Instagram, when he announced the fund last February.

This may become his biggest legacy.

• HARICHANDAN ARAKALI

Selling Books to Exploring Space

The Making Of A Billionaire

Twenty-seven years and \$203 billion later, Jeff Bezos is stepping down as Amazon CEO. A look at his journey from a high school in Miami to sub-orbital space



GETTY IMAGES

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1964

Jeffrey Preston aka Jeff is born in Albuquerque, New Mexico, on January 12, 1964. He is raised by single mother, Jacklyn Gise. Jeff is later adopted by his step-father Miguel Bezos in 1968 when he was four years old



1986

Graduates from Princeton University with a Bachelor of Science in Engineering, specialising in electrical engineering and computer science

1993

On November 19, marries Mackenzie Tuttle

1994

Writes a business plan on a roadtrip from New York City to Seattle, and starts Amazon in a garage on July 5

1997

On May 15, Amazon goes public at \$18 per share



GETTY IMAGES

2000

Bezos starts Blue Origin to make space travel accessible. It remains a secret till 2013, when media catch a whiff after Bezos goes land shopping

2002

Bezos starts Amazon Web Services; gives Andy Jassy capital and freedom to create the cloud computing service



GETTY IMAGES

2007

On November 19, Amazon launches Kindle at \$399. Readers get access to more than 90,000 books, magazines and newspapers

2010

On November 16, Amazon Studios is launched



AFP

June 2013

Amazon arrives in India in Bezos' attempt to curb Alibaba's popularity in Asia

Aug 5, 2013

Bezos buys the *Washington Post* and its sister publications from the Graham family at \$250 million, ending their ownership of 80 years

2015

Amazon Studios' *Transparent* becomes the first TV show to win a Golden Globe award, a first for a streaming service

July, 2018

Forbes, *Fortune*, Bloomberg Billionaires Index, MarketWatch and *Wall Street Journal* say Bezos is the world's richest person (\$151 bln)

Nov, 2018

Bezos announces that Blue Origin's *New Shepard* will take human beings to suborbital space

Jan 9, 2019

Bezos and Mackenzie announce their divorce. Mackenzie gets 25 percent (\$36 bln) of their Amazon stock, becomes world's third richest woman



GETTY IMAGES

Aug 2020

According to *Forbes*, Bezos becomes the 'first person ever worth \$200 billion'

Feb 2, 2021

Bezos announces he will step down as CEO of Amazon sometime in the third quarter of 2021 and Andy Jassy will replace him

June 7, 2021

Bezos announces he will fly to space as a passenger of the first crewed flight of the *New Shepard*, with his brother Mark, to suborbital space

July 5, 2021

Jeff Bezos steps down as CEO of Amazon

INTERVIEW

‘Communication is Underrated’

Serial entrepreneur Ronnie Screwvala on his latest book, *Skill it, Kill it*, how he keeps himself upskilled and what he'd tell his younger self

Q What inspired you to write the book? And what is the one thing you want readers to take away from it?

In the last five years since we founded upGrad, millions of students have applied to us. I saw a serious gap when it comes to their soft skills. Skill means lots of things to a lot of people, but if you don't practise and make a real change, you'll always be a five on ten which is neither here nor there.

In my first book, *Dream with Your Eyes Open: An Entrepreneurial Journey*, I aimed to talk about the failures for entrepreneurs. I failed my BCom and then decided to be an entrepreneur.

The one thing I hope people take away [from this book] is that learning never stops. In today's day and age, people are competitive, so it's going to be important to realise that soft skills are as important, if not more, as hard skills. I see myself as a product of soft skills. Almost every chapter of the book is about something that helped me through life, like gaining more confidence and focus, which helped get better outputs.

Q Did you learn anything in the process of writing this book?

I learnt a lot when we did a focus group with about a thousand working people across the world for this book. I learnt that what people think and what their biggest concerns are today versus what I heard five or 10 years ago, are different. And the best way to learn is by asking questions.

A HABIT SHOULD BE QUESTIONED, BECAUSE THERE'S A SENSE OF COMFORT WITH ROUTINE

It's never about a mentor giving you advice—that's good learning but not great learning. Really good learning is when somebody asks you a question which makes you go, 'Why didn't I think of that?'

Q Do you actively seek change or wait for things to push you out of your comfort zone?

Yes. I put myself in situations where I'm slightly on my toes. Everyone thinks you need to be hyper to be in a frame of 'looking forward', but 'looking forward' is a discipline. It doesn't have to be done when you're in the middle of your career. It has to be done at the start. It is a necessary trait for people. If you don't do that, you're going to get stuck, and you will think the opportunity is failing you, when it's you failing the opportunity.

Q Are habits set in stone or do we have to change them with the times?

The one good thing about habits is they have been challenged during the pandemic. A habit should always be questioned, because there's a sense of comfort with routine.

Standing still is taking five steps backwards. You're fooling yourself if you think that you will remain happy with your status quo. Habit is equal to status quo. You're assuming that you are deciding your status quo, but the status quo is always changing around you. When you're not clear on what you do, take some time off. Take



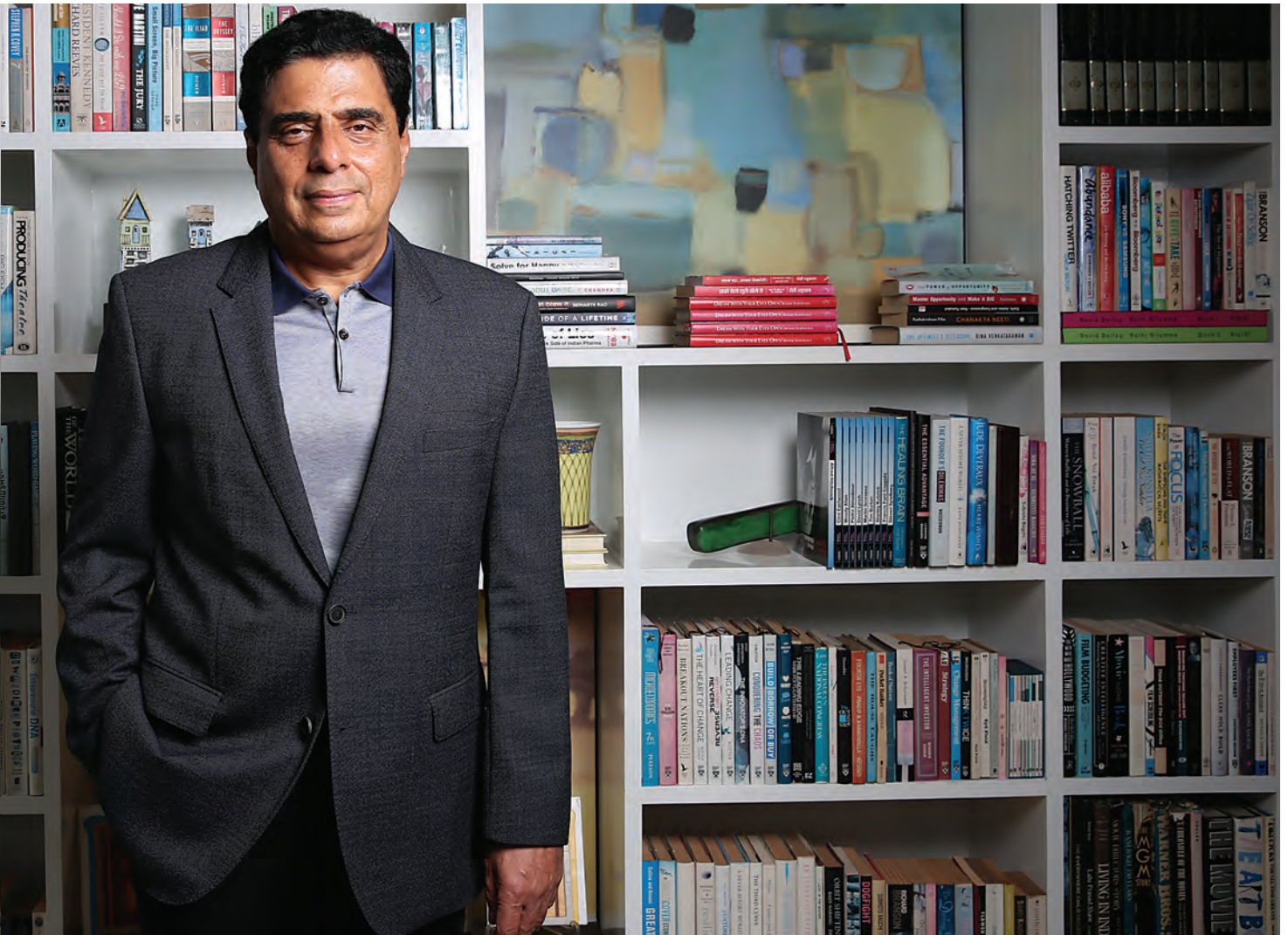
a disproportionate amount of time getting inspired, meeting strangers and reading books.

Q How important do you think the people around you are in affecting you?

It's important. First, of course, is your family, the closest circle around you. It can make or break you in many ways. It gives you a certain sense of comfort and a strong foundation. For everyone else, it's all about energy. You should be surrounded by people with positive energy. You may have a great friend, for example, but if he's constantly running you down or trying to egg you, then you'll become that person. So I would say, sometimes it's fine if you have a connection with a negative

\$120 mln

The amount raised by Ronnie Screwvala's upGrad in April, its first round of external equity funding



person. But, at the end of the day, you are who you are based on your energy and that energy needs to be positive.

Q How do you maintain life-long learning?

I do new things, I constantly interact with new people, and I push the envelope. The first 10 years you're kicked around and the next 10 you have failures, and it lets you hone in on what you want to do in life.

It's not like I was an education expert when I started upGrad. The year before I decided I wanted to start upGrad, I met with hundreds of people, some twice, some thrice. I read a few industry reports, but they didn't motivate me at all. Consultant reports tell you the past, but nobody

tells you about the future. So for me, it's exactly this that keeps me going—I'm able to use the skills I've honed in the past, especially my learnings and failures, and adapt them to what I want to do.

Q What are the most important skills you've learnt in your life?

Communication is underrated. Especially in a digital era, we need to over-communicate. Most people think that communication is oratory skills or command of the language, whereas communication is so many things, including listening and absorbing. Coming from a lower middle-class family and being an entrepreneur along with that, neither confidence nor communication

came naturally to me. I had to fight for it. I think resilience and the ability to deal with setbacks are also very important. I don't think we move on easily, which I, however, pride myself on doing quite well.

Q If you could tell your younger self anything, what would it be?

I would tell my younger self to get a lot more focussed on what I wanted to do; I was opportunistic and excited, and wanted to do a lot at the time. If I was more focussed, I would have walked a few more miles. And I would tell myself to stick it out. Because if there's anything I can say for myself, it's that through most of the thick and thin, I stuck it out.

—ANAVI KAUL

THE YOUNG AND VISIONARY



A businessman par excellence,
Yash Pal Singh Yadav, Managing Director,
Anya Polytech & Fertilizers Pvt. Ltd. (APFL)
established the firm in association with
Anya Agro & Fertilizers Pvt. Ltd.
in January 2011.

Synonymous with dynamism, Yash has proved his mettle with a host of successful entrepreneurial ventures. Known for his business ethics and values Yash has a number of companies under his command. He epitomizes the amalgamation of professional knowledge, experience, intellect, and leadership which aids the enterprise's sustenance in otherwise dire situations. Mr Yadav has achieved several milestones; showcasing his unique potential in constructing a sustainable and appreciable business environment.

Yash's achievements are backed by academic and professional qualifications—BE Mechanical, MBA in Finance (LSBF, UK), PG in Capital Market and Finance (IIFT), Export Management (IIFT), and PG in Management.

About APFL

The organization is engaged in HDPE, PP, BOPP, and Woven Fabric bags' manufacturing for micronutrients and organic fertilizers. About 80 million bags are produced per annum to pack fertilizers, food grains, etc at the industrial level. With a 90-crore turnover and net worth of 120 crore, the company functions at its optimum capacity with 100 per cent utilization. APFL boasts of a proficient workforce comprising of 400 persons employed directly across divisions such as Managerial, Technical, etc. under-skilled, semiskilled, and unskilled manpower categories.

Expanding their scope of work in the year 2015, the Company entered the micronutrient fertilizers manufacturing business and started producing Zinc Sulphate Heptahydrate and Zinc Sulphate Monohydrate. Keeping in mind the alarming rate at which Zinc deficiency leading to decreased crop productivity was affecting our largely agriculture-dependent population and economy, 16,500 MT of fertilizers were produced per annum. In addition, they also started manufacturing Magnesium, Ferrous Sulphate, etc.

The Company has a wide marketing and distribution network established across 16 Indian states. The direct and institutional distribution network works for the sale of various products including Zinc Sulphate, micronutrient mixtures, water-soluble fertilizers, zinc EDTA, formulas, organic manure, and plant growth promoters. APFL's success can be attributed to the fact that it has worked on ground level and promoted the use of micronutrients in the agriculture industry. Being one of the biggest producers of micronutrients; they produce 15,000 MT of micronutrients and 30,000 MT of organic fertilizers to facilitate the growth of the agriculture sector in India. APFL has recently begun manufacturing certified seeds to extend further help in the agricultural growth process.

APFL engages with farmers actively in on-ground meetings and gives field demonstrations across Uttar Pradesh and other states. The Company operates with the sole aim of mitigating nutrition deficiency in order to serve the farming community.

Committed towards promising better agricultural results, they participated in various Zinc Seminars/Symposia around the world, particularly in Brazil and Belgium.

During the peak of the pandemic, the Company's growth rate for the year 2019-20 was recorded at 60 per cent and in the following financial year—2020-21— it grew by another 33 per cent.

More recently in the year 2017, APFL was felicitated for its best video film for farmers by



“Committed towards promising better agricultural results, they participated in various Zinc Seminars/Symposia around the world, particularly in Brazil and Belgium.”

Ministry of Agriculture, Government of India. In addition, the Company's contribution in the field of agriculture is duly recognized and appreciated every year with letters of appreciation from various agriculture universities and institutions for 'Best Field Demonstrations to the Farmers'.

Braving the Waves of the Pandemic

The supply chain and inventory management skills were upgraded and with effective management control and strategic decisions a proper inflow of raw materials and distribution of the manufactured products was managed.

Absorbing the complete manpower during pandemic posed a great challenge, however, the same was tackled by taking a step at a time. They began with marinating 30 per cent manpower and gradually took it up to 60 per cent. Work distribution was planned in such a way that it became more inclusive of the workforce whilst following the COVID 19 guidelines laid down by the government of India. A major challenge was to cope up with the tremendous shortage of unskilled labour but it was handled well with great efforts and provision of better facilities in the form of both monetary rewards



such as masks and sanitizers, and were strictly instructed to maintain social distance.

Social Activities Amidst COVID 19

Doing their bit for the betterment of the society and helping mankind in such testing times, APFL engaged in philanthropic activities. They distributed around 5,000 PPE kits to different hospitals, made free medicines available, and donated 20,000 face masks, sanitizers, and groceries (for a month) to 12,000 needy families. They saved starving families who had lost their bread-winning jobs due to the pandemic. APFL also contributed INR 5 lakh to Prime Minister's Relief Fund. They are also working on sanitization and taking steps to make clean drinking water available in several villages of Uttar Pradesh.

CSR Initiatives of APFL

- APFL has started an NGO—Naya Savera—to provide free medicines and video consultation with doctors. Naya Savera also spreads information about various government schemes amongst villagers and farmers.
- Recognizing their duty towards society, APFL began manufacturing masks during the pandemic. This helped in generating employment and distributing free masks to the poor.
- School bags have been distributed among school students from time to time by the organization. They also distributed free seeds and Zinc Sulphate fertilizer samples to farmers.
- Understanding the digital needs of the society, several computers were installed at various computer centers to enable children from poor families to gain access to technical education. ■



For more details on their initiatives and offerings visit: <http://apfl.in/>



INSIGHTS

Leader Of The Pack

How to build a champion mindset, from sport to the boardroom

PUNIT PARANIPE / AFP



'Encourage everyone to think like a leader'

KL Rahul

Cricketer



LEADERSHIP PULLS YOU OUT

of your comfort zone. You have the responsibility of creating a great environment, keeping

everyone healthy, competitive and in the right frame of mind.

In sport or life, when under pressure, you have two thoughts: Either adopt the aggressive or cautious approach. I've encouraged my team to always take the aggressive approach; if we fail, we fail as a team,

but always trust your gut and instinct.

I ask all the players to feel as if they are the captains of the team—it is not my team or it isn't the team of Anil Kumble [former India cricket captain and coach of Punjab Kings]. It is our team. All of us are equally responsible for what we do, whether we create

Beacon- A Revolutionary Journey to Zenith

After the serene situation of the pandemic in 2019, Chirag Joshi, CEO of Beacon, visualize focusing more on the molecular diagnosis that is not discovered much in our country.

Beacon group has crossed the Rubicon in the past under the guidance of Dr D K Joshi in making it one of the leading diagnostic group in the country.

The journey of Dr D K Joshi started from small provenance with a background of a small family restaurant business.

Dr Joshi took scientific training under the guidance of world top-level scientist Dr B S Blumberg who got the Noble Prize in Hepatitis research and he was the director of Fox Chase Cancer Centre, Philadelphia, USA. Likewise, Dr Joshi also trained himself with many renowned scientists in different institutes worldwide including The National Institute for Biological Standard & Control London, Royal Post-Graduate Medical School London, Harvard Medical School, Boston USA, Merck Sharp & Dohme Research Laboratories, New Jersey USA, CDC – Department of Health & Human Service, Atlanta USA, The Middlesex Hospital, Medical School & University College, London.

His dream was to venture into a business since childhood that he turned into reality in 1990 by starting Beacon Diagnostics Pvt. Ltd. Today, Beacon is in the top five Indian IVD players in the product segment of Immuno Diagnostics, Biochemistry and Haematology.

With time Dr Joshi established three other verticals including Vector, Biogeny and Impetus.

A company with an ultra-modern manufacturing plant, Beacon is certified with ISO 9001, ISO 13485 & MDR-17 norms. A working place for 550 employees, all the products here are CE marked with 800 distributors Pan India.

Conferred with The National Award by the Prime Minister Shri Atal Bihari Bajpayee, Dr D K Joshi was uncompromising with quality, customer satisfaction and R & D implementation.

To take the company towards a new level, he handed his authority to the second generation. Dr Joshi believes that young blood pours in new and unique ideas. His



Ms. Nidhi Joshi, Dr. Dinesh Joshi and Mr. Chirag Joshi

son Chirag Joshi and Daughter-in-Law Nidhi Joshi took over the command as CEO and COO, respectively.

After completing his graduation in pharmacy, Mr Chirag Joshi CEO of Beacon completed his Master's in Business Administration from the University of Wales, UK. Mr Chirag Joshi entered into Business in 2013 as a Head – Sales & marketing with the vision of capturing A-Class market share and improving the brand prominence in the country. Under his leadership, he expanded the company's export to more than 62 countries and planning to go to another 100 countries in the next few years. With his visionary perception, he took the company into the next orbit of the business.

Ms Nidhi Joshi, COO of Beacon, has completed her Masters in Human Resource and joined Family Business and now she is heading Financial Management, Commercial Activities, Production, Supply Chain and HR-Admin department. She is working hard for total automation in the Production department. She is also a member of the Young Leadership Council.

Post Covid-19, both young leaders, Mr Chirag Joshi and Ms Nidhi Joshi decided to diversify their business into Ayurveda. Today Beacon group is entering into Ayurveda products.





history or we go down. I am the captain only on the scoresheet and when I go for the toss at the start of a match. Once the game starts, it's a combined decision.

When you go into the game, and there is so much pressure, you tend to forget the plans because your mind and heart are racing. Remember the plans, remember your personal

strengths and stick to those. In the processes of winning, losing, meeting, planning etc, you tend to forget the simple things right.

The minute someone says captain, the name that comes into the mind of anyone from our generation is MS Dhoni. Yes, he's won a lot of tournaments, done amazing things for the country, but the biggest

achievement of a captain is to win the respect of your teammates. Any of us would take a bullet for him without a second thought.

Also having played under Virat Kohli... he operates at 200, when 100 is the best that you possibly can be at. And he has the ability to carry the other 10 guys, and pull them from 100 to 200.

Manasi Joshi

Para-shuttler

WHEN I HAD AN ACCIDENT THAT turned me into an amputee, all I had to do was accept that from now on I was going to be living as a person with disability. When I was in the hospital, one day, I just told myself 'this is it'. The next day, I dreamt of myself as a person with disability; it meant even my subconscious was able to accept it.

There were difficult days because every five days, I was going into the operation theatre. One day, I had a panic attack and the doctors had to calm me down. I've had great support from my family and friends... people around you help you. We sometimes feel we are alone in this, but that's not true. Help is right beside you... all you have to do is ask.

I've seen people do great things with whatever opportunities they get. I thought I'd also follow them... all I will have to do is push a little harder. When I started playing, I would just hit standing strokes—for me that was also an achievement, because I was able to stand without support. Not being able to do one thing didn't demotivate me, being able to do something else motivated me on the other hand.

Champion athletes overcome their setbacks. They learn to navigate whatever obstacles they face. And they learn to accept those failures, finetune their skills and improve



SAM PANTHAKY / AFP

'One who navigates hurdles best emerges a champion'

themselves. We are all champions, we are all resilient, and all of us have the capability to adapt to whatever situations we face.

For me, to be able to continue with the hurdles that I face and with minimum support that I get has been the journey. There have been multiple milestones, like winning a

medal at the World Championship. I don't know what is the destination or what these milestones are showing, but every such milestone takes me to the next milestone.

• KATHAKALI CHANDA & NAINI THAKER



Catch the interviews on *From The Field* every Friday at 4 pm on www.forbesindia.com

SANJAY JHUNJHUNWALA: MAN ON A MISSION



The Founder-CEO of the Mani Group, which includes IQ City Medical College Hospital, is a man with his eye, not just on the skyline, but on the future of healthcare.

When Sanjay Jhunjhunwala, the Founder-CEO the Mani Group of companies, which includes IQ City Medical College Hospital in Durgapur, started out, he was a man on a mission with an eye on not just the skyline, but on the future. Four decades later, the Group comprises several verticals that are impacting lives in the residential property, retail, hospitality, healthcare, and education sectors.

Healthcare has always been close to Mr. Jhunjhunwala's heart, in keeping with the group's motto – Change for Good – and the brand's promise to improve the quality of life of whoever is touched by it. Out of that promise grew the idea of an integrated township that would serve as a residential area, while incorporating the health and education sectors as well.

So began the creation of a Knowledge & Health Campus over 100 acres in Durgapur which saw the emergence of IQ City Medical College Hospital – the first multi-speciality hospital in the city to have a Medical College attached to it, and also the largest private teaching hospital in eastern India.

According to Mr. Jhunjhunwala, it is the “realisation of a dream – to have healthcare with a difference, state-of-the-art medical treatment facilities available to all at affordable prices in a safe and comfortable environment”.

That dream that began in 2013, saw the birth of IQ City – an ultramodern infrastructure, housing an 800-bedded multispecialty hospital that catered to the needs of humanity – which to his delight quickly became an integral part of Durgapur township, its surrounding areas, and its people who have come to trust the brand and all that it stands for.

IQ City Medical College Hospital, as the name implies, is a teaching hospital. But it was not enough to have a “safe and comfortable environment” just for patients, Mr. Jhunjhunwala also wanted to ensure a safe and comfortable environment in which healthcare workers would develop and flourish.

And soon the hospital had siblings – IQ City Medical College and IQ City Institute of Nursing Sciences. Which are testament to Mr. Jhunjhunwala's commitment of ensuring our future doctors and nurses would be fully equipped to serve society and country.

“Our future doctors, nurses, and technicians are trained not just to be competent, professional and knowledgeable but compassionate so that they can serve our nation by literally healing society.”

Who or what was the inspiration behind this idea? Several brands, says Mr. Jhunjhunwala, but more so the people behind those brands. “Inspiration comes from places you wouldn't imagine it would, and sometimes from people you do imagine it should! For me, inspiration has come from the likes of Niranjana Hiranandani and Surendra Hiranandani of the Hiranandani Group which, like us, has ventured into health care and hospitality... then there is Dr. Devi Shetty of Narayana Health, and, of course, who would not be inspired by the Oberois?”

The recipient of several awards, Mr. Jhunjhunwala insists that the only one that matters is the reward of trust you receive when you deliver on something to which you have committed. Over the years, the Mani Group, and all brands associated with it, has come to be recognised and respected by all those who value uncompromised quality.

This respect can only be garnered when you gain the trust of the people who have invested in you, whether it's by way of delivering a quality home, or quality healthcare. According to Mr. Jhunjhunwala, gaining this trust is simple: “Only commit to what you can deliver, and always deliver what you commit, if not more. The customer is not ignorant and will recognise value when he sees it.”

The Mani brand strives to constantly innovate to achieve sustainable growth within its different spheres of operation. This includes the group's foray into healthcare. For Mr. Jhunjhunwala, it is all about harnessing the best talent to maintain the top-notch eduhealth infrastructure at IQ City Medical College Hospital that will send forth doctors, nurses and paramedics who will uphold the highest standards of trust, integrity, service, and social responsibility. ■



\$329 mln

Private equity / venture capital investments in agritech in India in 2020



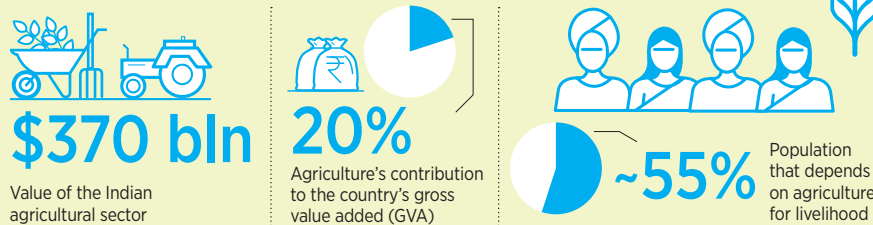
SHUTTERSTOCK

Tech-tonic Boost to India's Farm Sector

Tech startups and new laws can disrupt India's agri sector. Here's how

With a host of agritech startups taking root across India, technology being deployed across the production and supply chain, and the government introducing new regulations last September, the agriculture sector is witnessing some significant changes. Bain & Company, a US-headquartered management consultancy, highlights in a recently released report how these changes can be disruptive for the country's farming sector. • COMPILED BY JASODHARA BANERJEE

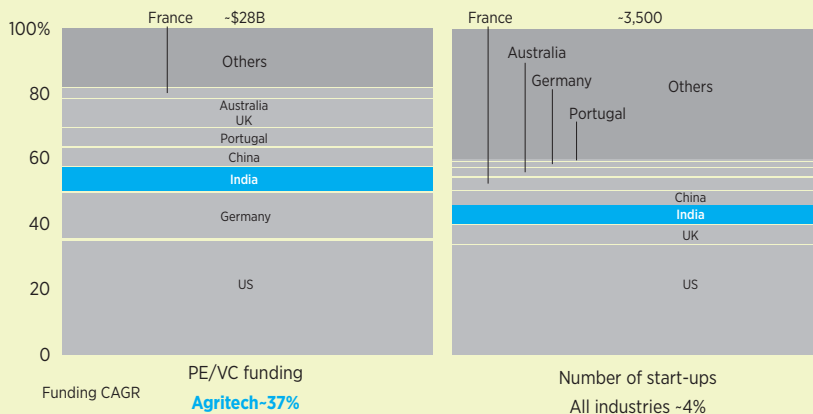
Size of Indian Agriculture Sector



Funding for Agritech Startups



India is the third-largest nation in terms of funding received and agritech startups



Impact of Agritech Startups on the Sector

- ◆ Application of tech-based farming and services, analytics and farm management
- ◆ Sustainable farming models and services, carbon trading
- ◆ New food products and uses, such as alternative proteins and feed, ocean farming

Impact of New Govt Regulations

Key features of 3 new Bills passed in Sep 2020:

- ◆ Broadens sales channels other than through APMCs, enabling farmers to sell anywhere
- ◆ Transfers market risk from the farmer to the sponsor
- ◆ Deregulates commodities like cereals, oilseeds, pulses, onions, and potatoes

5-10% What firms can save on procurement costs through a national strategy

Value Leakage of Produce from Farm to Mandi

Transportation, waste	6-8%
Arthiya commission	5-7%
Mandi cess	-1%
Weighing, bagging, etc	3-4%
Tonnage loss—moisture	3-4%

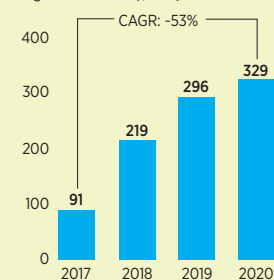
APMC and ECA reforms will enable companies to save between 5-10% of procurement costs by eliminating Arthiya commission, mandi cess, weighing and bagging costs

Projected Growth & Investments

\$30-35 bln The value pool in agri-logistics, offtake, and agri input delivery that tech and new laws can create by 2025



Private equity/venture capital investments in agritech in India (\$ mln)



		FY19	FY25	Growth
Online Offtake	Online grocery buyers (mln)	-30	-150	5x
	Average spend per consumer (\$)	-65	-130	2x
	Online offtake market (\$ bln)	-3	16-18	6x
Online Farm Inputs	Farm inputs (\$ bln)	-85	-150	2x
	Online sales penetration	Limited	5%	
	Online farm input market (\$ bln)	<1	7-8	Nonlinear
Digital Logistics	Agri-logistics (\$ bln)	-50	-100	2x
	Digital penetration	1%-3%	8%-10%	3x
	Digital logistics market (\$ bln)	-1	7-10	Nonlinear

Value Leakage of Produce from Mandi to Consumer

Arthiya commission	5-7%
Trader margin	4-5%
Transportation	4-5%
Retailer commission	20-25%
Waste	20-25%

High middlemen commissions and food wastage leads to higher process for end consumers

SOURCE Bain and Company's report 'Indian Agriculture: Ripe for Disruption', June 2021

TRANSASIA PUTS INDIA FIRST – SETS UP ASIA'S LARGEST FACTORY FOR COVID TESTS DURING THE LOCKDOWN



Mr. Suresh Vazirani,
Founder Chairman, Transasia-Erba
International Group of Companies

In March 2020, when the COVID-19 pandemic hit the Indian shores, Transasia-Erba International Group of Companies' R&D teams in India, USA and UK were asked to fast-track the development of COVID testing solutions. In no time, the Transasia-Erba group developed the Erba COVID-19 IgG and IgM test kits that played an important role in surveillance and epidemiological studies.

Very soon, the Group developed one of most sensitive RT-PCR kits as well as rapid antigen test for COVID-19.

In parallel to these R&D efforts, the team at Transasia Bio-Medicals worked round-the-clock during the lockdown to set up Asia's largest manufacturing facility at AMTZ, Visakhapatnam to manufacture these newly developed tests in co-operation with Govt. of India.



Mr. Suresh Vazirani with Dr. Jitendra Sharma, MD & CEO, AMTZ, Vizag at the inauguration of Transasia's manufacturing facility

While the ongoing pandemic continues to spring unforeseen circumstances, the Transasia-Erba group believes that it has been an insightful and dynamic period, providing them the opportunity to serve the nation and its people in ways more than one!

Providing prompt after-sales services to hospitals even during lockdowns

In order to support the efforts of our brave doctors and healthcare workers, Transasia's engineers did not deter from providing technical support services for even one day during the strictest of lockdowns. Doctors and hospitals appreciated the brave efforts of Transasia's engineers to continue to provide full support to them when employees of most other MNC medical device companies refused to step out of their homes.

Aiding state governments with various COVID relief efforts

Mr. Suresh Vazirani, Founder Chairman of the Transasia-Erba International Group of Companies believes that given the company's area of strength, it can make the greatest impact on human lives, especially during the ongoing crisis. In what is set to be the largest humanitarian relief effort in the company's history, Transasia has mobilized critical equipment and medicines, through its CSR arm, the Vazirani Foundation.

Over **2500 critical machines** such as BiPAP ventilators, **2000 oxygen concentrators**, blood cell counters and coagulation analyzers for D-Dimer tests have been donated by Transasia and

Vazirani Foundation to hundreds of Govt. hospitals across India, especially in the smaller cities.

The Affordable Oxygen Concentrator rental program launched in partnership with AMTZ, Atal Innovation Mission (AIM) and Uber enables patients to quickly get delivery of oxygen concentrators at a nominal rental cost, through a specially designed mobile app - O2Home. Currently available across 12 cities, the service will be extended to cover 100 cities.

Medicine donation to NGOs, government and mission hospitals

Transasia donated over **5 lakh tablets** towards recovery of COVID patients. These medicines, a part of India's COVID treatment protocol are mitigating the widespread human impact of the pandemic.

Four decades of excellence

Having started its journey in 1979, Transasia has been at the forefront of providing quality and affordable diagnostic solutions for early and accurate disease detection. Today, Transasia is a trusted diagnostic partner for over **40,000 labs** and hospitals across India, making it India's largest IVD manufacturer exporting to over **100 countries** across the world.

Dedicated solutions to monitor disease severity

Transasia's comprehensive portfolio for monitoring disease severity and progression are trusted by large and small laboratories, for their accuracy among other features. This is a major reason why its test kits for D Dimer, CRP, LDH and Ferritin were widely used during the pandemic. The company's strength also lies in its reach, with the sales and service teams present in over 5000 tier II-IV cities, towns and villages!

Towards a COVID-free world

Going forward, the Transasia-Erba group will continue to evaluate the crisis and commit additional resources. On the diagnostics front, the teams in India and globally are working on developing test kits that utilize other body fluids such as saliva, making it convenient for the end-user. Also, an RT-PCR kit to identify variants of COVID-19 is on its way!

Eyeing Green

20

Over the last decade, Mukesh Ambani has moved to remake Reliance Industries Ltd (RIL) with a singular objective: To reduce its dependence on its mainstay hydrocarbons business. At this year's annual general meeting (AGM), the 64-year-old chairman took another step in that direction.

On display was a bold plan to move into the green energy space with an investment of ₹75,000 crore. While this would be supplemented with government grants in the form of production-linked incentives, the sheer scale has the potential to catapult the company into the largest green energy business in India over the next decade. It also dovetails with its plan to become a carbon-zero business by 2035.

Reliance plans to invest in both manufacturing

as well as partnerships in the solar and hydrogen fuel economies. Notably absent from the announcement was wind energy, which is largely seen as a mature business and one that hasn't lived up to its potential.

"The group has a unique ability to make significant end-to-end investments as it has done with the oil & gas as well as telecom businesses. If it takes the same view in renewable energy, that can be a very powerful differentiator," says Vinay Rustagi, managing director at Bridge To India, a consultancy firm specialising in the renewables space.

Over the last year, carbon neutrality has emerged as a key theme globally and governments are making it easier for businesses to hop onto this bandwagon. First, there are the obvious societal benefits. Second, there are payouts for select businesses like steel where the carbon footprint is particularly large. Third, as

er

Reliance Industries' bold plan to move into the green energy space—with an investment of ₹75,000 crore—is in keeping with its 2035 net carbon zero commitment. It also has the potential to catapult RIL into the largest green energy business in India

By SAMAR SRIVASTAVA

Pastures

21



“We are exploring new and advanced electrochemical technologies that can be used for large-scale grid batteries to store the energy that we create.”

MUKESH AMBANI

Chairman and Managing Director,
Reliance Industries Limited

ESG (environmental, social and governance) investing comes more and more to the forefront, companies are going the extra mile to show they are good corporate citizens. So not only would this make business sense, in time, it should also result in a higher valuation.

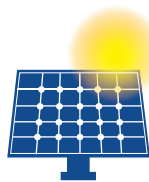
At present, Reliance's valuation is a mix of a low multiple for the hydrocarbons business as well as higher terminal values ascribed to telecom and retail. The company trades at a 31 times multiple at a market capitalisation of ₹14,00,000 crore. Its return on equity is 8 percent and the stock has given investors a return of 17 percent over the last year.

For now, only the broad contours of the plan have emerged. Analysts *Forbes India* reached out to declined to talk about specifics as they are still awaiting clarity on how the ₹75,000 crore will be allocated and the cash flows it can produce. It also remains to be seen how government policies support the adoption of solar in India's energy basket. Anant Ambani joined the boards of Reliance New Energy Solar and Reliance New Solar Energy—the two companies through which investments would be made.

There has been no increase in the sum of the parts valuation (hydrocarbons, retail and Jio) of Reliance Industries. But analysts also point out that the company's execution capabilities can't be underestimated. There was a fair amount of scepticism over VoLTE (Voice over Long-Term Evolution) technology when it was deployed for Jio, but it worked eventually.

The Green Energy Plan

A large part of the green energy rollout would be in the solar space. Here the technology is reasonably mature and it provides an opening for



FOUR GREEN PILLARS



Photovoltaic Module Factory

Silica to be converted to poly silicon and then wafers to make solar cells



Advanced Energy Storage Battery Factory

To take care of intermittent energy needs



Electrolyser Factory

To manufacture modular electrolysers for captive production of green hydrogen



Fuel Cell Factory

Uses oxygen from air and hydrogen to generate electricity

the company to reduce India's imports from China. The company plans to build four gigafactories in Jamnagar. For the production of solar energy, there are plans to construct a solar photovoltaic module factory. Think of this as the solar panels we often see in pictures. They'd convert raw silica into poly silicon and then to wafers that would make solar cells and then the modules. This would give them the benefit of full backward integration.

The Indian market for solar modules is dominated by Chinese imports with some Indian players like Vikram Solar and Waaree catering to the domestic market. A key use of these would be in the market for rooftop and distributed solar applications. While these markets are small and fragmented, Reliance's commitment to set up 100 GW of manufacturing capacity by 2030 has the potential to dramatically increase usage.

While companies like Tata Power have been trying to increase adoption for the last decade, they haven't managed to achieve scale. Mass adoption of solar rooftops would require government policies to nudge people in that direction. From the announcements, it is clear that the company intends to deal with consumers and not institutional clients. "Expect some big bang initiatives in distributed solar," says Rustagi.

The company has made no announcement on getting into the power generation space. "It doesn't want to deal with discoms," says Jyoti Gulia, founder of JMK Research and Analytics.

Reliance's and Indian companies' plans tie in with the government's attempts to keep Chinese manufacturers out of the Indian market. From April 2022, there will be an imposition of 40 percent basic customs duty on solar modules and 25 percent on solar cells. This should give a fillip to Indian manufacturing. But with the imposition of these duties, Gulia says there is a fear that lower-quality products may flood the Indian market until Indian supply comes on stream.

Second, for storage of intermittent energy, the company plans to set up a battery manufacturing facility. The market is unclear whether these batteries would be of the sophistication required for electric vehicles or whether they would be for supplying electricity during times when solar or wind power is not available. If it is the latter, producing on a mass scale is a lot easier and it can even be done from batteries that are pulled out of electric vehicles after the 3,000-charge cycle is over. "We are exploring new and advanced electrochemical technologies that can be used for such large-



Anant Ambani is on the boards of two Reliance solar energy companies

scale grid batteries to store the energy that we create,” Mukesh Ambani said at the meeting.

Lastly, there is the production of hydrogen and electricity from hydrogen and oxygen. This would be done through electrolyzers. The technology here is still at a nascent stage and energy intensive. Getting it to work at scale at a low capital cost will be a key challenge. The modalities of transporting this would also have to be worked out.

In the next decade, business models predict that these hydrogen fuel cells would power cars, aircraft and ships as well as data centres, telecom towers and micro grids. If Reliance manages to produce hydrogen at scale, it could emerge as a leader in this area.

Retail and Jio

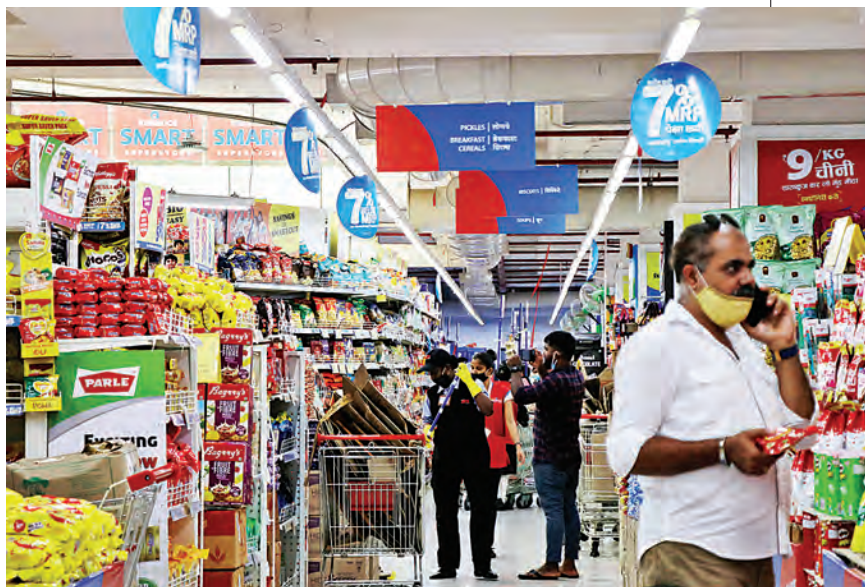
Over the last year, Jio Platforms and Reliance Retail have raised ₹1,52,056 crore and ₹47,265 crore from investors respectively. As India stayed at home, both businesses benefited—increased telephone and broadband usage at home and more deliveries through JioMart. The increasing opportunities for both businesses should continue this year.

At ₹1,57,629 crore, Reliance Retail is now India’s largest retailer by turnover. The company operates 12,711 stores across the country and has a lock on prime real estate across malls and high streets. This makes it harder for competitors to enter. The company has also acquired Big Bazaar which is pending regulatory approval as well as the resolution of a court case with competitor Amazon, which contends that it has the right of first refusal of any sale of Big Bazaar.

The next battleground is likely to be grocery delivery with Amazon, Flipkart, Tata-BigBasket and DMart slugging it out for a slice of a market valued at between \$10 billion and \$25 billion. Across large cities, vans delivering everyday items are now a staple feature as companies build their databases of customer profiles.

Reliance has alluded to broad-basing its partnership with Facebook-owned WhatsApp to allow consumers to order through the app as well as make payments. A formal launch of the service has not yet happened. JioMart delivers 5,00,000 orders a day, according to information released in December 2020.

Another venture that remains to be scaled up is bringing kiranas into the Reliance Retail fold. Not only would this allow the company to deliver orders from neighbourhood stores, it would also get them on-boarded as



At ₹1,57,629 crore, Reliance Retail is India's largest retailer by turnover

customers, allowing Reliance Retail to play the role of a distributor. This on-boarding is happening in 13 cities. Details of how many merchants have signed up are not available.

Jio Platforms ended FY21 as the largest operator in India with 426 million subscribers, up by 99 million users. It is the number one operator in all circles except Kerala, Karnataka and Tamil Nadu. The company reported an average revenue per user of ₹138 and started preparations for the rollout of its 5G service. (Spectrum auctions for 5G are yet to happen). Net profit in Q4FY21 was ₹3,508 crore.

Valuing Reliance

As the fossil fuel era fades away, Reliance is also diversifying its hydrocarbons business to produce specialty chemicals. The petrochemical industry forms the feedstock for this space and the company as well as government oil companies have a lock on the raw material. These can either be sold in the raw distillate form or converted to chemical compounds.

The chemistry for these compounds is complex, but once got right, there are usually only two to three suppliers the world over. Globally, there is also a move to supply from Chinese manufacturers and Indian specialty chemical companies have benefited from the China +1 strategy. Companies like SRF, Atul, IG Petrochemicals quote in excess of 30 times earnings. Once the oil-to-chemical business kicks off, expect a higher multiple for the parent Reliance Industries.

5G: THE NEXT BIG BUILD IN THE JIO ECOSYSTEM

With his collaborations with Qualcomm, NXP and others on the 5G network and Google on an affordable phone, Mukesh Ambani is set to repeat the 'Jio Effect'—at 1Gbps speeds



When Reliance Jio Infocomm rolls out the 5G wireless services in India—perhaps as early as later this year—it will be the next big build out of the mobile internet-led digital ecosystem that Mukesh Ambani, Asia's richest person, has been building over the last decade.

It will set Reliance up to reach its next 300 million users with its trademark affordable services across businesses from groceries to entertainment to health care. And Ambani wants to do so on the back of Reliance's own technology, for which he has partnered with the best in the business.

In early May, India approved six-month 5G trials by telecom service providers, including Reliance Jio Infocomm, Bharti Airtel and Vodafone Idea. Reliance Jio Infocomm will

also be conducting trials using its own indigenous technology.

"We are excited with the development of a new generation cloud native 5G RAN technology that is truly open, and software defined. Qualcomm and Jio successfully tested 5G solutions in India, achieving the 1 Gbps milestone on Jio 5G solution," Ambani says in the company's latest annual report. RAN refers to radio access network.

Qualcomm Technologies and Jio, along with its wholly owned subsidiary Radisys Corporation, have announced expanded efforts to develop open and interoperable interface compliant architecture-based 5G solutions with a virtualised RAN. This work is intended to fast-track the development and roll-out of indigenous 5G network infrastructure and services in India.

Additionally, the in-house development of Multiple-in Multiple-out (MIMO) and indoor 5G small cell is at advanced stages. Radio frequency capacity and coverage planning are also underway based on the 4G data traffic profile. Work is also ongoing on standardising 5G device configurations by collaborating with original equipment manufacturers.

Jio Platforms, a subsidiary of Reliance Industries, and NXP Semiconductors have announced a collaboration to implement a small cell solution for 5G wireless that will enable a wide range of 5G use cases for broadband access as well as Industry 4.0 and Internet of Things applications, including telemedicine, tele-education, augmented/virtual reality, drone-based agricultural monitoring and several other applications, the companies have said.

Jio is also collaborating with Google to develop affordable but feature-rich Android smartphones, the first of which will be released later this year.

India could have 330 million 5G mobile subscribers by 2026, telecom gear company Ericsson projects in its latest mobility report this year. Ericsson expects 5G to become the fastest adopted mobile generation.

Jio has invested over \$50 billion since inception to create the largest connectivity ecosystem in India, according to its annual report. It has built sufficient network capacity for the next 300 million mobile broadband subscribers, over 50 million fibre homes and 50 million micro, small and medium businesses.

— HARICHANDAN ARAKALI

Over the last year, Reliance Industries has become net debt free. This gives it the flexibility to raise additional sums for future investments, although it is possible it could fund a capex of ₹75,000 crore from internal accruals. At the 2019 AGM, Ambani had declared that Jio's investment cycle was over. With 5G auctions due and infrastructure investment in telecom, that cycle could resume again. The battle for grocery delivery across India, which holds a lot of top line promise is likely to cause a dent to the bottom line.

Simply put, India's largest private sector company will embark on a new spending cycle. For now, analysts aren't sure what to make of it as the market for solar modules is fairly commoditised. That is one reason why despite the promise of the green energy business, the market hasn't ascribed any additional valuation to the company. In the fortnight since the AGM, the market cap has hovered at ₹14,00,000 crore. **F**

(RELIANCE INDUSTRIES LIMITED IS THE OWNER OF NETWORK18, PUBLISHER OF FORBES INDIA)

Milky Mist

A Story of Growth, Purpose and Sustainability



Sathish Kumar T
Chairman & Managing Director,
Milky Mist

With his humble beginnings as a milk supplier, **Sathish Kumar** – Chairman & Managing Director, Milky Mist, has disrupted the Indian Dairy industry by vertically integrating his way towards creating an end-to-end value chain. Fuelled by purpose, determination, and careful planning, Milky Mist has carved a niche for itself over the past 20 years. The brand has been a pioneer in introducing Paneer to South India and has become India's largest supplier of Paneer with over 1,50,000 retail partners. So, what's the story behind a school dropout, but thrustful learner, becoming a dairy tycoon? Let's find out!

Dropout with a Dream for Dairy

Sathish belongs to a proud pedigree of generational farmers in Tamil Nadu. He was 16 when he leaped from being a high-school dropout to a hyper-successful entrepreneur. Since then, Sathish and his team have devoted their full potential towards continuous innovation and growth. His team is led by Dr. K. Rathnam - a visionary with 23 years of unmatched expertise and the CEO of Milky Mist. The super-competent team is navigating towards taking 'Milky Mist' to International Markets.

Vertical Expansion - The Game Changer!

The FMCG Conglomerate started with supplying milk. When Sathish realized that the brand should have more products in its arsenal, 'Milky Mist' happened. The vertical expansion started off with paneer and proliferated into a 'Dairy Realm' with products like milkshakes, flavored yogurt, butter, cheese varieties, and UHT range of products - to mention a few. With the recent acquisition of Briyas and Asal, the tycoon is now looking at capitalizing on a bigger part of the daily essentials market.

Impeccable Quality Starting with Cattle Feed

Milky Mist's quality assurance starts at the very bottom of the value chain - Feeding cattle with quality feed. The company provides the partner farmers with quality compounded cattle feed to ensure that the cattle remain disease-free. Milky Mist's automatic milk collection systems enable 60,000 dairy farmers to supply milk. Each batch of products has to pass hybrid quality tests conducted by automated systems, experienced chemists and microbiologists.

Milky Mist[®]

DAILY DOSE OF NUTRITION

Digitizing Dairy

When the world was intimidated by the market shift brought by the pandemic, Milky Mist saw a silver lining. In response to the digitization surge triggered by the lockdown, Milky Mist served customers at their doorstep with its e-commerce initiatives. When life gives lemons, Milky Mist uses them to make Paneer.

Keeping up with the racing technology

Sathish, a tech enthusiast at heart, travels across countries to acquaint himself with the new technologies. The 55-acre Perundurai plant is fully automated with State-of-the-art high-end technologies. The Plant can handle 1.5 million

liters of milk per day. Robotic packing lines ensure hygiene and efficiency. Milky Mist employs an end-to-end cold chain system with a fleet of refrigerated trucks. GPS monitors and temperature monitors on the trucks help the company keep a tab on product quality and delivery delays. Milky Mist also facilitates its retail partners with coolers and chillers.

Green Milk. Green Car. Green Home.

In a bid to remain carbon-neutral, the factory runs on sustainable energy with its own wind and solar energy farms with an installed capacity of 2 MW and 4 MW. Sathish's love for sustainability doesn't just stop with business. He drives an electric car and his home runs on solar power. Milky Mist has planted over 100,000 trees and undertakes the revival of lakes and rivers as part of its CSR initiatives.

Milking Every Drop of Creativity

The 'Dairylicious' brand has a history of thinking out-of-the-box. The Live Parlor concept in Cochin is one of their recent innovations where customers can just walk into the live kitchen, try and buy their products. Like most of their concepts, Live parlors ended up receiving astonishing customers. Soon, more parlors in other cities will be opened.

Pan India Brand

Sathish and his team are working towards making Milky Mist a Pan India FMCG Brand and become a market leader in product categories of dairy and Food. ■

A New Terrain

Mahindra is reinventing itself to get its SUV business back on track. It is seeking to redefine the authentic SUV, and will launch new models with modern features. Will it be a bumpy ride or can the carmaker script a turnaround?

By MANU BALACHANDRAN





Even in his wildest dreams, Rajesh Jejurikar hadn't seen it coming. Of course, he knew there would be some frenzy. After all, the Thar is an iconic model, and Mahindra was bringing out the second generation of the popular SUV after a decade. The new model would feature contemporary design, the latest infotainment options, an automatic gearbox that appeals to an urban clientele, and refreshed engines, among a slew of changes. For the first time ever, Mahindra also packed a petrol engine in the SUV.

The Thar, which bears a striking resemblance to the Jeep Wrangler, was launched in India last October. The hysteria had become obvious when the first unit of the SUV was sold in an auction ahead of the official launch for a staggering ₹1.1 crore, the proceeds of which went towards a Covid-19 relief fund.

Then, as bookings opened, Jejurikar, the man in charge of the automobile business at Mahindra Group, knew that the company could be in for some trouble. A veteran at the homegrown automaker, Jejurikar has led and lived through the launch and hype of some of the company's iconic vehicles, ranging from the Scorpio to the XUV 500 over the past two

“To win in the SUV battle, you don't have to make a product that's similar to what somebody else is making. We must focus on our strengths.”

RAJESH JEJURIKAR,
EXECUTIVE DIRECTOR (AUTO & FARM SECTORS), MAHINDRA & MAHINDRA



decades. In 2002, when the Mumbai-headquartered company launched the Scorpio, Jejurikar was the man in charge of marketing at the automaker. In 2011, when it rolled out the XUV 500, he was the chief of operations for the automobile business.

In the next five years, Jejurikar, who took charge as the executive director for the auto and farm sectors at the Mahindra Group 15 months ago, plans to launch 23 new products across passenger and commercial vehicle segments. The company has lined up capital expenditure of ₹12,000 crore for the launch of new models, upgrades of existing ones and new variants. Of these, nine will be in the SUV segment, while 14 will be in the light commercial vehicle (LCV) category. Between July and September, the company will also launch two new models, including the Bolero Neo and XUV 700.

“I have lived through the hype of Scorpio, and I’ve lived through the hype of XUV 500,” says Jejurikar. “But the hype over Thar is something I’ve never seen. It is eight months since the launch, and even today we are unable to deliver the vehicle to the finance minister of a state in which we have a large industrial activity. We are now quoting 10 months as the waiting period to customers.”

Much of the shortfall is a result of the second Covid-19 wave, and a shortage of semiconductors that has hit manufacturing businesses across the world. “It’s a mania that is unimaginable and this is not because we are making 1,500 units a month,” Jejurikar adds. “We are still producing 3,000-plus units, but we are getting bookings of 6,000 a month.” That means, for someone booking a Mahindra Thar in July, delivery isn’t expected until April 2022.

That’s a long wait in India’s highly competitive \$104 billion automobile market, and most often, such delays out buyers off. For Mahindra, which is trying to stage a comeback and reclaim some lost turf over the past



“Over the decades, we have designed vehicles that have created a strong and loyal customer base. The latest example is the Thar.”

ANISH SHAH,
MD & CEO, MAHINDRA & MAHINDRA

few years in its once impregnable stronghold of SUV business, delays such as these can be a death knell. But Jejurikar isn’t bothered. New orders continue to come in and he knows that it’s only a matter of time before the company can ramp up supply.

In many ways, Mahindra’s renewed sense of assurance stems from its faith in the Thar, and the lack of a rival in its category. The Thar, which gets its design from the jeeps Mahindra would assemble in 1947, is distinctive and, until recently, did not boast much of the sophistication that numerous other SUVs in the Indian market had.

Unlike compact SUVs such as the Hyundai Creta or the Kia Seltos, which have defined the segment, the Thar, Jejurikar says, is busy creating a category for itself, a philosophy he wants other Mahindra vehicles to follow. That means, over the next few years, as it looks at launching new models, Mahindra will not chase other carmakers and build rival of their offerings. Instead, it

wants to build products that will redefine authentic SUVs to reclaim, what Jejurikar says, is a space that Mahindra continues to own.

“By picking on our capability and competence, we want to attract consumers who are looking at multiple other segments,” Jejurikar says. “You can be a specialised position brand and still get volumes. To win in the SUV battle, you don’t have to make a product that’s similar to what somebody else is making. Because that’s what works for them. We must focus on our strengths. And that’s exactly the tweaking that we’ve done.”

To do that, he has the unflinching support of his boss, Anish Shah, who took over as managing director and CEO of Mahindra & Mahindra Ltd in April. “Auto is a core business,” says Shah. “It is an integral part of who we are and what we do. Over the decades, we have designed vehicles that have created a strong and loyal customer base. The latest example is the Thar. We have consistently performed well in our core: Authentic SUVs that are tough and sophisticated. Our strengths lie in our deep-rooted understanding of customer requirements and an ability to deliver outstanding products at a great value for our customers.”

NEW THINKING, NEW PHILOSOPHY

Much of the recent tweaking, perhaps, is also a desperate need of the hour.

For a while now, Mahindra has been steadily losing turf, particularly its dominance in the SUV market. Its share in the utility vehicle category, according to the Society of Indian Automobile Manufacturers (SIAM), slipped from over 50 percent in 2012 to less than 15 percent in 2021. The company is now fourth, behind Maruti Suzuki, Hyundai Motors and Kia Motors in the category.

Mahindra’s overall share in the domestic passenger vehicle sector has slipped to less than 6 percent from nearly 12 percent in 2012, making it only the fifth-largest passenger vehicle maker. Just a year ago, it was the third-

largest automaker, cornering over 7 percent. Rival Tata Motors, the other homegrown automaker, has made a stunning turnaround in its fortunes over the past five years, unleashing products that boast best-in-class features, design and safety, among others. In the process, it has become the third-largest carmaker, from the sixth position a few years ago.

One of the pioneers in the SUV business, Mahindra's dip in fortunes also comes at a time when India's automobile industry has seen a tectonic shift with auto makers making a beeline to launch SUVs and compact SUVs. Much of the shift had to do with changing customer preferences and global trends. The success of models such as the Kia Seltos and Sonnet, Hyundai Creta and Venue, MG Hector, Tata Harrier, Maruti Suzuki Brezza and Mahindra Scorpio is proof.

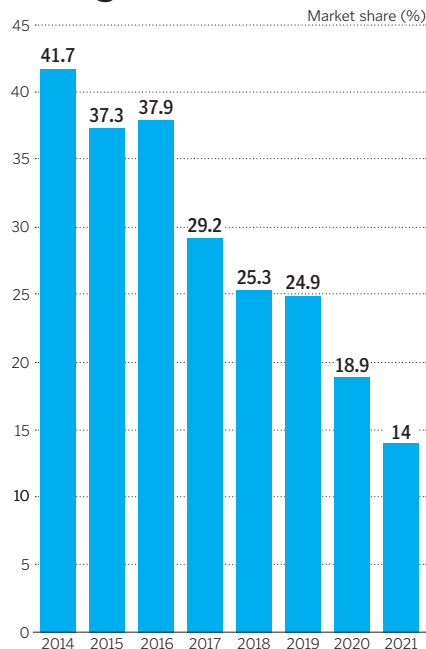
The trend towards bigger-looking SUVs had also tempted Mahindra to spread itself too thin in the SUV business, creating a plethora of products that it had hoped would win the market. From entry-level SUVs to compact sedans and MUVs, its vehicles included unsuccessful models such as the Quanto, a smaller version of the Xylo, the TUV300, the KUV100, and the Marazoo. "Market share is of importance to us as well," Jejurikar says. "How you get market share has to be a strategic call. In the desire to get market share, if you try and do things where you're not going to succeed, then you're barking up the wrong tree because you're going to get into segments where you don't have a right to be in."

That's why after taking over as head of the automotive business, Jejurikar and his team spent time on defining the vehicles they were going to develop, and redefining the idea of SUVs for the Indian audience. The Thar is the first of those. "In the personal vehicle space, the battleground has intensified and there's been a huge increase in competition, especially in the

Slipping Market Share

	Total Vehicles	Utility Vehicles	Market Share (%)
2014	254,344	219,421	10.15
2015	223,968	206,837	8.6
2016	236,307	222,324	8.4
2017	236,130	222,541	7.7
2018	249,505	233,915	7.5
2019	254,701	235,362	7.5
2020	186,977	179,405	6.7
2021	157,216	155,686	5.7

Losing The SUV Market



SOURCE: SIAM

SUV space, where we primarily had a presence," Jejurikar admits.

The company has identified six pillars on which it wants to build future products, including turn-on design, unmissable presence, tough-yet-sophisticated, safe, and sci-fi products. "For each of these pillars, we created three or four parameters. For instance, we will not do a product that will not meet a certain ground clearance," Jejurikar says.

In addition, Mahindra is clear that it will not waste time making rivals for successful models. "We don't want to create a Creta fighter. The minute you say I'm going to create a fighter for something, you've boxed yourself in," Jejurikar says. "When the designers created Scorpio, they never said we are creating a fighter for something.

Somebody just created a design from their heart. XUV 500 was like that. It's a segment that didn't exist and, in a way, Thar is that. It is not a fighter of anything. It just created a segment of its own. People who compare the Hyundai Venue and Kia Sonnet come and buy the Thar. So, if you create a product that touches a sweet spot, you're going to get consumers coming from everywhere."

This means the company will eventually phase out some of its unsuccessful models, including the Marazzo, and KUV 100. Mahindra's pipeline for the next few years includes the new Scorpio, XUV 700, a five-door Thar, and an all-new Bolero. Then, there will be an electric option of the XUV700, new XUV300, and on SUVs code-named W620 and V201. There will also be two 'born electric' models debuting in FY26. "We've invested in platforms over the last few years, and we've built a strong portfolio of engines and aggregates," Jejurikar says. "Now we need to leverage that in a way that we deliver a brand idea and build products that are exciting."

"The time has gone where Mahindra needed to take small steps to win market share," says Puneet Gupta, director for automotive forecasting at consultancy firm IHS Markit. "The industry is in a transformational phase, and all automakers from Hyundai to Kia and Toyota are playing for global volumes. Mahindra has had a loyal customer base in India, but with India's buyers now having global exposure and access to aspirational brands, it needs to give more weightage to products that can score well for themselves."

That's why Mahindra's new launches will be even more crucial. The Bolero Neo, a face-lifted version of the previous TUV 300, which is scheduled to be launched on July 15, will likely feature BS VI-compliant engines, redesigned headlamps and grille to bring it closer to the Bolero. The XUV700 is expected to boast

best-in-class tech such as ADAS driver aids, level 2 autonomous driving, a fully digital infotainment system, and a turbo petrol engine.

“As long as Mahindra balances the price-value equation, delivers exceptional customer experience and works in harmony with its network partners, reclaiming lost ground and market share is absolutely doable,” says Harshvardhan Sharma, head of auto retail practice at Nomura Research Institute. “Mahindra has been launching a bouquet of market initiatives, especially on customer journey enhancement via digitisation as well as connecting with millennials and Gen Z to deliver a holistic experience. With Thar and the upcoming XUV700, I am sure market domination is possible.”

LEADING THE CHANGE

Its renewed push in the SUV business means Mahindra intends to stay away from the fleet market, and focus on personal ownership. That strategy is akin to what Tata Motors, which had struggled for over a decade in the automobile business, followed in its comeback. Mahindra’s products such as the Xylo and the Marazzo had largely focussed on the fleet market in the past.

“All our offerings should have adventure capability,” Jejurikar says. “We don’t want to be a mobility solution. And hence when we say we’ve now chosen to not play in shared mobility, it’s a conscious call. Our products are being designed with a specific target.”

That’s a far cry from a decade ago, when Mahindra wanted to be an all-encompassing auto maker with UVs, tractors, two-wheelers, three-wheelers, sedans, pick-ups, light trucks, heavy trucks, electric cars, boats, and aircraft, among many others. In 2018, Mahindra had also picked up a 16 percent equity stake at ₹176 crore in car rental firm Zoomcar.

“As an OEM we had two paths. We could say, ‘I’m going to make a product

like Ertiga because that’s the only way I can get market share and by playing in every segment’. We’re taking a step back and saying, ‘that’s not going to work because that’s going to take us into a territory where we don’t have a competitive advantage’. We will be clear about where opportunities are and where we can have a distinctive offering,” says Jejurikar.

Mahindra is expanding this strategy to its other focus areas, including two-wheelers, where it has turned its attention to the legendary Java motorcycles and France-based Peugeot Motorcycles. In July, Peugeot appointed tennis legend Novak Djokovic as the brand ambassador for its EV business. “Our right to win has to come out of creating distinctive products that are true to our story,” Jejurikar adds.

“But we are not going to play in the mass-market of two-wheelers. We have realised it’s not wise to play in the two-wheeler market only to say we are in the mobility space.”

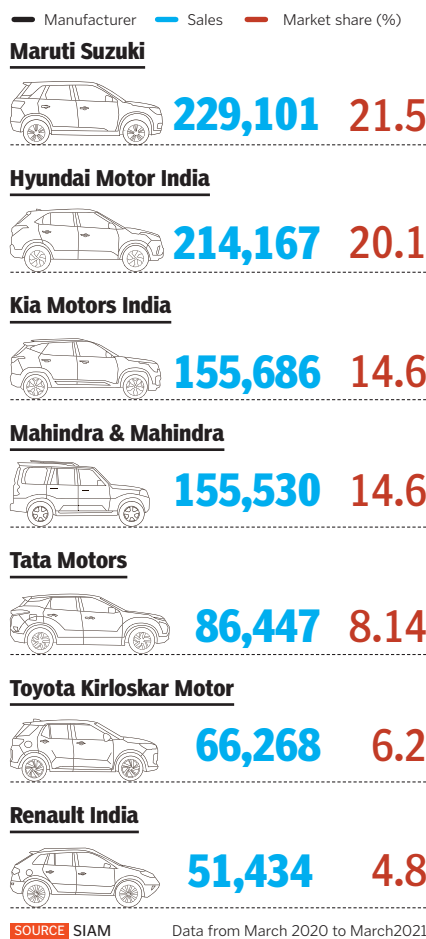
This new direction has also begun to deliver financial results, according to Jejurikar. Over the past couple of years, strict cost management has helped reduce manufacturing fixed expenses by 40 percent, and sales and marketing expenses by 70 percent. “Overall, we have reduced our fixed expenses—₹900 crore over FY19—resulting in a much fitter, leaner and agile organisation,” Jejurikar says. The company also walked away from businesses that it wasn’t finding much merit in.

“Our capital allocation actions over the past year are delivering results,” says Shah. “Despite the challenges of the pandemic, we generated operating cash of over ₹10,000 crore and delivered strong revenue and profit growth.” Mahindra & Mahindra’s consolidated revenue stood at ₹21,456 crore in the January-March quarter, up by 32 percent, while consolidated profit after tax stood at ₹1,635 crore during the same period.

The company is in the midst of selling its Korean subsidiary SsangYong, in which it owns a 75 percent stake. It had acquired it a decade ago to further its international presence. SsangYong is under court receivership after Mahindra failed to bring in a buyer over the last year after announcing it would make no further investments in SsangYong.

Early this year, Mahindra also announced that a joint venture with Michigan-based Ford has been put off, after being under works for over two years. “Apart from India, Mahindra is looking at making itself appealing to a global audience,” says Vinay Piparsania, former executive director at Ford India and former consulting director for automotive at Counterpoint Technology Market Research. “The company will definitely want to hedge against the

Tough Climb



India cycles and has a significant business to go after in Asia and Africa, among others. This means there shouldn't be any confusion about who owns what in the minds of consumers. In India, Mahindra has a dominating market presence and as long as it can offer products that are accessible and aspirational, the brand will only get stronger."

GEARING UP

Mahindra is also laying out elaborate plans to ramp up its electric offerings. In May, it approved the merger of the EV subsidiary Mahindra Electric Mobility Ltd (MEML) with the company to consolidate operations, development, sourcing and manufacturing. It also set aside ₹3,000 crore for its EV plans, six of which will be launched by 2026.

The company was among the earliest entrants in the EV category, buying a stake in Bengaluru-based Reva Electric in 2010. Despite that, Mahindra didn't make significant inroads in the segment. In 2017, it was one of the companies chosen by the government agency, Energy Efficiency Services Ltd, to provide 10,000 electric cars for government use. But concerns over poor range and performance led to the government shelving the plan.

"Mahindra is bullish on EVs and rightly so," adds Sharma of Nomura. "Given their prowess in product development and R&D, it's the right way to go. India is at an inflection point for EVs, and Mahindra, which has been a pioneer with EVs is surely pacing well."

The company has hired Uli Stuhec, an EV veteran and a former vice president of vehicle engineering at May Mobility, a Michigan-based autonomous vehicle startup, to kick-start its 'Born Electric' programme, based out of its North American Technical Centre in Detroit. It has also created two verticals: One focusing on last-mile mobility and the other on technology. "Right now, we're building a team in Detroit for

"As long as Mahindra balances the price-value equation, delivers exceptional customer experience and works in harmony with its partners, reclaiming lost ground and market share is doable."

HARSHVARDHAN SHARMA,
HEAD OF AUTO RETAIL PRACTICE,
NOMURA RESEARCH INSTITUTE

Born Electric," Jejurikar says. "It will leverage the UK Design Centre for the design, but core platform architecture work will happen out of Detroit."

The UK Design Centre, known as the Mahindra Advanced Design Europe (MADE) centre, was set up in May and will be headed by Pratap Bose, until recently vice president, design, at Tata Motors. Bose was instrumental in turning around Tata Motors' fortune, and in designing bestselling models such as the Altroz, Harrier, and Nexon. Bose's appointment is likely to help Mahindra in newer areas and SUVs. "Everything starts with design," adds Goenka of IHS Markit. "With EVs becoming a core of their strategy and a renewed focus on the SUV space, people like Bose will be able to deliver results."

India sold over 21 million vehicles, including 17 million two-wheelers, that run fossil fuels in FY20. China, where EVs have seen traction in recent times, sold 1.3 million EVs in 2020, according to Singapore-based market research firm Canalys; it accounted for over 40 percent of the global EV sales. Over the past few months, everyone from General Motors to Ford Motor Company, Volkswagen and Honda have been making commitments to shift their entire fleet to EVs.

"One foresees a bright future for Mahindra in the mid-to-long term," adds Sharma of Nomura.

"Despite having a broad portfolio, Mahindra Group has continued to build value, and remains relevant in the market across sectors. By announcing nine new products across an assortment of segments and powertrains, it reasserts its pole position as far as the SUV space is concerned. What's also interesting is the decision to have electric powertrains for its whole PV range except Bolero, Thar, and Scorpio.

Apart from Bose, Mahindra has hired several senior executives, including Jogindra Shetti, a veteran at Ford who has joined as vice president for EV Tech business, Harish Lalchandani to drive strategy, and Binoy Paul, who will lead all the electrical and electronics engineering activities for vehicles.

"Mahindra is planning the new product lineup in sync with current mobility themes such as connected, autonomous driving, and electrification, as well as revamping its design language to cater to legacy and millennial customers... these are all positive steps and will definitely bear fruit in the coming years," adds Sharma. It has helped that the company has shifted from its rugged nature to appeal to a wider, younger customer base that prefers automatic and petrol variants.

Mahindra is gearing up for the long haul and wants to reclaim its status as leader of the lucrative SUV market, which Jejurikar reckons is between 50 and 60 percent of the SUV market in India. But does focusing on a niche curtail growth? "We do have volume ambitions," adds Jejurikar. "We do have strong growth aspirations, but all we are saying is we should do it in a way that we have a strong right to win and not do it by getting into segments where we are not going to be competitive enough, either on costs or on the way our product is perceived."

The drive may be bumpy, and Jejurikar knows that well. But like the Thar, who better than Mahindra to handle the rough terrain. **F**

Grit, Guts & Glory

How A Velumani, a landless farmer's son, built Thyrocare into a billion-dollar behemoth before a surprise sell-off to PharmEasy, which will give the company an opening into B2C business and its founder an investing foray into the healthtech sector

By MANU BALACHANDRAN



It's been a long and tiring journey for A Velumani. But, at the end of it, the 62-year-old is a satisfied man.

The son of a landless farmer, whose father couldn't afford to buy him a pair of pants or slippers, Velumani has traversed some rather difficult terrains since starting out from the nondescript village of Appanaickenpatti Pudur



near Coimbatore. Along the way, the bespectacled scientist has also redefined the medical diagnostic industry in the country.

His 26-year-old company Thyrocare Technologies is one of India's largest health care diagnostic chains that has been instrumental in India's long-drawn fight against Covid-19 for over a year now. "Mine is a story of grit, guts and glory," Velumani, the chairman and managing director of Thyrocare Technologies, had told *Forbes India* in an interview a few months ago. His company is today worth a staggering ₹7,000 crore and Velumani's own stake in that venture used to be around ₹5,000 crore.

Until the last week of June.

On June 25, Velumani surprised the world when he decided to sell his company to a relative newcomer in the health industry and a unicorn, PharmEasy, in one of the first instances of a startup buying a listed company. According to the deal, Velumani sells his 66 percent stake for ₹4,546 crore to PharmEasy's parent company API Holdings. He will use ₹1,500 crore of those proceeds to buy 4.9 percent in API, which will propel PharmEasy's valuation from ₹13,390 crore (\$1.8 billion) to over ₹29,700 crore (roughly \$4 billion).

"I would have retired now, had I been in my previous job," says the former scientist at the Bhabha Atomic Research Centre. "The difference is my former colleagues have retired with maybe ₹5 crore, and I have done so with ₹5,000 crore."

Thyrocare, a pioneer in the thyroid testing segment, has, over the past few years, expanded its business into other areas, like preventive health checkups and lipid profiling among others, with outlets across India, Nepal, Bangladesh, and the Middle East. The company processes over 920 million samples in India, through 3,300-odd collection centres across 800+ towns, making it one of the largest chains of health diagnostic labs in the country. As India battled both

The life and times of A Velumani



1959

Born to **landless farmers** in **Appanaickenpatti Pudur** near **Coimbatore**

1978

Graduated in **chemistry** from the **University of Madras**

1982

Moved to **Mumbai** to work at the **Bhabha Atomic Research Centre** as a **scientific assistant**

1996

Started **Thyrocare** from a **200 sq ft room** in **Mumbai's Byculla** locality, focusing on providing **Thyroid profile** tests

1999

Company expands to processing over **200 samples** a day with **15 franchisees**, and a turnover of **₹ 1 crore**

2006

Turnover grows to **₹ 29 crore**, employee strength to **200**

2011

New Delhi-based **CX Partners** picks up a **30 percent** stake in **Thyrocare** for **₹ 188 crore**

2016

Thyrocare goes **public**, issue subscribed **73 times**

2021

Velumani sells his **66% stake** in Thyrocare to PharmEasy's parent company **API Holdings**. Will make an investment of **₹ 1,500 crore** to buy **4.9 percent** in API

its first and second waves of Covid-19, Thyrocare was at the forefront, processing some 35,000 samples a day.

"A lot of people are calling me mad for leaving the company," says Velumani. "But I saw great value for the company in the deal. I felt there was huge potential for the company, and maybe I am not the right man to lead it. People with an ego wouldn't have done that."

PharmEasy's deal with Thyrocare comes at a time when India's online pharmacy segment has seen increased traction. Earlier this month, Tata Digital, a subsidiary of Tata Sons, announced it was acquiring a majority stake in 1mg Technologies. "It's like an arranged marriage," Velumani says about the deal. "About 25 boys had come to see, and with the 26th boy, it was love at first sight. The process was very fast, and I don't see it as something where I am parting

with it entirely. But the brand must transition for another 25 years, and it can do that better without me.”

FROM LANDLESSNESS TO BILLIONAIRE

Velumani’s story is one of true grit. The son of a landless farmer, he grew up near Coimbatore in Tamil Nadu. “When it comes to poverty, there are two kinds of people,” says Velumani. “One who enjoys it, and another who suffers because of it. The one who enjoys it will come out of poverty very fast while the one who suffers will remain poor.”

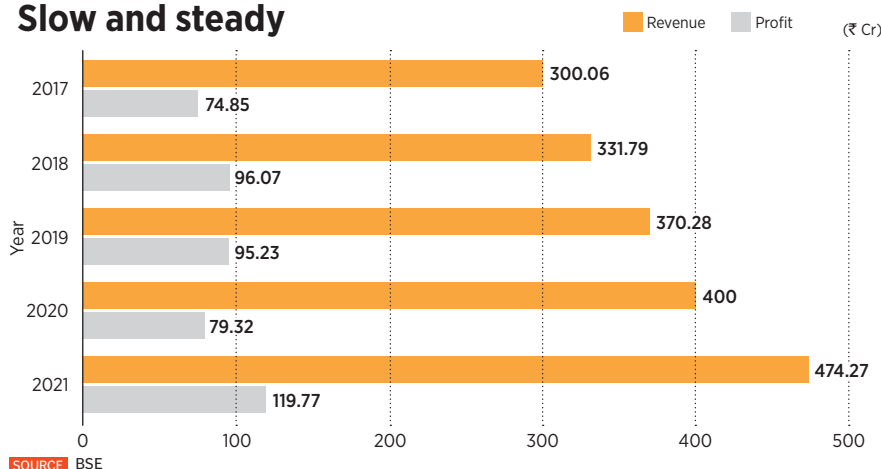
His parents toiled hard to bring up Velumani and his three siblings and ensured they received an education. His mother, Velumani says, inculcated the lesson of not borrowing money, and taught him to manage with limited resources. “People in business often forget how to manage with low resources, but I learnt how to manage with no resources,” he says.

After graduating in chemistry in 1978, Velumani’s career began with a job as a shift chemist at Gemini Capsules, a small pharmaceutical company in Coimbatore, in 1979. Three years later, the company shut down and Velumani was staring at an uncertain future.

Around the same time, Velumani used to frequent the Central Library in Coimbatore. “It was my *adda* [hangout],” Velumani says. “I didn’t have money and I didn’t have many friends. My life was about spending time in libraries than in theatres or other entertainment options.” There, on a Wednesday, Velumani saw a job posting in a newspaper for a scientific assistant at the illustrious Bhabha Atomic Research Centre. BARC, located in Mumbai, is one of India’s foremost multi-disciplinary nuclear research centre that began operations in 1954.

“I came to Mumbai, not with some big dreams,” Velumani says. “My belief was that if I get a government job, my life will be completely

Slow and steady



transformed.” But the entire process of selection would take time and Velumani returned home to look at other opportunities. Around 50 days later, he received an offer letter to join the institute and Velumani was once again back in Mumbai. This time, however, a medical assessment had found him to have colour blindness, forcing BARC to withdraw the offer.

“After 15 days, I received a letter saying that colour blindness will not affect your work,” Velumani says. “Finally, after three trips to Mumbai in three months, I had a job at BARC.” His work profile involved thyroid testing. “It’s a very boring job,” Velumai recalls. “I also would have hated it had I been from a rich family. There are two kinds of people at the workplace: Those who only work, and those who can also think. I was in the second category.”

“There are two kinds of people at the workplace: Those who only work, and those who can also think. I was in the second category.”

That meant, Velumani began spending his free hours in the library and began studying everything about the thyroid gland, endocrinology, immunology, microbiology, and molecular biology, among others. In 1985, he enrolled for a master’s degree while being an employee at BARC, before going on to complete his doctoral programme in thyroid biochemistry by 1995. “When I was travelling to Mumbai, I used to think the BSc degree was a full stop,” Velumani says. He later realised it was only the beginning of his journey. It also helped that he had the support of his boss, a blind man, who also encouraged Velumani to study.

At that time, the University of Mumbai had a tie-up programme that allowed scientists at BARC to study and research further. In the meantime, he also rose to the rank of a scientist and was posted at the Radiation Medicine Centre (RMC), a department that focussed on the application of nuclear energy in health care and agriculture.

BUILDING THYROCARE

By 1995, some 14 years after he started working at BARC, Velumani knew it was time to start something of his own. “My boss retired, and I was very comfortable with him,” Velumani says. “At that time, my wife was working with the State Bank of India. Since she

had a stable job, I thought why not give up this job and try something else. I was a very frugal man”

With ₹1 lakh that he had pooled through his provident fund, the then 37-year-old set up a testing facility in Byculla, a neighbourhood in South Mumbai, to detect thyroid disorders. It also helped that the lab was near the Tata Memorial Hospital, a prominent cancer institute. For long, India has grappled with hypothyroidism, with one in 10 people suffering from it.

Velumani started out by charging one-fourth of the existing fees in the market for processing the samples. Even at that time, the scientist-turned-entrepreneur knew the key to success was keeping costs low, which meant the business needed to process at least 25 samples a day to be cost-effective. The company would provide a thyroid profile at ₹100. That was also largely because it focussed on aggregating samples from numerous labs in the city, thereby achieving economies of scale.

“When I priced my services very low, people asked me, ‘will you get enough to eat’,” Velumani recalls. “But I knew, if I am the lowest, and I am the best, I’ll be the tallest. There is no company that has closed down because they kept prices low. All of them closed down because they could not control the cost.”

Over time, Velumani started out with a franchise model where samples would be collected across the country and sent back to the central laboratory in Mumbai. By 1999, the company had nearly 50 franchisees and processed some 200 samples a day. Until 2015, the company had only one lab in Mumbai to process the samples from all over the country. “I succeeded in logistics very early on,” Velumani says. “But when we found that the floor was losing efficiency as samples went up, we decided to set up a new lab in Coimbatore and found



Dhaval Shah (left) and Dharmil Sheth, co-founders of PharmEasy, which has a valuation of \$4 billion

the efficiency was going up but not the cost.” Today, the company has 15 processing labs across the country.

From testing for thyroid, the company expanded to other areas, including preventive medical check-ups, blood tests, and pulmonary function tests. A significant part of the business, however, continued to be in the B2B category. “Velumani had taken a philanthropic approach to his business, and managed to build the business well,” says Vishal Manchanda, research analyst for pharma at Nirmal Bang Institutional Equities Research. “He was the one who brought down costs substantially in the testing business. In addition, his focus on operational efficiency also made him one of the cheapest in the business.”

Last year, Thyrocare posted revenues of ₹474 crore, up by 18 percent, while profits grew by 51 percent to ₹119.7 crore. “In the entire

world, India is the cheapest in health care,” says Velumani. “And in India, I am the cheapest diagnostics provider. This is nothing but efficiency.” That’s probably why Thyrocare has seen its net margins hover between 25 and 30 percent, unlike many of its peers whose net margins have remained between 15 and 20 percent. Over the years, by keeping prices low, Velumani has managed to increase volume and achieve economies of scale, while by keeping overhead costs low, he protected his margins.

In 2016, more than 20 years after Velumani founded the company, Thyrocare Technologies listed on the bourses, which was subscribed some 73 times. A few years before that, in 2011, New Delhi-based CX Partners picked up a 30 percent stake in the company for ₹188 crore. “Had I not diluted my company, I would not have become cleaner and transparent, because once somebody else is the

stakeholder in your organisation, he is bound to ask too many questions, and you don't want him to ask any question which is worrying you," Velumani says about the deal.

At that time, the deal had valued the company at about ₹600 crore (\$100 million). Since then, other investors, including Samara Capital, Norwest Venture Partners, and ICICI Bank's Emerging India Fund, have also bought into the company.

"In 2011, somebody bought a stake in the company and for five years, they did not do anything," Velumani says. "When they left, they got four times the value without doing anything. My son told me, 'You do four times the work and somebody else gets four times the reward'. He suggested that I do what they did."

LETTING IT GO

Perhaps that was also a trigger when it came to letting go of the company he had held close to his heart. Five years ago, Velumani lost his wife, who he believed was a pillar of Thyrocare. Sumathi Velumani, a former director at Thyrocare, passed away due to pancreatic cancer before the company had gone public.

Their children, a son and daughter, meanwhile, felt that only Velumani could do justice to the company. "Over the past five years, I had left it to them to run it," Velumani says. "But, perhaps, they are more of managers than creators, and they felt it was not the best way to run it. A creator is somebody who dreams." He then discussed the plan of a stake sale with his children, only after he had made up his mind to sell the company. "I took a decision, and told them," Velumani says. "You must never discuss and then decide. That causes confusion."

Now, with nearly ₹3,500 crore in his kitty, Velumani, the investor, is gearing up for the long gamble. "I used to get a salary first, and then I began paying salaries," Velumani says. "Now, I will be the one giving

money to those who pay salaries," he jokes about his foray into investing.

To begin with, he will own a 5 percent stake in API Holdings, the holding company of PharmEasy, which is likely to be listed on the bourses and is valued at \$4 billion. PharmEasy, founded by Dharmil Sheth, Dhaval Shah, Harsh Parekh, Hardik Dedhia and Siddharth Shah, provides a slew of services, including teleconsultation, medicine deliveries, and sample collections for diagnostic tests. The six-year-old company has a network of 80,000 pharmacies and 6,000 doctors.

In April, PharmEasy became

"My son told me, 'You do four times the work and somebody else gets four times the reward'. He suggested that I do what they did."

India's first e-pharmacy unicorn after raising \$350 million at a valuation of \$1.5 billion in series E funding, led by Prosus Ventures and TPG Growth. A month later, the company purchased e-pharmacy player Medlife for an undisclosed amount.

"Thyrocare is a B2B business, which has been dealing largely with hospitals," Manchanda says. "With PharmEasy, it will have an opportunity to deal with customers directly and offer PharmEasy an opportunity to offer numerous wellness packages, making it a holistic player in the space."

Already, other players in the segment, including Netmeds, Flipkart, and Amazon, are ramping up their presence. That's because

e-pharmacy and B2B healthtech are the two largest segments in the healthtech sector in India, and account for about 70 percent of the overall healthtech market, according to a report by IAMAI and Praxis. Of this, the e-pharmacy business is worth \$700 million. The past few years have seen increased traction in health care, particularly healthtech, as Covid-19 accelerated a shift towards tech-based offerings.

"E-pharmacy saw a 200 percent increase in the number of orders in 2020; e-pharmacy adoption in households also increased by more than 2x post-Covid-19," the report says. "The number of consultations on teleconsultation platforms increased by 300 percent in 2020. India's e-diagnostics market was at \$0.07 billion in 2020 and is growing at a CAGR of 66 percent."

India has more than 5,000 healthtech startups and the healthtech market, according to IAMAI-Praxis Global Alliance, is expected to grow at a CAGR of 39 percent to touch \$5 billion by 2023. "Due to physical restrictions and safety concerns owing to the pandemic, there has been an increased adoption of teleconsultation, homecare services, e-pharmacy, online fitness and digital personal health management, which has catapulted the Indian healthtech sector on a high-growth path," said consultancy firm RBSA Advisors in a recent report. "The consumer adoption that healthtech has been able to achieve in 2020 would have taken at least four to five years in a non-Covid 19 scenario."

That's perhaps something Velumani knew was a long time coming. "Anything connected with technology and tech companies will be very highly profitable, and scalable," Velumani had said about the impact of Covid-19 on the health care services industry in 2020. "And you will get a lot of valuation."

Looks like, the canny investor in Velumani is only getting started. **F**

FITNESS AS A CHOICE, NOT A PUNISHMENT

Tanvee Tutlani is known for her tailored fitness and diet guidance that pay attention to individual preferences and choices

They say one should treat their body like a temple. And yet, many of us refuse to pay attention to the daily requirements of our body when it comes to activity, fitness and health. If not for the pandemic, we would not even have devoted any time at all to include exercise in our daily regimen. It is almost as if we are too busy for it.

Tanvee Tutlani suggests otherwise. The certified dietician and nutritionist firmly believe that one should prioritize health and fitness over and above any work commitments, study routines or daily chores. According to Tanvee, physical activity and fitness is not something you make time out for – it has to be treated as a part of your lifestyle, just like work or recreation.

The Stepping Stone of Self Love

Tanvee began her journey in the fitness and healthcare field around eight years ago and has come a long way in shaping people's lives for the better with her focus on a healthy lifestyle. Tanvee's rollercoaster ride in an unconventional profession is something that continues to inspire her and others around her to this day.

After completing her school education at Delhi Public School, Vasant Kunj, New Delhi, Tanvee decided to pursue a degree in Commerce from the reputed Delhi University. Throughout her childhood and at the beginning of her college days, Tanvee faced multiple concerns due to her obesity.

Her decision to transform herself and her body for the better turned out to be the stepping stone of her long journey in the world of fitness. Tanvee embraced regular workouts and healthy diet plans as her new way of life. With time, those around her started viewing her transformation as an inspiration for changing their lifestyles for the better. Tanvee began helping them in her way with free workout sessions and by sharing some personal tips and insights with them.

Transforming Lives with Motivation and Care

The persistent encouragement Tanvee received from those around her strengthened her resolve of stepping into the field as a professional. She took up Dietetics as her subject of choice for further studies. Eight years down the line, Tanvee has helped reinvigorate more than 50,000 lives through her focus on fitness and health.

Today, Tanvee Tutlani is known for treating each of her patients equally, catering to their special needs through a tailored physical regime and diet plan for them. This has not only given her fame and name, but also the immense satisfaction associated with helping transform someone's life for the better.

"My mother and grandfather have been two of the biggest pillars of support in my life, followed by my husband who is my inspiration, guide and partner – all in one! Being a mother to two infant twin boys, my hands are always full; it is my husband who makes sure that I never compromise on my routine and health schedules despite all the chaos associated with parenting," Tanvee shares.

Fighting the Pandemic Hand-in-Hand

In these tough times of pandemic, Tanvee donned the hats of both a leader and a caregiver, helping as many people as she could to recover faster, build immunity against the virus, and reinforce their bodies with the strength needed to fight it.



Tanvee Tutlani

In fact, the pandemic helped Tanvee spread her message of adopting a healthy lifestyle to many more people than she could in the pre-pandemic years. As people become more understanding and careful about their bodies, health and immunity, Tanvee's healthcare, dietetics and online fitness classes have witnessed escalating demand for past several months.

In Tanvee's own words, "Investing in yourself and your health has become the single most significant aspect of our lives today. Many people are, probably for the first time in years, prioritizing exercise over movies, detox over junk and immunity-building activities over leisure. Isn't it great?"

Therefore, Tanvee has come up with multiple sustainable fitness and healthcare routines for people who want to inculcate it as a part of their lifestyle instead of a short-term hobby. Besides, she believes in tailoring her regimes according to the client and their background, including BMI, medical history, work schedule, favourite meals and more, for the best results.

"A one-size-fits-all approach never works when it comes to fitness, nor just punishing yourself. At Diet Smart, we believe that Eating Smart is the only way to Eating Right, and that means you can stay fit and healthy without giving up on what you love," concludes Tanvee Tutlani.

How HDFC Bank's Crises Have Spelt Gains for ICICI Bank

As the former awaits lifting of credit card ban, rivals gain market share. Can the bank recover lost ground?

By SALIL PANCHAL

When Sashidhar Jagdishan, managing director and CEO of HDFC Bank, apologised to shareholders in their integrated annual FY21 report released in June—about issues relating to technology outages the bank had been facing and a ban imposed on it to issue new credit cards—the move was rare and commendable.

It is unusual for a corporate leader, more so of a mega bank, to use the words 'sorry', 'justifiably' and 'fix the problem' in a message to investors. Consider the fact that in the past several years, public sector

banks (PSBs) have, in the case of glaring divergences in reporting non-performing assets (NPAs), mentioned these only in the notes to accounts to the financial statements, as mandated. There were no regrets, explanations or concerns.

For HDFC Bank, India's largest private lender by assets, internal crisis—in the form of inquiries, penalties and bans imposed by the regulator Reserve Bank of India (RBI)—is unfamiliar territory. It has not only caused embarrassment for the bank, but has also enabled ICICI Bank—a rival in retail banking—to gain market share in the credit card market alongside SBI Card since

December 2020, at the expense of HDFC Bank (see table).

Despite a strong set of earnings through healthy revenue growth and steady asset quality, valuations for HDFC Bank have dipped over the past year while those for ICICI Bank have risen in the same period. Improved quarterly earnings have boosted investor sentiment for ICICI Bank; the stock has outperformed the Nifty Bank index, gaining 23.2 percent in 2021 against just 13.8 percent for the index and only 7.6 percent for the HDFC Bank stock in 2021.

HDFC Bank, with a 24 percent market share, was the market leader in issuances of new cards, which



ranged between 1.5 to 2 lakh cards every month, prior to the ban.

THE HARD RAP ON KNUCKLES

In the past two years, HDFC Bank has suffered three large outages at its data centre: First on November 27, 2018, when its next-generation mobile banking application crashed due to a massive surge of customers; the second during the first few days of December 2019, when net banking and mobile banking applications suffered problems and then again in November 2020.

The RBI in December 2020 issued an order which temporarily banned HDFC Bank from launching its digital business-generating activities planned under its programme Digital 2.0, including issuing new credit cards.

In another embarrassing development, the RBI in May penalised HDFC Bank ₹10 crore for wrongfully selling third-party non-financial products (GPS devices) to its auto loan customers between 2015 and 2019. This contravened the provisions of the Banking Regulation Act 1949. The RBI action came after HDFC Bank probed into the matter based on a whistleblower's complaint to the RBI regarding the irregularities.

The bank had taken remedial action against six employees for improper lending in the auto loans division, while the one-year extension for its departmental head Ashok Khanna was not approved and he retired in March 2020. "For many years we had been bundling the financing of GPS systems and cars. The teams believed this was a routine lending activity," Jagdishan said in the 2021 annual report.

Jagdishan, an HDFC Bank veteran of over 25 years and chosen in 2019 as the 'strategic change agent', has only seen external crisis such as rising NPAs, poor credit offtake and the impact of the pandemic's first wave. Rarely has the bank witnessed internal battles of this nature.

The fact that Jagdishan's predecessor Aditya Puri, over a



“Because of our work on the digital side, we were able to capture opportunities perhaps faster than most others.”

ANUP BAGCHI
EXECUTIVE DIRECTOR, ICICI BANK

26-year period, built a bank that commands a market capitalisation of \$109 billion (as of July 1), meant that he always had huge shoes to fill. Jagdishan's doubters say after the RBI actions he had little choice but to admit to the problems and start afresh.

This is probably what gave rise to HDFC Bank's 'Project Future-Ready' which Jagdishan announced in April, in an effort to create the necessary strategic and execution agility for the bank to serve its customers. It includes redoubling its focus on verticals such as retail, corporate, private banking and increasing its focus on commercial banking, particularly the micro- and small and medium enterprise vertical. HDFC Bank's MSME loan book has grown 30 percent year-on-year to touch ₹2.02 lakh crore as of December end.

The bank has also identified four delivery channels: Branch banking, tele-service/sales (including virtual relationship manager channel), sales channels aligned with the business verticals and digital marketing.

There is a certain amount of humbleness in the new regime. In an analyst call hosted by Morgan Stanley

India on June 9, Jagdishan had said: "I must thank the regulator for rapping us in December 2020 as it has made us run faster and think ahead of time." In several other analysts' calls, he has reiterated that while technology outages will continue to take place [in the system], the critical factor is how resilient one is to withstand them and how swift the recovery time is.

Global data on tech outages at banks from a Goldman Sachs May report shows such incidences are higher in overseas banks. Between June 2020 and May 2021, HDFC Bank had 16 outages, compared to 24 for National Australia Bank, 39 for Wells Fargo, 40 for Citi, 52 for Bank of America and 73 for SBI, based on Downtechnology data. But outages appear to last longer for banks in India compared to the overseas ones. HDFC Bank has the highest—4.1 hours—duration of outage followed by SBI (4 hours), compared to 2 hours for National Australia Bank, 1.7 hours for Wells Fargo, 2.7 hours for Citi and 2.5 hours for Bank of America.

DOING THINGS RIGHT

This shows that the agility to deal with technological problems is weak in Indian banks. While HDFC Bank waits for guidance from the regulator on the findings of the third-party audit report of its IT systems, the bank has started to strengthen its existing technology architecture and make the shift towards new-age cloud-driven processes. "Banks in general had been laggard in moving from their monolithic legacy-based systems and swiftly adopting next-generation processes, which some technology giants and fintechs have been able to do faster," says HDFC Bank's Chief Information Officer Ramesh Lakshminarayanan.

HDFC Bank is pivoting to a factory approach through a digital factory and an enterprise factory plan, where it will roll out new digital products and services, he adds.

In the next three months, HDFC Bank customers could see changes to

their existing payment applications, such as PayZapp, and also a new platform for existing credit card customers. These platforms will be built on cloud-native stacks and not on conventional data centres.

The broader digital strategy will likely include collaborating and partnering with some of India's top fintech unicorns, besides incubating some new fintech startups with a co-ownership formula and also creating and owning its own technology IPs. While declining to reveal actual technology spends, Lakshminarayanan says it will "move in line with global standards" and be funded by existing business operations.

Some of the recent digital payments data is encouraging for HDFC Bank. Unified Payments Interface (UPI) May 2021 data on digital remittances from India's top 30 banks shows HDFC Bank to have the lowest technical decline [read as failure rate] of 0.06 percent and a debit reversal (DR) rate of 99.95 percent on a high volume of 215.12 million transactions.

ICICI Bank is equally impressive with a technical decline of just 0.08 percent and a DR of 94.5 percent on volumes of 151 million. Similarly, in beneficiary bank data, both HDFC Bank and ICICI Bank have a technical decline of just 0.03 percent each, on volumes of 143.07 million and 280.54 million respectively.

HDFC Bank has also managed to maintain its market share (by volume) of UPI transactions at 8.7 percent in the three months to March 2021, compared to 8.6 percent in the



"I must thank the regulator for rapping us in 2020 as it has made us run faster and think ahead of time."

SASHIDHAR JAGDISHAN
MANAGING DIRECTOR AND CEO,
HDFC BANK

December-ended quarter. These data points give HDFC Bank the confidence about stickiness of its customers and ensuring that glitches are limited.

HDFC Bank's Parag Rao, group head—payments, consumer finance, digital payments and IT, is confident that the bank "will return with a bang" in the credit cards segment. His optimism stems from the fact that despite the existing ban, HDFC Bank has managed to maintain its leadership position in credit card spends at 28.5 percent, compared to 18.6 percent for SBI Card and 17.6 percent for ICICI Bank. But HDFC Bank should be concerned because ICICI Bank's market share spend

since March 2018 has risen by 6.5 percentage points and SBI Card by 2 percentage points, compared to flattish growth for HDFC Bank.

"We have used the last six months to introspect, re-engineer the cards business, with our 15.5 million credit card customers. We need to get back to our pre-embargo run rate and then touch new milestones," Rao says.

ICICI BANK GAINING MUSCLE

In HDFC Bank's absence, ICICI Bank has been a major gainer in both issuance of new credit cards and gaining market share (see table). In terms of new credit card additions, ICICI Bank has seen an 18 percent growth year-on-year. "ICICI Bank has seen a 20 to 30 percent jump in its market share between December 2020 and April 2021," says Nitin Aggarwal, banking analyst at Motilal Oswal Financial Services. HDFC Bank's credit card base has contracted by 389,424 between December 2020 and April 2021, RBI data shows.

One of the critical elements for its success in the credit cards business has been its tie-up with Amazon Pay. In early July, the bank crossed the milestone of issuing two million Amazon Pay ICICI Bank credit card since the tie-up in October 2018. Credit cards is the largest contributor to fee-based income for most banks.

In the pandemic, ICICI Bank also got its retail lending mix right, both in secured and unsecured lending, analysts say. Nearly half of its retail book is secured mortgages, which has seen a 21 percent growth in volume to ₹2.43 lakh crore from levels a year ago. "ICICI Bank was trying to de-risk its book and it has managed to do it better than HDFC Bank, HDFC and Axis Bank," Aggarwal said.

In its broad retail book, ICICI Bank reported robust personal and rural loans sequential growth of 6.4 percent and 7 percent respectively for the March-ended quarter. ICICI Bank's entire retail book grew by 19.9 percent year-on-year, which is

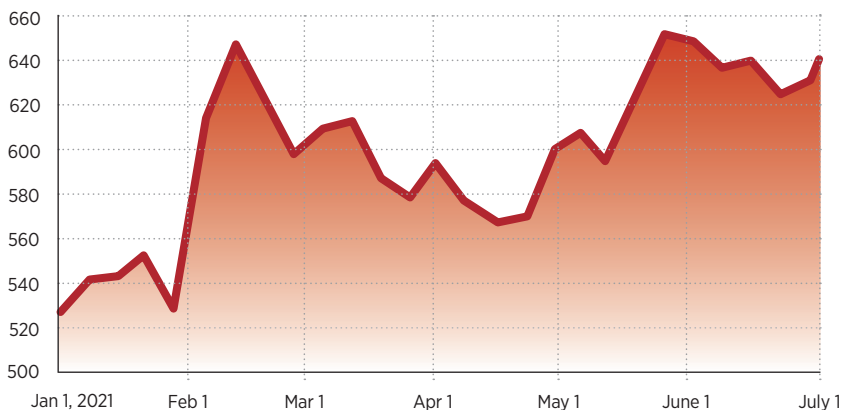
Net Additions In Credit Cards (Thousands)

	OCTOBER 2020	DECEMBER 2020	FEBRUARY 2021	APRIL 2021
ICICI Bank	228.7	201	198.5	142.6
SBI Card	139.8	194.6	99.6	105.7
Axis Bank	29	-12.3	98.8	56.5
HDFC Bank	194.4	-78	-57	-66.4
Kotak Mahindra Bank	6.4	11.2	21.8	-103.4

SOURCE RBI, Motilal Oswal Financial Services

ICICI Bank Outperforms HDFC Bank

Stock Price of ICICI Bank



Stock Price of HDFC Bank



impressive coming in a pandemic year. HDFC Bank saw a modest 6.7 percent growth in its retail book, Axis Bank saw a 10 percent jump and Kotak Mahindra Bank's pure retail book grew by around 7 percent.

Retail growth for HDFC Bank continued to be modest in the June-ended quarter. Retail loan growth fell by around 1 percent from the March-ended quarter and deposits edged up just 0.8 percent sequentially to ₹13,46,000 crore in Q1FY22. "HDFC Bank's credit momentum has moderated a bit in Q1, dragged mainly by continued weakness in the retail segment," says Anand Dama, head-BFSI at Emkay Research, in a note to clients.

ICICI Bank's executive director Anup Bagchi says the bank was able to capture opportunities

much faster than others due to the advantages in digital banking. He said credit delivery has become more seamless and gained pace, which has led to improved market share of the non-mortgage book.

ICICI Bank is now trading at a multiple of around 3.2 times book value and about 2 times adjusted for subsidiaries book. HDFC Bank

Cards Outstanding (mln)

	APRIL 2021	Y-O-Y GROWTH (%)
ICICI Bank	10.7	18
IndusInd Bank	1.5	15.2
SBI Card	11.9	13.6
RBL Bank	3	14.4
HDFC Bank	14.9	3

SOURCE: RBI, Motilal Oswal Financial Services

is trading at around 3.7 times book, having improved in recent months, but having been de-rated 10 percent in the past one year, analysts say. "ICICI Bank has narrowed the valuation gap and there is more to go in ICICI Bank's favour," says Motilal's analyst Aggarwal. ICICI Bank in FY21 delivered double-digit RoE (of around 12.6 percent) for the first time since FY17, and is now projected to improve to 15.2 percent in FY23E.

JAGDISHAN'S LEGACY

In eight months, Jagdishan has put some things in order through the Project Future-Ready programme. He has also started to create a new profile for himself which has moved out of Puri's long shadow. "This is probably his way of saying that I am my own person," says business journalist Tamal Bandhopadhyay, who chronicled HDFC Bank's digital journey in his book *HDFC Bank 2.0: From Dawn to Digital*. Bandhopadhyay says that while several banks are "extremely savvy" in their digital banking journey, Puri was well ahead of his time in terms of getting the bank onto the digital journey.

Independent banking expert Hemindra Hazari, who has studied the governance of banks in India, is "not surprised" that all these events have come to light in recent months, post Puri's retirement. "Puri was so focussed on achieving targets and getting the laddoo in each business line that compliance took a backseat under his leadership," Hazari says. Jagdishan is firmly trying to correct this while not compromising on growth. "Jagdishan is doing an honest job."

Lakshminarayanan is confident that the learnings from these episodes will only make the bank stronger. "Companies which are awake and understand the customer pulse are the ones that will move ahead. Our customers will decide which way we go. If make this pivot quickly, our customers will speak for us." **F**

Will Zomato's Audacious Bet on Grofers Pay Off?

Despite grocery being a high-risk play with thin margins and dynamics that are different from food delivery, IPO-bound Zomato perhaps has little option but to take the plunge with a stake in Grofers. It gives it a chance to keep the growth story intact

By **RAJIV SINGH**

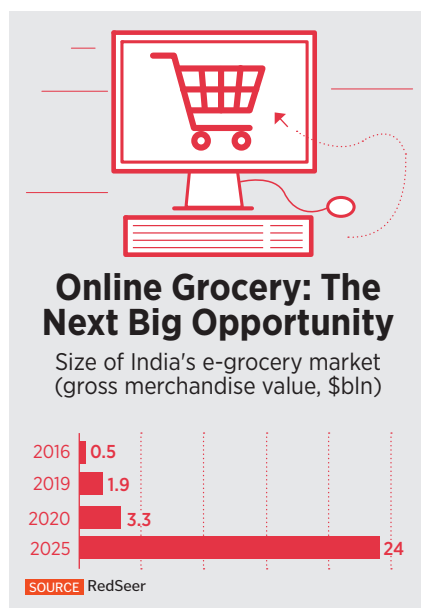
Last April, it was not a question of choice for Zomato. The country shut down, restaurants shuttered and food business got hammered. To keep the home fire burning, the online food delivery and restaurant discovery platform started delivering grocery with 'Zomato Market'. Though getting into grocery and essentials was the need of the hour, as demand for food delivery suddenly evaporated, the bigger question was: Who would buy grocery from Zomato?

Five months down the line, the food delivery giant got the answer. By September 2020, Zomato had delivered 1.1 million grocery orders across 185 cities, points out CLSA in its brokerage report this April. "Thank you for giving us the opportunity to serve you during the lockdown," Zomato wrote in a blog last September, announcing the 'signing off' of Zomato Market. With a gradual lifting of the lockdown curbs, the company was getting back to its core business and focus: Food delivery. The company flirted with grocery delivery for half a dozen months and there were signs of a promising future.

Back in 2018, Zomato was committing itself a serious relationship by getting into B2B grocery business. It bought Bengaluru-based company WOTU, rebranded it as Hyperpure, and started supplying restaurants everything they needed: Vegetables, fruits, poultry, groceries,

spices and dairy beverages. "We are trying to transform Zomato into a foods company, much on the lines of a farm-to-fork model," Deepinder Goyal said in an interview to *Forbes India* in July 2018. The co-founder explained the evolution of the company. In July 2008, Zomato was born as a food discovery and ratings platform. "In July 2013, we started walking. Now in July [2018] we will start running," he had stressed then.

Three years later, Zomato is sprinting. The Gurugram-headquartered company, which is scheduled to get listed in July, reportedly bought a 9.3 percent stake in online grocery startup Grofers for \$100 million. The investment values



Grofers at over \$1 billion, and gives Zomato—which is reportedly seeking a valuation of \$10 billion—a much-stronger blueprint and chance to make a dent in the grocery business. While Zomato declined to comment, Grofers did not reply to a set of questions sent by *Forbes India*.

Industry watchers are not surprised with Zomato's move for two reasons. First, online grocery business has got a massive boost due to the pandemic. From \$1.9 billion

in GMV (gross merchandise value), the e-grocery market leapfrogged to \$3.3 billion last year, according to RedSeer. The contribution of fruit, vegetable and staples, the consulting firm pointed out in its report released early this year, stood at a staggering 47 percent. What is interesting, though, is the projection. By 2025, the e-grocery market is estimated to be valued at over \$24 billion.

Second, food delivery alone won't make Zomato a force to reckon

with, especially after the listing. It would need more engines, if not one which can be as big and promising as food delivery, to fire. Reason: Low transacting consumers. Though Zomato, Ambit Capital Research points out in its brokerage report in May, has a high monthly active user (MAU) base of 42 million, the number for monthly transacting user (MTU) is just 11 million. What this means is that the online food delivery major has to provide more



Given Zomato co-founder Deepinder Goyal's penchant for taking risks, grocery seems to be the best bet for the entrepreneur

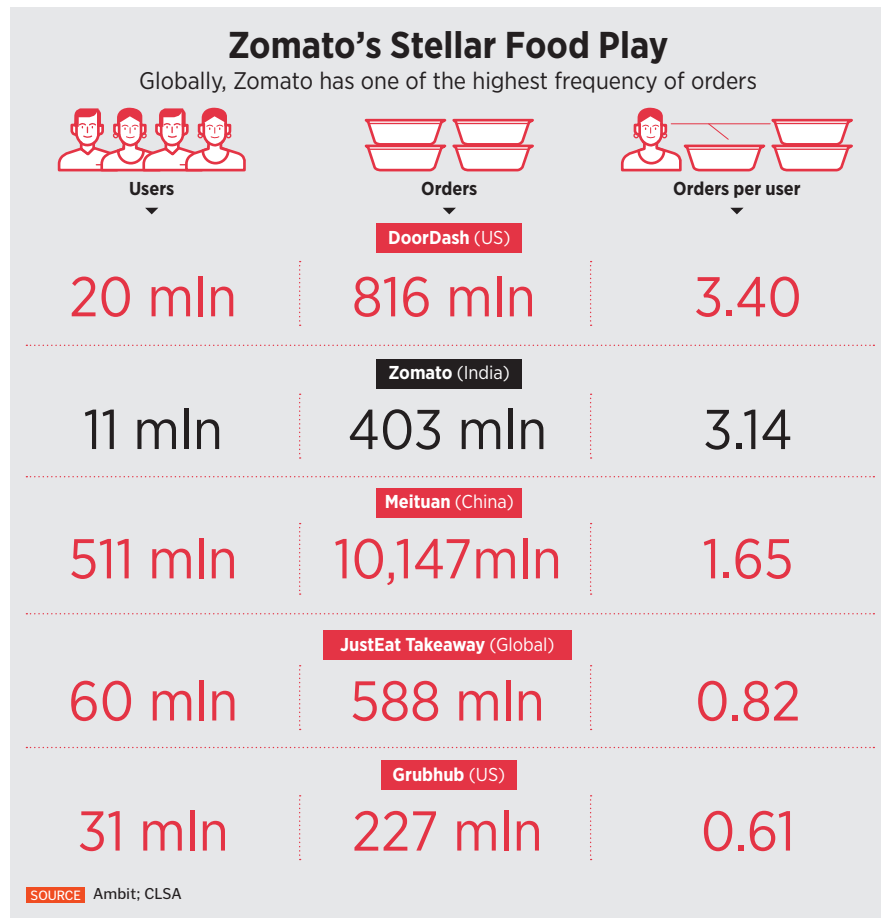
reasons and occasions for consumers to pay. Food alone won't suffice.

There is another potential blip. The pandemic delivery tailwinds, especially from the latter part of the last year, are likely to abate once the raging pandemic subsides and a vast majority of the population gets vaccinated. This, in turn, will not only result in a dip in online food volume and value order, but will also force online food delivery companies to look for new sources of revenue.

If food delivery companies needed one more reason to look beyond food, then they must look at the 'collateral' damage of the pandemic on the urban population. "The effect of the pandemic on the lower middle class would be catastrophic," reckons the Ambit Capital Research report.

While 81 million of urban India is poor, a similar number of lower middle class people would be unlikely to afford food delivery services. Around 150 million urban users are not the right target market for food delivery companies in the near-to-medium term, the study predicts. If one adds another grim data—women workforce participation in India stands at 20 percent unlike the US and China at 57 percent and 60 percent respectively—the picture becomes clear as to why food delivery companies would not find it easy to expand their catchment area over the next few years. What this means is they need to find other modes to earn income. Grocery might be an option.

Globally, too, food players are diversifying. In its recent report on online food delivery in India, brokerage company CLSA points out how global players are getting into adjacent categories such as cloud kitchens, grocery and other essential deliveries by using high customer engagement, delivery expertise and data analytics on consumer insights. Online food delivery companies around the world are attempting to transform their single-purpose apps into multi-use 'super apps'



with a host of convenience services for consumers. "Relatively high take rates in India demand that online food delivery platforms also expand their revenue bases," says the CLSA report released in April.

Zomato, for its part, is well aware of the problem, and the potential solution. One of the threats in the excruciatingly long list of risk factors mentioned in its draft red herring prospectus (DRHP) filed in April includes, "If we are unable to make acquisitions of and invest in complementary businesses, assets and technologies, or successfully integrate them into our business, our business, results of operations, cash flows and financial condition could be adversely affected." Buying a stake in Grofers—which was struggling to raise funds and also dumped its listing plans through

SPAC that it was exploring early this year—gives Zomato a fighting chance to keep its growth story intact.

The going, though, won't be easy for one simple reason. One plus one doesn't always make two, reckon retail analysts. Food delivery, they point out, is not equivalent to grocery delivery. The dynamics are different, the market is different. The customer base of Zomato and Grofers is also different. While the former has built its business by having consumers who are 'convenience' oriented, the latter has been catering to users who are price sensitive, and would not settle for higher-priced products.

Absence of overlap is crucial because grocery is a high volume and wafer-thin margin business. "Grocery delivery is a very challenging business," says KS Narayanan, a food and beverage expert.

Grocery has been the mainstay of millions of general trade stores dotting streets across the country, where the supply chain is managed in a pretty cost-efficient manner due to lower overheads. “Given tight margins, the prospects of a profitable grocery delivery operation for an aggregator is very low,” Narayanan points out.

Let’s take Grofers, for example. For the FY20 fiscal, total revenue reportedly stood at ₹176.79 crore, and losses were at ₹637.49 crore. These numbers do not come anywhere close to BigBasket, India’s biggest e-grocery platform: ₹3,822-crore revenue and ₹611 crore losses for the same fiscal.

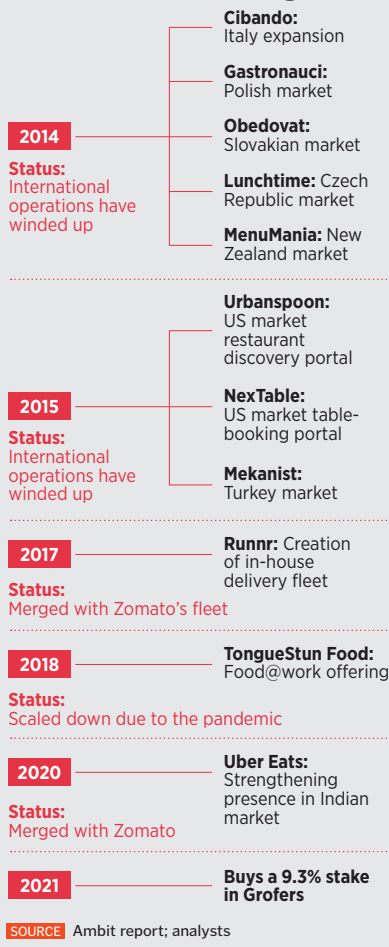
Though the headroom for growth is massive in grocery, one also has to look at the flip side. It is hard to make money and sustain the business. Even BigBasket, a decade-old player and the biggest in India’s e-grocery business, had to sell out recently. In May, Tata Digital bought 64.3 percent stake in BigBasket, reportedly at a post-money valuation of \$1.8 billion.

The only thing common between Zomato and e-grocery platforms, says Narayanan, is on-demand delivery. However, with millions of locally-relevant stock-keeping units (SKUs) that are required in the case of grocery, it becomes challenging for an aggregator to stock and deliver.

Another potential impediment for Zomato is the intense fight in the grocery segment. “It has become the big boys’ play,” says Ankur Bisen, senior vice president (retail & consumer products division) at consulting firm Technopak.

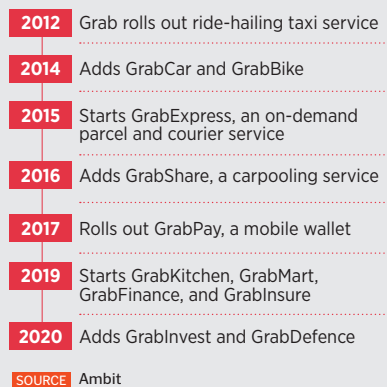
With Tata, Reliance, Amazon and Walmart-owned Flipkart taking deep positions and getting hyper aggressive in the segment, there is not enough room for smaller or niche players. The Zomato-Grofers deal, Bisen points out, is a good example of two desperate players. For Grofers, with an aborted IPO listing plan and its failure to get more funds from its existing or new backers, an investment by Zomato gives it a new

Zomato’s Acquisition Track Record: A Mixed Bag



Can Zomato ‘Grab’ The Opportunity?

Singapore-based startup Grab, which started as a ride-hailing company, has morphed into food-delivery and financial services giant across Southeast Asia



lease of life. For Zomato, looking at Grofers gives it an opportunity to take a long-term view. “Will the gambit pay off? It’s too early to say,” he says.

Against the mixed track record of Zomato in its acquisition strategies, Grofers’ deal too does not look too promising. “Zomato has struggled with its acquisitions,” points out Ambit in its analyst report. “It tried to expand in multiple geographies but failed,” it adds, listing out prominent examples of large write-offs. The acquisition of Urbanspoon [a US restaurant information and recommendation service] in 2015 for over \$50 million and shutting down its operations within five months was a big jolt for the company, the report highlights. Another US-based acquisition in 2015 was written off in 2020.

Back home, the acquisition of Bengaluru-based Tonguestun Food, an aggregator of caterers and restaurants for office canteens, bombed. Though the plan was to create an entire ecosystem around food, the execution proved to be a challenge. “The pandemic made things worse, and thus another write-off in FY20,” the Ambit report points out, adding that the company wrote off its equity investments in multiple global subsidiaries (see ‘Zomato’s Acquisition Track Record: A Mixed Bag’). With Zomato’s appetite to take risks remaining intact, can grocery change the narrative for India’s biggest online food delivery player?

The answer, perhaps, lies in the draft red herring prospectus. “We may not be able to sustain our historical growth rates, and our historical performance may not be indicative of our future growth or financial results,” reads the top risk factor outlined by Zomato. Given Goyal’s penchant for taking risk, grocery seems to be the best bet for the entrepreneur who has handsomely delivered on the food front. **F**



Public Health Crisis Within The Pandemic

Many people experience debilitating physical and mental health symptoms for months post Covid-19 recovery. While companies have to do their bit for employees, there needs to be larger concerted public policy initiatives

By **DIVYA J SHEKHAR**

One week into her internship at a venture capital (VC) firm in Mumbai in early April, Megha Todi tested positive for Covid-19.

With mild symptoms, she isolated herself at home for 15 days following which she recovered and tested negative. Todi's intention was to get on with work "full throttle". But what happened with her physical and mental health thereon was completely unexpected. "Now I feel like contracting Covid itself was nothing compared to the after-effects that keep building on in my body and mind," the 30-year-old tells *Forbes India*.

Her first clue that things were not completely alright was brain fog. As someone who efficiently ticked all the items on her to-do list daily, Todi instead found herself staring at the screen and being unable to think clearly at work. There was consistent fatigue and inability to multitask. "One day I do well at work, but the next day, I'm not able to even get myself to sit up straight and concentrate. It's cyclical," Todi says, adding that she has continuous backache, her gastro-intestinal health has gone for a toss, and she is even scared to get out of the house for a walk because of energy levels that plummet at the slightest exertion. All this, in turn, leads to anxiety and guilt of being unable to perform and be productive in a fast-paced work environment.

Todi, who founded a bootstrapped

ecommerce startup for handcrafted lifestyle and home decor products in 2018, had to shut it down as she could no longer manage it alongside work

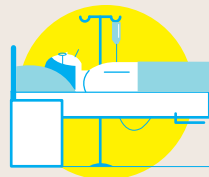
commitments. "It's been over two months and I'm still able to work at just 50 percent efficiency," she says. Todi explains that while people at work were understanding during her recovery, she doesn't know how to explain the fact that she still falls ill every other day. "Ultimately, the perception is that I am fine because I've tested negative, especially because others in the office have bounced back quickly post-Covid," she says.

The World Health Organization (WHO), in a March update on the clinical long-term effects of Covid-19, describes Long Covid as a "persistent state of ill-health". It explains that while most people with Covid-19 recover and return to normal health, "some people can have symptoms that last for weeks or even months after recovery from acute illness... some patients develop medical complications that may have lasting health effects".

People are not infectious to others during this time and there is no internationally agreed definition of the condition as yet, the public health agency adds. Among the wide range of long-term symptoms reported, there is recurrent fever, depression, anxiety, headache, chest pain, persistent cough, muscle and abdominal pain, rashes, loss of smell, shortness of breath, sleep disturbances and diarrhoea, among others.

There is no saying how much time Long Covid symptoms will take to subside. "As doctors, we call it leaving something open-ended,

What is Long Covid



◆ The World Health Organization (WHO) describes Long Covid as a "persistent state of ill-health". There is no internationally agreed definition as yet



◆ People can have symptoms that last for weeks or even months after recovery from Covid-19



◆ Some patients, adds WHO, develop medical conditions that may have lasting health effects

◆ **Common Symptoms:** Wide range of symptoms reported, including fatigue, recurrent fever, depression, anxiety, headache, chest pain, persistent cough, muscle and abdominal pain, rashes, loss of smell, shortness of breath, sleep disturbances and diarrhoea, among others



◆ Long Covid could also lead to serious complications in the **heart, lungs** and **brain**

MADHU KAPPARATH



Megha Todi from Mumbai says contracting Covid was nothing compared to the after-effects that kept building on in her body and mind

because we really do not know how long it will last. I usually tell people three to six months, which is also a very long time,” says Dr Joyeeta Basu, consultant physician.

According to her, cases of Long Covid have been more prevalent in the wake of the second wave. While 5 to 7 percent of her patients came back with Long Covid concerns after the first wave, the rate has tripled over the past few months. “This can be attributed to the [coronavirus] variants, which caused a more severe disease in many people this time around,” she says, narrating a recent incident about how two of her patients in Gurugram who had recovered from Covid landed up in hospital for about seven to 10 days after their oxygen levels suddenly

dropped during a 5-km bike ride.

At its peak in May, India reported 4 lakh Covid-19 cases in a day. While infections reduced to about 1/8th of those numbers in June [standing at 54,069 over 24 hours on June 24], people testing positive for Covid in India still contribute to about 22 percent of global cases, according to online scientific publication *Our World In Data*, which is the highest for any country.

“India is still battling the acute phases of Covid-19, wave after wave. This takes the attention away from Long Covid, which gets pushed behind and a lot of things about it remain unclear even today,” says Dr Mandeep Garg, professor, department of radiodiagnosis and imaging at the

Postgraduate Institute of Medical Education and Research (PGIMER) in Chandigarh. He is also a doctor managing Covid-19 patients and is the lead author of a research paper titled ‘The Conundrum of ‘Long-Covid-19’: A Narrative Review’, published in the *International Journal of General Medicine* in June.

Dr Basu, who is the co-founder of medical clinic Doctors Hub in Gurugram, has been seeing Long Covid playing out among her patients through complications in the heart, lungs, brains and mental health. “People are fearful and anxious that they might lose their jobs if they cannot go back to work or be productive enough soon,” she says, adding that more young adults are



showing Long Covid symptoms. “This is a public health crisis,” she adds, explaining that over the next couple of months, she expects to see a rise in such cases. “For example, post-Diwali, when we have rising pollution levels, we’re going to see a lot of people with COPD [chronic obstructive pulmonary disease]. I dread the coming winter.”

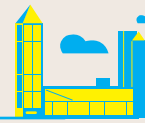
SPOTLIGHT ON YOUNG WORKFORCE

In a press briefing on April 21, Union health secretary Rajesh Bhushan said age groups 20-30 and 30-40 accounted for 19.35 percent and 21.15 percent respectively of total Covid cases in 2021. This is the highest among all age groups in the country. People aged 50-60 accounted for 15.07 percent, making it the third-most affected category. According to the Periodic Labour Force Participation Survey (PLFS, 2018-19), the 15-59 age group forms 63 percent of India’s total workforce of an estimated 47 crore people.

India has the second-highest Covid-19 caseload in the world, behind the US. Unlike the US, however, there is very little research or data available in India around Long Covid and how it is impacting people, be it through lowered productivity levels at work or daily life. In February, the US National Institute of Health (NIH) launched a major initiative to study the long-term effects of Covid-19, with a funding of \$1.15 billion.

In India, the health ministry, Indian Council of Medical Research (ICMR) and the All India Institute of Medical Science (AIIMS) launched a National Clinical Registry of Covid-19 in September 2020 to track long-term symptoms. The Registry was supposed to collect and monitor real-time data of Covid-19 patients from 100 hospitals across the country. “Such data will serve as an invaluable tool for formulating appropriate patient management strategies, predicting disease severity, patient outcomes etc,” read a letter from the ICMR dated August 6,

Role of Companies



Some of the initiatives taken by companies to support people suffering from Long Covid

Leaves: Unlimited leaves for employees suffering from Covid and post-Covid conditions; leaves for employees who are caregivers also considered



Mental Health: Improving employee access to counsellors and organising group therapy sessions



Insurance: Expanding medical insurance cover to take care of employees and their dependents

Sensitisation: Making managers across levels aware of the day-to-day challenges of working with Long Covid complications

Redistribution of Work: Sometimes by even engaging contract/freelance workers, in order to enable people to take extended leaves while not adding to the burden of those who are working

Vaccination: Covering vaccination costs for employees, and in some cases, their immediate families; ecommerce platforms also vaccinating delivery executives



Open Communication: Encouraging managers and colleagues to check in on each other regularly to talk about challenges at work due to Covid-related health issues

Data: Leveraging technology to collect and study data that provides insights on how Covid and post-recovery physical and mental health complications affect employees

2020. Nine months on, this data has not been made public. Queries about the Registry sent by *Forbes India* to ICMR were unanswered at the time of writing this article.

When it comes to managing Long Covid on-ground, there continues to be awareness limitations among many members of the medical community, says Dr Garg.

Bhasha Mewar’s experience is an example. When the 37-year-old museum professional developed acute Covid symptoms back in early March 2020, she struggled to get a diagnosis. “Back then, nobody knew

about Covid or how to manage it. It was terrifying,” she says. Even today, she suffers from chronic fatigue syndrome, gastrointestinal issues, chest tightness [airways become inflamed] and breathlessness. “Even if I just talk over the phone with my friends for about an hour, I get completely exhausted and need to lie down,” she says. Mewar struggles to find doctors who can manage her conditions properly. “Guidance from Long Covid support groups on social media, which predominantly have people from the US and UK, help me take care of myself,” she says, adding that the communities she is part of have close to 300 Indians.

The nature of Mewar’s job does not allow her to work remotely from home. So while her boss at the museum gave her a sabbatical between June 2020 and January 2021, even after rejoining, Mewar has to take frequent breaks during the day at work, because even a little extra exertion aggravates her symptoms. “I’m scared of this becoming a permanent debility. I’ve been told to just rest, rest and rest. But I’m not able to do that because I need my job and must report to work,” she says, adding that having a supportive boss and workplace are critical for long haulers.

In corporate circles, while Long Covid is definitely a conversation—from discussing health benefits like insurance to impact on overall work practices—it is not likely to be very detailed at this point, says Shanthi Naresh, careers business leader, Mercer India. “Productivity loss is a concern for organisations, and many companies are undecided about having a formal policy on extended employee recovery periods,” she says.

Alpana Dutta, partner, people advisory services at EY India, agrees that business affordability is a reality and if a business cannot afford something, it can become a short-term measure, but not a policy. “So unless an organisation can afford being generous



After recovering from Covid, Bhasha Mewar, a museum professional, is forced to take frequent breaks at work because even a little extra exertion aggravates her symptoms

with medical coverage, leave policy, vaccination etc, it is very difficult,” she says. “Many organisations have raised their hands and said, ‘This is all we can do. Beyond this, we empathise, but cannot support as an organisation.’” Therefore, according to her, the loudest statements with respect to taking care of the health and safety of employees are made by either companies that are large with deep pockets, or have gained business on account of the pandemic.

One such large organisation that has a multitude of policies to tackle the long-term implications of Covid-19 among its 21,000 employees (including 12,000 blue-collar workers) and 300,000-plus people in its extended ecosystem [like micro-entrepreneurs in its network] is FMCG major Hindustan Unilever (HUL).

“Extended absence from the workplace either because of an arduous recovery from Covid-19 or caregiving responsibilities, and how that impacts productivity, has very much been on top of our mind,” says Anuradha Razdan, executive director (human resources), HUL. The company supports its people through sick leave policy and encourages them to resume work only when they feel completely fit. Apart from undertaking vaccination

of employees and their families, HUL has increased the number of doctors and counsellors accessible to them, and has tie-ups with 214 hospitals across the country.

There’s a two-level business continuity plan that finds ways to cover for people’s tasks even if they fall sick, redeployment of talent when understaffed, and sensitisation of leaders and managers across levels, Razdan says. She adds that investment in medical infrastructure and employee welfare while ensuring availability of sufficient manpower at all times is the route to long-term resilience.

“Compassion does not need to come at the cost of business,” she says. “If we have prioritisation of health and safety, agile ways of working and redeployment of talent as per requirement, you can be compassionate without compromising on the commercial aspects of the business.”

Consistent and long-term mental health support is one of the biggest priorities for employees during this time, says SV Nathan, partner and chief talent officer, Deloitte India. He explains that apart from Covid-related policies like insurance cover for employees and their dependents, unlimited leaves, and redistribution

of workload to ensure people can take their time to rejoin work and those working are not overburdened by the long-term absence of their colleagues, the consultancy firm has started counselling helplines for employees and their family members.

“All of our 65,000 employees and their families have access to this confidential counselling helpline, 24x7, on all 365 days. Compared to before the start of the second wave, we have witnessed a four-fold jump in calls,” he says, adding that employees are also encouraged to reach out and check in on one another on a regular basis.

Awareness is paramount for empathy at the workplace, believes a senior sales associate at a data science startup in Bengaluru, who did not want to be identified. The 31-year-old has been suffering from brain fog, fatigue, blurry vision, nausea and gastrointestinal issues since October 2020. “Companies understand when you are suffering and give you leeway to a certain extent, but if there are people on the team who are just not aware of what someone can go through because of Long Covid on a day-to-day basis, they can be quite unsupportive and insensitive about it,” he says.

A senior media sales executive in Mumbai agrees that beyond a certain time, there is expectation from employees to perform like normal again. The executive, who did not want to be identified, was hospitalised twice: First, because of severe Covid in October, and then due to post-Covid symptoms in late December during which time he was completely immobile for a few days due to sharp pain in his body, among other symptoms.

He recounts how managers expected him to work as early as two-three days after both his hospitalisations, despite the severity of his case. He continues to experience frequent headaches, bouts of cough, sleep disorders, drop in energy levels, fatigue, and inability



to concentrate and handle stress. “Things get overwhelming faster than they used to before,” he says.

“My blood sugar is also on the higher side as a result of Covid. The doctor says if I do not manage a lifestyle, this could become a problem,” he explains, adding that if there are no defined company policies about how employees with Long Covid must be treated, many lay people cannot understand the severity. “If I was discharged and out of the hospital, it was assumed I could be back at work. Nobody asked or checked about what symptoms I was facing,” he says. “There needs to be a mechanism where the company is able to understand different cases in consultation with doctors and accordingly decide how much leeway needs to be given.”

Due to lack of a standardised company policy, employees have to rely on empathy and sensitivity of individuals, he says. While from a work perspective he did not receive much support and was expected to be back almost immediately post hospitalisation, the executive realised that some others in the organisation suffered disparity even with respect to the extent of company support during Covid treatment. “While I got the support I needed during my hospitalisation, from arranging ambulances to cashless insurance, different departments or managers behave differently,” he says.

Naresh of Mercer India says that given the emotional toll Covid takes on people, sensitisation of managers is forward-looking and necessary to ensure empathy on a day-to-day basis. Dutta of EY India agrees that managers need to develop skills to help stressed employees and deal with stress themselves. “It is important to study data around Long Covid in the organisation to design progressive wellbeing policies,” she says, adding that companies cannot follow a one-size-fits-all approach, particularly



“By prioritising health, safety, agile ways of working and redeployment of talent, you can be compassionate without compromising on the commercial aspects of the business.”

ANURADHA RAZDAN
Executive Director
(Human Resources), HUL

with respect to Long Covid.

Companies like ecommerce firm Flipkart and hyperlocal delivery startup Dunzo say they are putting in place personalised programmes to cater to specific physical and mental health requirements of employees.

Apart from Covid leaves, medical insurance, counselling support and vaccinations, Flipkart is placing an emphasis on regular, open conversations to address the evolving needs of the employees, says Chief People Officer Krishna Raghavan. “We encourage regular communication between leaders and their teams, to understand their day-to-day experiences and address any apprehensions they might have,” he says over email, adding that gathering insights and feedback almost on a real-time basis have helped the company implement

initiatives that have had a positive impact on the lives of employees.

“Tech has enabled us to ensure that we’re able to meet growing demand, but it’s never at the cost of the health of a [delivery] partner, team member or merchant,” says Geetanjali Swamy, head-people team at Dunzo. “Everyone’s reaction to Covid is different and keeping in touch with team members who are affected helps us solve their challenges. We are also evolving benefits on an everyday basis as per what people need,” she says in an email response, adding that the company is also providing sensitisation training, vaccinations, counselling and group therapy sessions.

Dr Garg of PGIMER stresses that awareness around Long Covid continues to be low among various stakeholders, which is why apart from corporate workplaces, it is important to continue disseminating information among medical professionals, patients, policymakers and the public.

According to him, health care facilities must be equipped to conduct regular follow-ups around the conditions of patients and study recovery patterns. Medical professionals could be more proactive and interactive with patients, particularly those who are not very literate or tech-savvy.

Dr Garg’s research article warrants setting up of dedicated, post-Covid care, multidisciplinary clinics, and rehabilitation centres. “Further research comprising cataloguing of symptoms, longer-ranging observational studies, and clinical trials are necessary to evaluate long-term consequences of Covid-19,” it states. He adds that the government needs to prioritise a coordinated and systematic collection of data around Long Covid, which needs to be made public. “This will help us create a more robust strategy, because Long Covid is going to be a huge challenge in times to come.”

THE RIGHT CHEMISTRY

With more than two decades of experience in active packaging chemistry, **Manish Jain founded Cilicant Chem Private Limited.** Despite being an indigenous company, his leadership and strategic approach catapulted Cilicant to a global level. We recently caught up with him to learn more about his entrepreneurial journey and his learnings.

MR. MANISH JAIN
FOUNDER AND MD, CILICANT



Cilicant has now established itself as one of the trusted brands in active packaging, what was the main pillar of thought behind creating this brand?

As you know that Rome wasn't built in a day. The journey from building a company to a brand requires years of persistent hard work and continuous improvement. My vision was to create a brand that symbolises a 'trusted partner'.

Tell us about the major milestones of your journey, how did it begin?

The most significant milestones in our journey have been guided by client feedback. Right from the beginning, my team and I always kept our eyes and ears open to pick up customer feedback. I believe that every customer or client sends signals or messages about his pain points or areas of concerns.

This keen understanding of our client's feedback enabled us to develop our products, manufacturing facilities and technical support.

Can you share with us the growth plans and vision for the company?

Of course!

With the motto of continuous improvement, we aim to be the fastest-growing active packaging manufacturer of India.

With the trust and support of our partners in the healthcare and food industry, we were able to establish our 3rd manufacturing facility in Pune in 2020. Soon, we are coming up with our 4th manufacturing facility to keep up with the demands of the industry.

What strategies were adopted or implemented on the operational level to provide effective customer service?

Desiccants in active packaging is mostly an 11th hour requirement of our customers.

Due to the active nature of our products, we ensure their efficacy by focusing on their packaging, from using hermetic sealers and barrier bags for our desiccant packs to selecting renowned logistic partners. These parameters ensure safe and quick delivery of our products to our customers.

Can you share an example of value addition to your healthcare partners?

For example, Accuflip has been a result of constant improvisation and has been touted as a value-added product for the active packaging industry. Accuflip is an RH regulating product and has addressed the needs of formulators and packaging specialists by solving the problem of over-desiccation.

As an entrepreneur, what has been your success mantra?

The key to building a successful brand is "Continuous improvement with accepting the changes."

Your major learnings in your entrepreneurial journey and advice to budding entrepreneurs?

I have been a learner throughout my life. The most significant learning over the years has been that TRUST is the foundation of everything, and it is more important to 'earn people' than 'money'.



“

My advice to entrepreneurs is to trust yourself, trust your vision, trust your team and focus on earning people than money.



CoWin: Global Aims, But Struggles at Home

Millions in India cannot access the online Covid-19 vaccine platform, while vaccine shortages and privacy issues add to concerns

By **DIVYA J SHEKHAR**

The Jawhar and Mokhada taluks in the Palghar district of Maharashtra are just a three-hour drive from Mumbai, but in terms of human development indices, they are many decades behind. They are home to tribes including the Warli, Katkari, Kokana and Mahadeo Koli, many of who are small farmers, landless labourers or daily wage earners struggling to make a living in the wake of the Covid-19 pandemic.

Vaccinating people in these taluks presents a different set of challenges. First is the fear of vaccines, due to low awareness, illiteracy and misinformation. Second, it is nearly impossible to use the digital-centric route through the CoWin platform, which the government calls the “technological backbone” of India’s vaccination process.

Many people in Jawhar and Mokhada do not own smartphones; among those who do, some cannot

navigate CoWin, while others struggle with patchy internet connectivity, says Sarika Kulkarni, founder of the Raah Foundation, which has been helping with vaccinations in these areas. “Many places do not have basic cell phone reception. Forget 4G, even the 2G network is poor,” she adds.

According to her, many tribals, including 40 to 50 percent of senior citizens, do not even have an ID proof, which is mandatory for vaccine registration. Getting IDs



District administration personnel have been helping those without digital access to register for Covid-19 vaccine doses

SANCHIT KHANNA / HINDUSTAN TIMES VIA GETTY IMAGES

made delays their vaccination by at least another two to three weeks, she explains, adding that CoWin allows just four registrations per ID card, which limits the ability of people with access to register others.

Kulkarni is working with the district administration officials and ASHA workers to facilitate offline vaccination camps that involve paper-based registrations. The beneficiary data is uploaded to CoWin only when there is network connectivity, and vaccination certificates are distributed later. “If we depend on the internet, we won’t be able to vaccinate even half the people in this area,” she says. “If a digital platform is at the centre of such a crucial process, there are bound to be multiple challenges.”

NEED EARS ON THE GROUND

The harsh realities of the Covid-19 vaccination process—low digital literacy, inadequate last-mile health infrastructure and vaccine supply constraints—have resulted in just 7 crore people getting fully vaccinated as of July 12; this is just about 7 percent of about 94 crore adults.

The government has set an ambitious target to vaccinate the entire adult population by year-end, for which it will need to administer about 188 crore doses. With six months to go, it is now on the 37 crore mark. Between January 16 and June 30, on an average 20 lakh people were vaccinated per day. To reach the target, this number has to go up by almost five times. Meanwhile, vaccine shortages and booking slots through CoWin has turned vaccination into a scramble.

The Supreme Court (SC) recently said that CoWin creates a digital divide in vaccine access, and that even the digitally literate are finding it difficult to get slots on the platform. “A vaccination policy exclusively relying on a digital portal for vaccinating a significant portion of the population of this country between the ages 18-44 would be unable to meet its target

of universal immunisation owing to such a digital divide,” said a special bench led by Justice DY Chandrachud in an order released on May 31. “It is the marginalised sections of the society who would bear the brunt of this accessibility barrier. This could have serious implications on the fundamental right to equality and the right to health of persons within the above age group.” The bench added that the government must have “ears on the ground”.

It is against the backdrop of these developments that the government is planning to take the CoWin platform to other countries for their vaccination programmes on July 5. “When our Prime Minister was reviewing the National Digital Health Mission on May 27, he directed us to open-source the software and platform, and give it as a gift to anybody who wants to

The Indian civilisation considers the whole world as one family, and the pandemic has made many people realise the fundamental truth of this philosophy, he said. “That’s why our technology platform for Covid vaccination, CoWin, is being prepared to be made open-source,” he said.

Back home, however, most Indians continue to struggle to access and navigate the platform. According to Statista, a data research firm, smartphone penetration rate in India is 41 percent in FY21, and is estimated to cross 51 percent by FY25. The SC, in its order, also pointed to a National Statistics Office Survey of 2018, which said that around 4 percent of rural households and 23 percent of urban households owned a computer, while internet access rate was at 15 percent in rural areas and 42 percent in urban areas during the same period.

“If I have to depend on someone else to access my rights, that itself is a disempowering experience.”

PRASHANTH N SRINIVAS, Assistant Director (Research),
Institute of Public Health, Bengaluru

use it. So we will give this free of cost to any country that wants to take advantage of the platform and modify it [as per their requirements],” says Ram Sevak Sharma, head of the CoWin platform and CEO of the National Health Authority (NHA). “Various countries have registered for the conclave, which you can count as an interest shown in the platform.” Sharma told *Forbes India* that close to 50 countries had registered for the conclave, including Iraq, Peru, Mexico, Panama, Vietnam, Canada, Dominican Republic, Uganda and Nigeria.

Addressing the global CoWin conclave on July 5, Prime Minister Narendra Modi said that India had decided right from the beginning to adopt a “completely digital approach” while planning its vaccination strategy.

Sharma believes that lack of direct access to CoWin is not a concern, as those who cannot self-register can get it done through health professionals at the vaccination site. He says that “80 percent of the people in this country get registered through walk-ins, only 20 percent are using the reservation and booking system”. He also says that assisted bookings can be made through call centres and Common Service Centres (CSCs), which are physical units set up to take e-governance services to rural and remote locations.

Aishwarya Narayan, research associate, Dvara Research, says that vaccination data estimates place the number of registrations through such assisted models at a meagre 1.5 percent. “Faced with some evidence on low availability and



uptake of CSC services in the context of vaccine registration, it is worth looking into the larger issues that plague their functioning,” she says.

According to Prashanth N Srinivas, assistant director (research) at the Institute of Public Health, Bengaluru, CoWin has not yet been able to fulfil its basic purpose, which is to improve the efficiency of vaccine delivery by making doses accessible at lesser human and manpower cost, compared to traditional inoculation systems. “If I have to depend on someone else to access my rights and entitlement to a technology, that itself is a disempowering experience,” he says.

He gives the example of Chamarajanagar district in Karnataka, where he is based, and where he works with the local Soliga tribe. The rural district has very little private sector penetration and development, and low literacy levels, Srinivas explains. “There are so many settlements where piped water has not yet reached. More than half the population does not have access to proper roads. There is no telephone coverage in many places. So I cannot even imagine CoWin’s role here.” Till June end, about 3,158 inhabitants of Chamarajanagar, out of 15,568 eligible ones, had received at least one vaccine dose.

Srinivas believes a CoWin-centric vaccination strategy is unsuitable for such settings. It is the concerted offline effort of local community leaders, health workers, non-profit organisations and district administrations that is driving the inoculation process, he says. “When districts realised that vaccination is the only way out, it also dawned upon them that CoWin will not work. So they tried to figure out ways to personally connect with each person to get them vaccinated.”

The system has self-corrected itself, he explains, with measures that involve generating awareness, putting manpower on the ground, and creating a paper trail to vaccinate people. “So CoWin’s purpose of being



“Eighty percent of the people get registered through walk-ins, only 20 percent are using the reservation and booking system.”

RAM SEVAK SHARMA,
Head, CoWin platform

a platform that provides sophisticated, real-time data is gone,” says Srinivas, adding that the platform should have factored in the diversity of ideas, people and geographies that interface with its technology. “Now CoWin is like this elephant in the room no one wants to address.”

In Delhi, for instance, the local administration has a “special arrangement authorised by district magistrate” to vaccinate homeless people, many of who do not have any form of ID, says Sunil Kumar Aledia, executive director, Centre for Holistic Development. He is working for the Delhi Urban Shelter Improvement Board (which runs over

209 temporary shelters with close to 4,000 people) where they identify one person in the shelter with an ID. “We create a patch of 100 vulnerable people who could get vaccinated, based on that one person’s ID,” he says.

Apart from the digital divide, many rural vaccination sites are far from villages and people do not have the means to travel. “So they wait for vaccination sites to be set up nearby. In villages, vaccination is not yet a priority, so people won’t do it themselves until we take the vaccine to them,” says Aliva Das, senior manager of non-profit Transform Rural India (TRI), which has close to 2,000 volunteers in Jharkhand and Madhya Pradesh to help people navigate CoWin. One challenge here is that while people do not know how to self-register, they are also skeptical about sharing their ID details with community workers.

Das adds that in the areas where she works, people between 18 and 44 years still had to pre-book slots on CoWin, instead of walk-ins. The Ministry of Health and Family Welfare had initially made online registrations mandatory for this age group, to reduce overcrowding at vaccination centres, but subsequently allowed walk-ins at all centres.

Das believes that the government

Long way to Go?

CoWin has been central to the Covid-19 vaccination exercise in India. While the platform has undergone many changes since it was launched in January, following are a few areas of concern expressed by experts and stakeholders



Exclusion

CoWin has been inaccessible to those without digital devices or technological know-how. Having to depend on someone else to register you and handle your health records is a disempowering experience



Limited Registrations

Current limit is four people per mobile number, which limits the number of people who can be helped by one person to access the platform



Data Security

In the absence of a data protection law, there is no way of knowing what exactly is going to be done with personal data, which parties it's going to be shared with, and for what purposes, thus creating room for speculation



Informed Consent

CoWin's privacy policy states that if Aadhaar is used for vaccination, beneficiaries may choose to get a Unique Health ID. There have been cases where people were not asked for consent for creation of the health ID, but ended up getting one, thus going against informed consent



Glitches

Users have faced glitches that have made it difficult to book slots and get vaccinated. For instance, doses received are not reflected correctly or there is duplication or non-receipt of certificates. People have also faced delays in OTPs and difficulties in grievance redressal



Access to Persons with Disabilities

CoWin's Captcha requirement makes it inaccessible to persons with visual impairment. Measures have to be taken to make it more user-friendly for persons with disabilities



Centralised Delivery Channels

Experts ask for greater coordination with district and block-level officials and greater empowerment to stakeholders at the local level to enable last-mile vaccinations in underserved locations. There is also need to monitor and empower local Common Service Centres

is not decentralising or opening more centres because of vaccine shortages. She has seen centres that need a minimum of 10 people to start vaccinations and prevent wastage, and if fewer people turned up, they were denied vaccines. "If denied once, people do not return for vaccination, no matter how much you persuade them," she says. Another reason vaccines have to be taken to rural people, instead of the other way around, is that many of them cannot afford to spend hours at the centres or make multiple visits, as it might lead to loss of earnings for the day.

Then there are glitches on the platform. Teekaram Mouhari, one of TRI's community volunteers from Samnapur block in Kanchanpur village of Madhya Pradesh, got vaccinated on June 1, but his certificate still doesn't reflect on CoWin. "They [officials] are saying it'll get updated, but it's already a month so we don't really know when it'll get resolved," Das says.

India's vaccination policy has seen multiple flip-flops. After launching it on January 16, the government initially aimed to vaccinate 30 crore health care and frontline workers,

senior citizens and persons with comorbidities by July, before vaccinating everyone else. On March 1, it opened vaccinations to people above 60 and those over 45 with comorbidities. On May 1, as Covid-19 cases began to surge during the second wave, the government opened vaccinations to all adults, which is close to 70 percent of 136 crore people, and placed greater responsibility with the states. This led to a scramble among states to procure vaccines, which were in limited supply.

This resulted in people desperately trying to book slots on CoWin, which got filled within seconds. "CoWin only shows vaccines available, right? It can't produce vaccines," says Sharma. "When vaccinations were opened for 18- to 44-year-olds, a number of vaccines were not available. There was a huge demand and less supply. But now the situation has changed completely. Now you can get slots easily."

Berty Thomas agrees that while the gap has been bridged to a certain extent in major cities, there continues to be significant disparity in many places. The analyst from Chennai,

who is also a programmer, struggled to find a slot when vaccinations were opened to all adults, and decided to gain an upper hand. He wrote a script over CoWin's public API (application programming interface) to help identify available slots for his age group in his city.

"There is a clear advantage in using the API, rather than going through the whole list of centres on CoWin, which was not user-friendly," says Thomas. It was not possible to quickly go through the entire list to spot vaccines available for 18+ people because CoWin also shows slots for the 45+ group, or centres with zero slots. "That is a challenge I wanted to solve, so that people can quickly access slots meant for them."

Thomas decided to run the script on the server that would issue alerts as soon as slots were available. His website under45.in adds people to relevant Telegram groups in their areas. As of July 1, his tool was being used in 675-odd districts across the country and has 41 lakh subscribers. As of July 5, code-sharing service Github showed 2,430 repository results for CoWin



slot-booking alert systems in India.

But despite the alerts, it is still difficult to find slots, Thomas says. “For example, until about two weeks ago in Ernakulam, Kerala, we had close to 60,000 to 70,000 people in the Telegram group wanting vaccines, but only 200 or 250 slots opened on a daily basis. Even those 250 slots did not come together, but in batches of 100 or 50, making it more difficult for people to access CoWin and book slots,” he says.

Thomas sees the usefulness of CoWin as a centralised database of information for studying data trends for pandemic management. “We face issues because everyone does not have access to the internet, plus there’s a vaccine shortage,” he says. “So while I understand the need for CoWin, I don’t know how well its current form has been thought through.”

HOW WILL ALL THIS DATA BE USED?

CoWin was created without a ‘privacy by design’ approach, says Prasanth Sugathan, legal director, Software Freedom Law Center, India (SFLC.in). “SFLC.in had flagged the lack of a specific privacy policy during its launch. It took the NHA almost five months to come up with a specific privacy policy.”

There are issues with the privacy policy in its current form too. For instance, under Use of Information is a term that those using Aadhaar may choose to get a Unique Health ID (UHID). However, for generating a UHID you need to be authenticated through any of the means for Aadhaar authentication at the time of verification at the vaccination centre.

Sugathan says they know of several instances where “people had not been asked for consent for creation of the UHID, but ended up getting one. This does not constitute informed consent,” he says, adding that creation of the UHID “under the garb of vaccination process” is not in compliance with the SC decision in *KS Puttaswamy vs Union of India (2017)*

on the Fundamental Right to Privacy.

Tanmay Singh, associate litigation counsel at the Internet Freedom Foundation, says that CoWin is following the Aadhaar playbook. “While people now have a choice to link CoWin with UHID, we have seen in the past how ‘voluntary’ has become ‘mandatory’ and people are left with no choice but to comply,” he says, adding that this is likely to become a bigger concern as the UHID gains ground in the wake of the scaling up of the National Digital Health Mission (NDHM). He points to how Digilocker is a partner programme for CoWin. “This is all a data-collection exercise.”

The Personal Data Protection (PDP) Bill, 2019, has still not been passed by Parliament, in the absence

“As per CoWin’s privacy policy, the obligation to keep your data secure is not upon CoWin, but on you, which is surprising.”

TANMAY SINGH, Associate Litigation Counsel, Internet Freedom Foundation

of which, there is no clarity on how the government will use the personal data collected via CoWin, says Singh. “This is a cause for concern, because we don’t know what is going to be done with this data, which parties this is going to be shared with, and for what purpose. It creates a lot of room for speculation, which, ideally, should not exist.”

He also says that as per the terms in CoWin’s privacy policy, the obligation to keep your data secure is not upon CoWin, but on you. “This is surprising, because once you have

given the data to CoWin, I’m not sure what you can do to keep your own data secure on the platform. So that is certainly a potential problem.”

Sugathan says that as per the privacy policy, users do not really have any control of their data. “They cannot delete their data from the CoWin portal once they are vaccinated. They cannot opt out from data-sharing with third-parties by the NHA,” he says. According to him, CoWin also needs to be made more accessible to differently-abled people. The Captcha requirement, for instance, makes it difficult for visually challenged people to access the site. “We are still hearing about people facing difficulties with grievance redressal and delays in OTPs. That needs to be fixed as well.”

Sharma, who was one of the main architects of Aadhaar in India as the chief of the Unique Identification Authority of India (UIDAI), sees a life beyond Covid-19 vaccinations for CoWin by deploying it for other vaccinations and immunisation programmes in the future. He says that in five months since its launch in January, CoWin has got about 300 million registrations. “You cannot say that a product has achieved finality in five months. It is obviously a work-in-progress and we will continue to add features as required by the policy or people-centricity of the platform.”

Singh agrees that officials have been consistently improving CoWin, based on feedback, which is why the platform today is not the same as the one that was launched in January. “But when you make a platform of this nature, and more importantly, when you make it the only way to access vaccines, you must get it right the first time. Because if there are issues that lead to even 1 percent of the population getting excluded, that’s more than a crore people,” he says. “With the technology solution as it is now, you stand to exclude not just 1 percent, but 20-30 percent of the population, which is a mind-boggling number.” **F**

Put To The Test

India is innovating solutions to ramp up Covid-19 testing. To what extent can this solve issues related to access, availability, undercounting and delays?

By **DIVYA J SHEKHAR**

ANIRUDHA KARMAKAR FOR FORBES INDIA



Has mukh Rawal, promoter and MD of Pune-based Mylab Discovery Solutions that launched India's first self-use Covid home test kit

Hasmukh Rawal believes the only way to prevent a third Covid-19 wave in India is to test, isolate and vaccinate.

The promoter and managing director of Pune-based Mylab Discovery Solutions launched India's first self-use home test kit for Covid-19 in late-May, after working

on it for almost six months. "It was the first time in the history of diagnostics in India that a mobile-based AI was being used in screening of an infectious disease," he says, explaining that normally, self-tests are conducted for blood glucose or pregnancy.

The Rapid Antigen Test (RAT), called CoviSelf, requires users to

register themselves on a mobile app. Its kit lets people take a nasal swab sample, put it in a prefilled extraction tube, add two drops of the swab sample to the test platform, and wait for 15 minutes. If the platform shows one line, the result is negative, and if it shows two, it's positive. Results after 20 minutes cannot be considered



“Self-use RATs are easily scalable, and can reach areas that lack testing infrastructure or laboratories.”

SANJEEV BHATT, senior vice president, corporate strategy, Meril

valid. The test card also has a QR code that can be scanned on the app.

Rawal says he wants to help people test, isolate and get treated faster. “During the second wave, testing didn’t happen at the right pace, which led to many complications,” he says, adding that while the standard RT-PCR tests have to be handled by trained technicians in a laboratory, home self-test kits can “reach even villages and rural areas, where there might not be a diagnostic centre, but people have phones”.

In June, Vapi-based global medical device and health care company Meril got an approval from the Indian Council of Medical Research (ICMR) for its indigenous rapid-antigen self-test called CoviFind. The method of collecting samples and testing them is similar to Mylab’s CoviSelf, as is the time taken for test results. Data generated through these tests are stored with ICMR.

Innovations in the diagnostics space are essential to meet the needs of India’s population, says Sanjeev Bhatt, senior vice president, corporate strategy, Meril. “Self-use RATs are easily scalable, and can thus reach areas that lack testing infrastructure or laboratories,” he says, adding that rapid antigen tests are also diagnostic solutions that are more convenient and affordable.

Bhatt intends to make 30 to 50 lakh CoviFind tests available in the market within the first month of launch. Meril has a tie-up with Piramal Pharma, as part of which 1,200 people on-ground will educate doctors and pharmacists about the test so they can guide consumers. This is apart from distribution through e-pharmacies, ecommerce platforms and a dedicated website.



RT-PCR vs Rapid antigen tests

- ◆ Real-time Reverse Transcription-Polymerase Chain Reaction (RT-PCR) and Rapid Antigen Tests (RATs) are the mainstay for Covid-19 diagnosis in India
- ◆ Companies are offering new RT-PCR and RAT solutions, and claim they save cost, time and manpower, while enabling scaling up and improving access to quality tests
- ◆ Some of the main distinctions are as follows:

RT-PCR	RAT
Molecular-based. Looks for viral genomic material specific to Covid-19	Detects specific proteins, known as antigens, on the outside or surface of the Covid-19 virus
Need specialised laboratories; time taken to provide results is capped at 24 hours	Faster and cheaper; don’t need labs; offer results in 15-30 minutes
Can detect even small amount of viral genetic material, so a test can be positive long after the person stops being infectious	Detects body’s immune response to the virus, and are not effective at the earliest phase of infection

SOURCE Nature; Johns Hopkins Center for Health Security; interviews

ICMR Guidelines for Home-based Testing Solutions

- ◆ Should be validated in India
- ◆ Manufacturers must ensure:
 - All material for sample collection, testing and disposal should be part of the kit
 - Kit should include detailed instructions for usage, interpretation and disposal of the test kit
- ◆ Must have an inbuilt system of data capture through mobile phone-based software
- ◆ Manufacturers advised to liaise with the data entry team of ICMR to ensure compatibility of data flow into the ICMR Covid-19 testing portal
- ◆ Once compatibility is ensured, regulator DCGI may be approached for approval
- ◆ Manufacturers not synchronising data with ICMR cannot market under the category of home-based testing solutions

Rawal says Mylab has the capacity to make 70 lakh CoviSelf kits per week and has rolled out close to 30 lakh kits in the market. Apart from multi-linguistic information and videos to cater to people across languages and socio-economic groups, the app allows “one phone number to create an unlimited number of profiles for testing, so people who do not have a phone can access the test with the help of someone in their vicinity who does”, he says.

According to the ICMR, real-time Reverse Transcription-Polymerase Chain Reaction (RT-PCR) and Rapid Antigen Tests (RATs) are the mainstay for Covid-19 diagnosis in India. While RT-PCR is considered the gold standard, it takes up to 24 hours in India, and requires a laboratory with skilled technicians. RATs take between 15 and 30 minutes, but are less reliable since they are not as sensitive as RT-PCR, which can detect even minuscule amounts of the coronavirus.

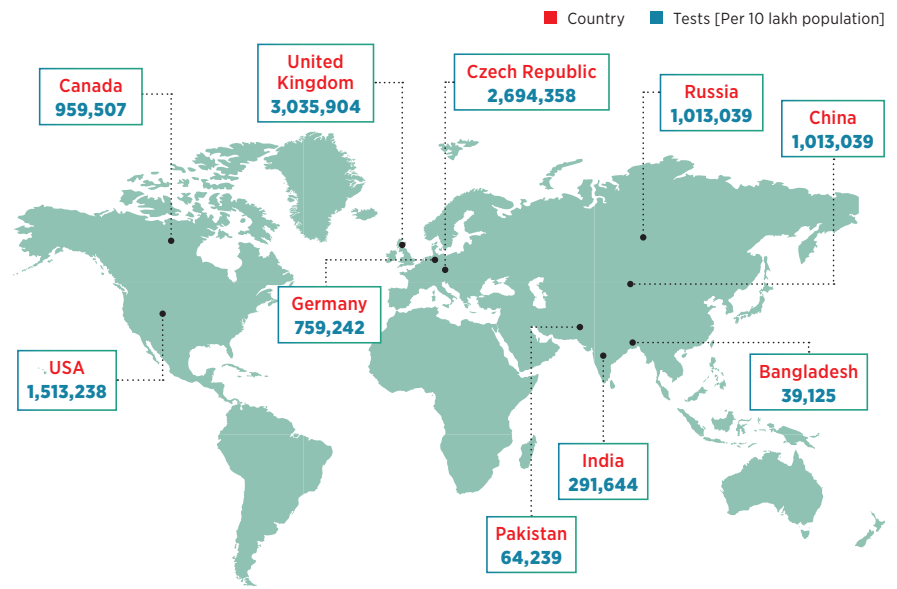
On May 4, at the peak of the second wave, the ICMR had stated in an advisory that, “At present, laboratories are facing challenges to meet the expected testing target due to extraordinary case load and staff getting infected with Covid-19. In view of this situation, it is imperative to optimise the RT-PCR testing and simultaneously increase the access and availability of testing to all citizens of the country.” It also suggested that in this scenario, RATs, with their short turnaround time, have the advantage of quick detection of cases and opportunity to isolate and treat early for curbing transmission.

Then on July 5, the ICMR said that about 120 RAT kits had been validated and found to be satisfactory.

Dr Viswesvaran Balasubramanian, consultant for interventional pulmonology and sleep medicine at Yashoda Hospitals Hyderabad, says RATs have a higher chance of missing a positive Covid-19 case, especially in those with low viral load. “Though still a matter of research, few manufacturing companies have reassured that the accuracy of diagnostic tests used to detect Covid-19 was unlikely to be affected by fast-spreading mutant strains of the virus,” he says.

Companies offering different RT-PCR or RATs claim they save cost, time and manpower, while enabling scaling up and improving access. Some examples include Tapestry Pooling by Bengaluru-based Algorithmic Biologics, which collects less-invasive, self-swabbed shallow nasal samples from multiple individuals to be pooled and tested in a single round using RT-PCR. There is the PanBio RAT device by Abbott, approved by ICMR, for home tests for Covid-19. Then there is Thermo Fisher Scientific, which launched a rapid point-of-care testing platform in June that uses the RT-PCR method to provide visual results in 30 minutes.

Testing Rate: Where Does India Stand?



SOURCE Statista; as of June 28, 2021

Map not to scale

CAN THEY REDUCE TESTING WOES?

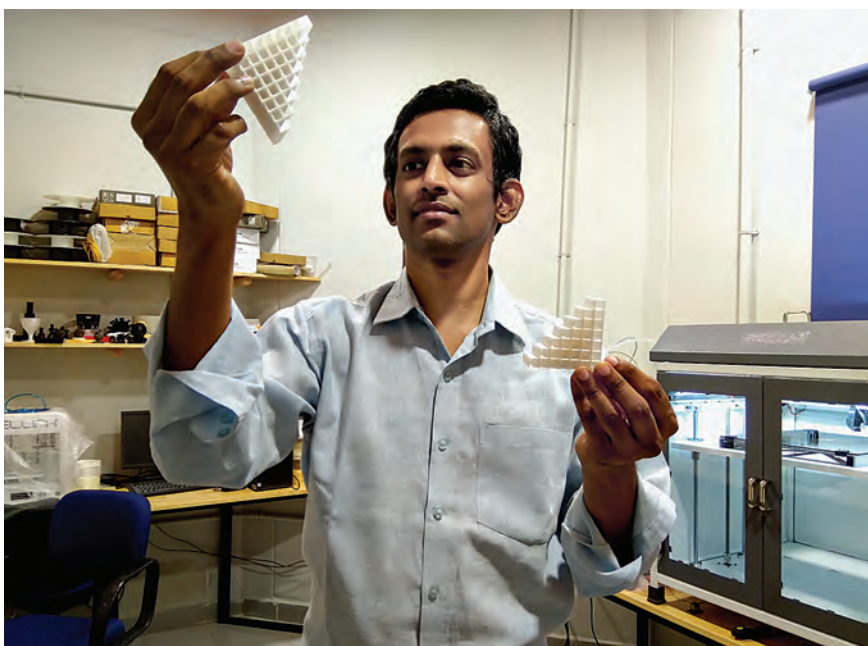
India’s testing capabilities have increased manifold since the beginning of the pandemic in March 2020. Daily testing numbers have exceeded 19 lakh, with a total of more than 40 crore since March last year, says Dr Balasubramanian. He adds, however, that the number of people tested per million (10

lakh) population remains low.

Last September, for instance, when the single-day count of Covid-19 cases reached 98,000, ICMR data says India was conducting 11 lakh tests per day. The number of daily cases increased by over four times since, reaching a high of 3.8 lakh in April, while India’s testing capability did not even double.

“Another point of concern is that the number of positive cases per 100 samples tested is around 7.35 percent, well above the recommended level of 5 percent,” says Dr Balasubramanian, explaining that one reason for this could be because only symptomatic people are getting tested, while asymptomatic ones continue to spread the infection. “A multitude of issues related to capacity, data monitoring, skilled human resource and supply chain constraints pose major challenges to strengthening testing capacity.”

India’s testing infrastructure was not equipped to fight sudden major surges in cases, and the country’s testing strategy has been more reactive than proactive, says Ameera Shah, promoter and managing director of diagnostics company Metropolis Healthcare. “It takes around 45



Manoj Gopalkrishnan, founder of Algorithmic Biologics



Thermo Fisher's reusable Accula Dock streamlines RT-PCR testing using a fully integrated, single-use microfluidic test cassette

60

days to two months to build or upgrade a Covid lab for new capacity. Therefore, it is difficult for any lab, even of scale, to expand their capacity overnight. By the time the capacity is expanded, the surge is already over," she explains. "The planning must be done much in advance."

Shah believes the government must have more frequent dialogues with stakeholders to take stock of the on-ground situation. She says in the wake of the second wave, she saw doctors confused about how to diagnose patients, given the evolving nature of the virus; there was pressure from consumers who wanted reports as soon as possible, while broken supply chains meant testing equipment and chemicals were not reaching labs on time, and health care workers were getting infected. With laboratories getting overwhelmed, people are spending more time waiting for results.

"In terms of testing, time is a variable that has not been fully appreciated," believes Manoj Gopalkrishnan, founder of Algorithmic Biologics, who has developed Tapestry to pool test samples in a bid to speed up and scale up coronavirus testing, while

reducing costs. "Because if one person is Covid-positive and you give that person 12 more hours to spread that infection in the community [due to delays in testing], you might end up with eight more cases on your hands."

Suppose one person in a group of 16 has contracted Covid-19. Individually, this would mean conducting 16 different tests. Tapestry Pooling attempts to identify who is positive in just one-fifth the number of tests. "We combine samples in different ways so that every sample ends up going to different cohorts," explains Gopalkrishnan, a professor at IIT-Bombay. "For example, you could arrange these 16 samples in a grid of 4*4, test all four samples in each row together and then each column. So you've done eight tests in total. Exactly one row will be positive, corresponding to the row of the person who tests positive, and exactly one column will be positive. From this information, you have uniquely picked

out that one person who is positive."

Gopalkrishnan is focusing on educational institutions, commercial office spaces and apartment complexes for deployment of Tapestry Pooling. "It has merit in any place where people see value in gradual reopening and resuming social interactions. Especially in a post-vaccination world, where we will look at those rare individuals who have the infection in an attempt to detect some early variant of the virus, this kind of testing becomes an important strategy to complement vaccination."

The solution involves weekly re-testing of individuals. "In that kind of situation, we do not expect more than 10 people to test positive. So if there are 1,000 people on campus and 10 or fewer have Covid-19, that's where pooling really shines," he says, adding that the biggest advantage is perhaps how the method allows a lab with a certain capacity to massively increase the number of samples it can test without buying new material or equipment, or hiring more people.

The idea is to reduce the time taken to test pooling samples using RT-PCR to 12 hours from the current 24 hours. "We also believe we can bring down the cost of testing by half in campus screening use cases. The goal is that if people on a campus are getting tested every week, then in a month each person should not be paying more than ₹1,000," says Gopalkrishnan.

Dr Balasubramanian says pooling samples of individual PCR specimens from high-risk groups such as migrant workers and international passengers in institutional quarantine facilities—followed by individual specimen testing only if a pooled sample tests positive—can save time and resources, and help understand disease patterns.

India's testing infrastructure can't fight sudden surges, and its testing has been reactive, not proactive

That said, he believes lack of skilled lab personnel and delayed reporting remain major hurdles. “Adhering to the recommendations of ICMR and usage of standardised kits might mitigate the problem to some extent.”

Testing requirements are evolving in various settings as per changing travel regulations, lockdown norms, health care needs, and with the emergence of variants, a standard lab-based RT-PCR test will need to be complemented with rapid point-of-care tests which are as accurate, says Amit Chopra, managing director, India and South Asia, Thermo Fisher Scientific. The company’s rapid point-of-care RT-PCR testing platform—Accula system, was launched in India in June. It has been developed by the US-based Mesa Biotech, which was acquired by Thermo Fisher earlier this year.

The testing platform has received an emergency use authorisation (EUA) from the US Food and Drug Administration (FDA) for the detection of the coronavirus in Clinical Laboratory Improvement Amendments (CLIA)-waived environments. The reusable Accula Dock, which can also be powered by a portable battery, is imported from the US, and streamlines RT-PCR testing using a fully integrated, single-use microfluidic test cassette. The final pricing will be determined by entities undertaking testing. The test uses nasal swab samples to provide visual results in 30 minutes.

It can be used in places like airports, ICU settings, ambulances, defence and sports arenas, amongst numerous other applications, Chopra explains. “For example, the rapid test is being used by the Cochin International Airport in Kerala, and will be very helpful as some countries may implement a protocol that mandates a rapid PCR negative certificate taken within four hours before departure for passengers travelling from India. This is not possible with standard RT-PCR

AALOK SONI



“There will be a reason and need for both PCR and home test kits in different settings, but PCR will always remain the gold standard.”

AMEERA SHAH,
Promoter & MD,
Metropolis Healthcare

equipment,” he says. Another example of the point-of-care platform is when patients are admitted to emergency care units in hospitals, and doctors need immediate test results to determine whether the patient needs a Covid ICU or non-Covid ICU. “The National Football League in the US is using this technology to screen players, spectators etc. Rapid testing is required in environments and scenarios where you cannot carry bulky machines or labs, but you need equally accurate results very fast.”

A FINE BALANCE

A lot of new tests and technologies have been launched due to the urgency of the Covid-19 crisis, but not maintaining the highest standards

could result in many active cases being falsely reported as negative, says Shah of Metropolis Healthcare. “For example, the glucometer has existed for a long time, but diabetes patients still often prefer to come to a lab and confirm whether their blood sugar levels are correct, as the glucometer does not always have the same level of accuracy as a lab test,” she says, adding that Covid home self-care tests have been developed in a much shorter time period. “There will be a reason and need for both [PCR and home self-test kits] in different contexts and settings, but PCR will always remain the gold standard.”

The ICMR has set a minimum acceptance criteria for sensitivity and specificity of rapid antigen tests. Sensitivity is a test’s ability to correctly generate a positive result for people who have the condition they are being tested for, while specificity is a test’s ability to correctly generate a negative result for people who don’t have the condition they are being tested for. For point-of-care tests that do not require transport to a laboratory, the ICMR has a 50 percent and above threshold for sensitivity and 95 percent and above for specificity.

The ICMR guidelines also suggest no repeat testing is required if RAT results are positive. But if a person is symptomatic and the RAT result is negative, then an RT-PCR is recommended. Dr Balsubramanian says, “Such sequential testing with an RT-PCR after a negative RAT report might increase the expenditure for screening.”

Going forward, prioritising last-mile access to diagnostic offerings will be an important task for the industry, stresses Bhatt of Meril. Another area with a potential for growth, according to him, is strengthening the diagnostics’ value chain to enable a “smooth, streamlined, robust and well-connected network that supports the delivery of medical diagnostics and devices”. **F**



Inhale. Exhale. Innovate

Noccarc Robotics and Biodesign Innovation Labs have built affordable ventilators from scratch to better suit Indian conditions and needs, while meeting global standards

By **JASODHARA BANERJEE**



When the Covid-19 pandemic arrived on Indian shores in 2020, the country was caught off-guard on several fronts. One of them was the acute shortage of ventilators. In April 2020, the Center for Disease Dynamics, Economics



& Policy (CDDEP), which produces independent and multidisciplinary research, estimated India had about 1.9 million hospital beds, 95,000 ICU beds, and 48,000 ventilators.

With Covid-19 still an unknown element across the world, and experts uncertain of ways to tackle it, ventilators emerged as an immediate way of treating critical patients. Expecting a massive surge in demand for ventilators in the coming months, the government of India, in March 2020, called on Indian companies to rapidly scale up manufacturing capacities and fill the supply gap. India Inc rose to the challenge, with established ventilator manufacturers as well as startups ramping up production capacity, inventing entirely new machines, and collaborating with other industry players in unprecedented ways.

Conventionally, ventilators are expensive and highly sophisticated machines, with high-end tertiary hospitals in big cities usually using imported variants that cost between ₹10 lakh and ₹30 lakh. Once installed, these complex machines cannot be moved around within the hospital, depending on changing requirements, and need trained technicians to operate and monitor them. These factors make it difficult for smaller hospitals, and those in smaller cities and towns, to afford and operate these machines.

The Covid-19 crisis presented an opportunity to fledgling Indian startups to take up the challenge of technological innovation and create ventilators that are at par with any world-class product, but better suited to Indian needs and conditions, and available at a fraction of the cost

of imported variants. Their aim has been to create ‘made-in-India’ products of superior quality that meet global standards and certifications, while keeping them affordable for hospitals of all sizes and capabilities.

When we started in late March last year, all we knew was that there was a pandemic and the country needed to get ventilators, and we had to put together a task force that would design, manufacture and deploy a world-class ventilator,” says Srikant Sastri, who, along with Amitabha Bandyopadhyay formed the IIT Kanpur Ventilator Consortium to assist Noccarc Robotics, a young startup, in building affordable high-quality ventilators for India’s hospitals. “Looking back, it was mad to set out that ambitious a goal.”

The team’s journey to successfully make the Noccarc V310 ventilator in a record time of 90 days has been documented in *The Ventilator Project*, written by Sastri and Bandyopadhyay, who were the team leaders in the project.

When the pandemic reached India last year, adversely impacting a wide range of industries, Pune-based Noccarc Robotics pivoted from clean tech to health tech, switching from making robots that clean solar panels to making ventilators. IIT-Kanpur graduates Nikhil Kurele and Harshit Rathore had founded the company in 2017. “The decision that we made last year was primarily driven by two factors: One, our existing business became highly restricted because of the lockdowns and we could not progress with it; and two, we realised that there was a requirement for medical technologies in the country,

Fledgling Indian startups have created ventilators at par with world-class products, available at a fraction of the cost of imported variants



and we could contribute meaningfully to that as we had experience of building complex electro-mechanical products,” says Kurele.

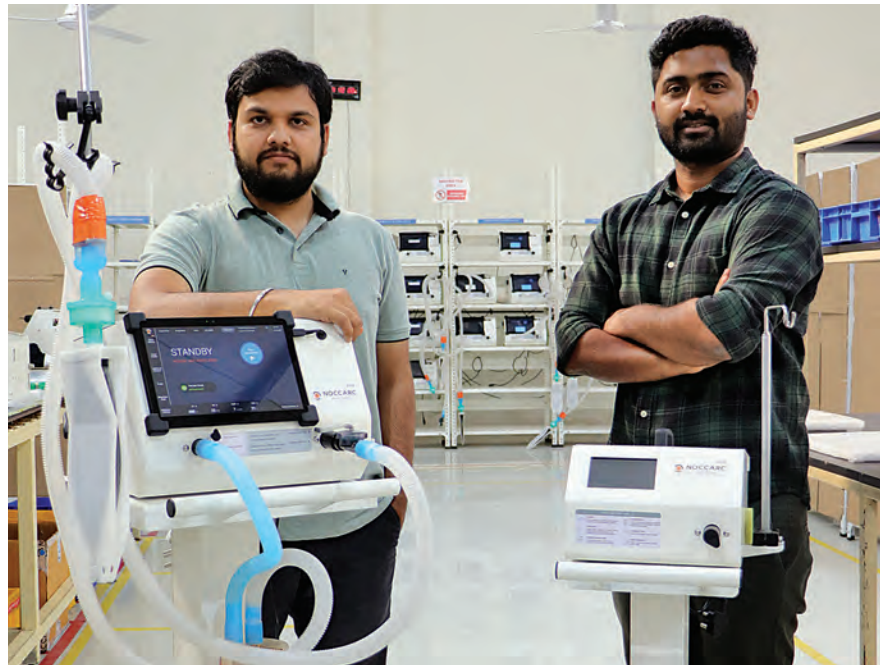
Sastri recalls how a process that usually takes 18 to 24 months to complete, was condensed into three months: “The only way we could do it was by bringing together many more experts. There were experts in charge of design, experts in charge of certifications, experts in charge of manufacturing and experts in charge of relationship with doctors, sales and distributions and service infrastructure.”

Talking about the challenges that they faced in the process, Bandyopadhyay says, “The biggest challenge was of the supply chain, because the whole world was under lockdown, and we were trying to make a machine with more than 500 parts. The other challenge was winning the trust of the market. No doctor would want to take a chance with a machine that they don’t have full confidence in.” But thanks to the reputable mentors that the team had on board, they were able to get an audience with some of the top doctors in the country and demonstrate the capabilities of their ventilator.

Sastri adds that another major challenge was the regulatory uncertainty that they came up against. “We could have made the ventilator in 50 days rather than 90, if regulatory requirements were clear. In the absence of those, we were second-guessing at all points of time,” he says.

The government had issued an initial set of specifications for the ventilator it wanted to procure, but, he adds, these specifications kept changing. “By the time we were ready with one version of the machine, we were told that additional specs were required, so we made another version, and then another. If the specs had been laid out clearly upfront in a transparent manner, we could have done it much faster.”

Kurele recalls that further



IIT- Kanpur graduates Harshit Rathore (left) and Nikhil Kurele founded Noccarc Robotics in 2017

“We would have made the ventilator in 50 days rather than 90, if regulatory requirements were clear.”

SRIKANT SASTRI, co-lead,
IIT Kanpur Ventilator Consortium

challenges lay ahead, as despite creating a ventilator that met all the specifications, orders were hard to come by. “Although we were the first Indian company to be certified by the Directorate General of Health Services [DGHS], and got certified on June 19 last year, we did not get any orders,” he says. “This was because orders for ventilators were placed even before DGHS approvals, with various domestic and foreign companies.”

Kurele says while government specifications and certifications ensure that an equipment meets the requirements, they do not specify the

quality of the product; it is up to the manufacturers to produce equipment that is of superior quality. “What we are trying to do is comply with US and EU certification standards, which will automatically raise the standard of the product,” he says. “Most medical equipment in India are imported, and hence are designed for European and US markets. Our designs keep in mind the ground requirements of India, with the quality standards of global markets.”

It was only by November-December last year that the ventilator made by Noccarc began to find acceptance and recognition among the medical community. While by the end of March 2021, the company had deployed 750 ventilators—“not in bulk government orders, but in ones and twos, to hospitals across the country who could earlier not afford imported ventilators,” says Sastri—and another 100 in March itself, it was during the second wave of the pandemic that orders picked up significantly. “Between April and June this year, we sold 2,500 units,” says Kurele. With the ebbing of the second wave, numbers have come

down, and although the company has the capacity to manufacture up to 100 units a day at its Pune plant, it normally makes about 40 units a day.

The fact that Noccarc's ventilators are being installed in some of the best hospitals in cities such as Mumbai, Pune and Delhi proves that they are being recognised for their capabilities and not simply their lower price. Noccarc has also found takers in hospitals in smaller towns such as Balaghat in Madhya Pradesh, and Surajpur in Chhattisgarh.

Bandyopadhyay says that "health care and related infrastructure has been neglected by most governments for far too long." He says that it appears from reports that apart from the quality of ventilators procured under PM Cares, there were problems of availability of spares, timely repairs and the lack of trained technicians at hospitals. Hence, buying ventilators and other medical devices is not enough to prepare for a third Covid wave; there should be long-term efforts to develop a testing and regulatory compliance framework, domestic production of reliable spares, and training of technicians to operate medical devices.

Unlike Noccarc, which had to pivot to making medical equipment, Biodesign Innovation Labs (Bild) was already making ventilators since its inception in 2017. "We visited more than 100 hospitals across India, including primary and secondary health care centres in districts, and found that there was an unmet medical need, where there was a shortage of ventilators, which led to mortality," says Gautham Pasupuleti, CEO and MD of the Bengaluru-based startup that manufactures respiratory support devices. "Existing respiratory equipment in the market are very expensive, and regular hospitals cannot afford them. Tertiary hospitals too had limited number of ventilators, which were manual variants, and



"We aim to save the lives of five million patients in the next five years with this product."

GAUTHAM PASUPULETI,
CEO and MD,
Biodesign Innovation Labs

they would refer patients to other hospitals because of the limited number of ventilators they had."

With the aim to bridge this gap, Bild made RespirAid—a portable mechanical ventilation device—which can even be used inside ambulances when a patient is being taken to a hospital. The four-year-old startup received support from the Biotechnology Industry Research Assistance Council (Birac, a not-for-profit state-owned enterprise under the Department of Biotechnology, government of India), the government of Karnataka, Nidhi Prayas and others. In order to ramp up production during the pandemic, Bild has tied up with Remidio, a Bengaluru-based maker of ophthalmology devices.

The company aims to reduce the cost of treatment by reducing the cost of equipment. "We want to create affordable Indian products that can replace the imported products, by not compromising on the quality and going through the necessary

validations and testing," he adds. "Right now, we are working with the government of Karnataka to deploy our ventilators in Tier II and III hospitals; we have also deployed our machines in Bengaluru hospitals," says Pasupuleti. "We have a target of saving the lives of at least 10,000 patients in the next 12 months, and 5 million patients in the next five years, with this particular product." It is currently working on increasing production capacity to 1,000 units per month to meet demands due to an expected third wave of the Covid-19 pandemic.

The company, which was a finalist at the Ayushman PMJAY and Tata Social Enterprise Challenge, was declared Winner of Pandemic Response Prize in the Cisco Global Problem Solver Challenge in July. Bild received a patent for its product this January, and has applied for patents in the US, UK, Australia, Japan and Europe.

Pasupuleti highlights the help it has received from the Karnataka government, and how its product was referred to the state health department, which gave it the opportunity to do pilot projects. "The government's support has been useful where getting patents and patent reimbursements are concerned. But there are more incentives for commercialisation that are required," he says. "Getting payments are a significant challenge, and as a startup we have to plan for alternative funding. Significant funding is required to commercialise medical equipment in India, and that is missing right now. We learnt that as a medical device startup, even when we are working with the government, we need working capital to manage orders."

Bild is currently in talks with potential investors to raise between \$0.5 million and \$2 million in funding. It is also looking to export its products to Africa—countries such as Tanzania and South Africa—where it has tied up with a distributor. **F**



Going Viral: Fear And Fake News

Misinformation and mistrust surrounding Covid-19 vaccines are slowing the pace of inoculation, and the problem might be more deep-rooted than we think

By MANSVINI KAUSHIK

On June 28, senior advocate Prashant Bhushan posted a series of tweets about how Covid-19 vaccines are unsafe.

His comments were soon flagged as misleading by Twitter.

In response to the backlash, he put out a detailed clarification on Twitter titled 'Why I Am Vaccine Skeptic', where he claimed that while he is not anti-vaccine or anti-science, he is aware of scientific views on several subjects being driven by "political, commercial and media-vested interests", and serious adverse effects of vaccines being underreported.

Experts and fact-checkers, however, even flagged as misleading some of the reports Bhushan, 64, cited to make his case. For instance, the advocate quoted a report that uses data from a June 18 technical briefing by Public Health England (PHE) to claim that those who have received a Covid-19 vaccine are six times more likely to die from being infected by coronavirus variants than those who have not taken the shots. The PHE data in the report, experts have pointed out, has been taken out of context, as it incorrectly gives the number of deaths among vaccinated and non-vaccinated people without taking into consideration other factors like age group, comorbidities etc.

"Why can't those in the establishment take opposing views like mine?" Bhushan asks *Forbes India*. "There's enough research to show that the disadvantages of taking the vaccine far outweigh the advantages,"

he says, adding that he believes Indians have developed robust immunity against the coronavirus because "50 percent of the population has been infected by the virus".

He says, "Just like we do not know how long the natural immunity will last after the disease, we do not know how efficient the vaccine will be. There

is no point in injecting a vaccine that has not passed proper testing phases and was rushed."

Doctors and scientists, however, say Covid-19 vaccines currently administered are safe and efficacious (see Myths vs Facts). "Vaccine development has gone through rigorous safety and testing. The process has been expedited at



various steps, but the steps have not been ignored,” says Dr Akhil Singh, assistant professor, anaesthesiology, pain medicine and critical care, All India Institute of Medical Sciences.

He explains that the literature around antibodies produced by Covid-19 vaccines is evolving and there is no conclusive evidence yet on how long natural immunity lasts. “It is important to be sceptical of everything, even science,” he says. “But public personalities should be aware of the weight of their words and choose them wisely. Especially in the middle of a pandemic that has claimed so many lives... and when we know that mass vaccination is the only way to end it.”

The problem, however, is not just limited to Bhushan. Many Indians are wary about getting inoculated

“Vaccine development has gone through rigorous safety and testing... the steps have not been ignored.”

Dr AKHIL SINGH,
Assistant Professor, AIIMS

for multiple reasons, including lack of trust in the government, misleading reports, lack of data in the public domain, and fear-inducing misinformation through social media.

Vaccine-related misinformation fuels hesitancy, which is a huge

challenge, says Shankar Kaul, managing director of information and analytics company Elsevier India, which is helping institutions and health care workers with Covid-19 research. This fear has a direct impact on India’s vaccination numbers, which are dismal due to factors ranging from vaccine supply constraints to rural-urban access divide.

India has set an ambitious target of vaccinating its entire adult population by year-end, for which it will have to administer close to 188 crore doses. With less than six months to go, the country’s vaccination numbers stand at 37 crore as of July 9, with close to 30 crore people receiving the first dose and seven crore individuals receiving both doses. Kaul points out that the total number of fully-vaccinated people represents just about 5 percent of India’s population.

Low vaccination numbers, when combined with misconceptions and fear, are risky, he says. “For instance, there is a common misconception that after taking the vaccine, a person does not have to wear a mask. Vaccinated people can still infect other people, which is a high risk given that only 5 percent of the population has been fully vaccinated so far.”

According to Kaul, this calls for the government at both the Centre and state-level to collaborate with health care providers, non-profit organisations, and public health experts to amplify the reach of verified information. “Regular communication through mass media channels can also help to a certain extent,” he says.

INFODEMIC IN INDIA

An August 2020 report by the *American Journal of Tropical Medicine and Hygiene* highlights that in the first three months of 2020, nearly 6,000 people were hospitalised globally because of coronavirus misinformation. During this period, the report says, at least 800 people may have died due to misinformation related to Covid-



CHAITANYA DINESH SURPUR



19. Injury or death was a result of following unscientific advice, such as eating large amounts of garlic, taking vitamins to treat infections, or self-diagnosis such as holding their breath for a certain period of time.

The dangerous implications of misinformation led the World Health Organization (WHO) to coin the term ‘infodemic’, which is “an overabundance of information and the rapid spread of misleading or fabricated news, images, and videos”.

“Infodemics and rumours create mistrust and undermine public health responses at the national and community levels by confusing people and nudging them to adopt risk-taking behaviours, such as refusing vaccination,” Dr Roderico H Ofrin, WHO representative to India, tells *Forbes India*. “Infodemics surge during health emergencies, when evidence-based information about a disease is still evolving, which leads to uncertainty that both confuses and scares people and prompts them to seek information from every possible source, some of which may be unreliable.”

In India, misinformation has been propagated even by political leaders, public figures, and celebrities. For instance, yoga guru and businessman Baba Ramdev, Niti Aayog’s VK Paul and Madhya Pradesh Chief Minister Shivraj Singh Chouhan have claimed that immunity boosters can be used for treating Covid-19. Doctors and experts have said that such claims encourage people to try untested therapies and wait too long to seek medical help.

Ayush 64, for instance, is a polyherbal concoction that the Ministry of Ayush said has been “found to be useful in treating mild to moderate cases of Covid in clinical trials”. No clinical data has been released to verify the claim. Ramdev falsely claimed that Patanjali’s Coronil tablet was certified by the WHO and can be used as a “cure for Covid-19”, which was later endorsed by former Union

Myths vs Facts

India started its Covid-19 vaccination programme on January 16, and since then, there has been misinformation surrounding vaccines and their development.

Below are a few common myths addressed by Dr Niranjana Patil, scientific business head—infectious diseases, microbiology, and molecular biology—and biosafety officer, Metropolis Healthcare:

1. Myth: The Covid-19 vaccine is unsafe as it has been developed quickly

Fact: Authorised vaccines are proven to be safe and effective

2. Myth: We can do away with masks after vaccination

Fact: Masking, hand washing and social distancing remain necessary in public places until a sufficient number of people are vaccinated and have developed herd immunity

3. Myth: Once I receive the vaccine, I will test positive for Covid-19

Fact: None of the authorised vaccines can cause you to test Covid-positive. It is, however, possible to get infected with the virus before the vaccine has had time to fully protect your body. Vaccination is necessary to teach our immune systems how to recognise and fight the coronavirus. Getting infected after vaccination reduces the risk of severe health complications

4. Myth: I’m not at risk for severe Covid-19 complications, so I do not need the vaccine

Fact: Regardless of your risk, you can still contract the infection and spread it to others, so it’s important you get vaccinated

5. Myth: Vaccines cannot be taken during menstruation

Fact: Vaccines are non-hormonal and do not affect the menstrual cycle. It is safe to take them during menstruation

6. Myth: Covid-19 vaccines in India contain pork

Fact: Pork gelatine has sometimes been used as a stabiliser in vaccines for some diseases, but neither of the two Covid-19 vaccines—Covaxin and Covishield—rolled out in India has pork

Health Minister Harsh Vardhan.

There is a need to make accurate information available to people in a timely manner, says Syed Nazakat, founder of DataLEADS, a digital media and information initiative

that conducts data analysis, fact-checking, media research and development initiatives. “Data deficiency and information vacuum allow misinformation to flourish.”

SPREADING FEAR

The WHO has declared vaccine hesitancy as one of the top 10 threats to global health, says Anand K, CEO, SRL Diagnostics. “Lack of trust in the newly developed vaccines, fear of side effects and even unfounded fear of death, inconvenience of booking slots on a web platform have all led to vaccine hesitancy,” he adds.

Dr Niranjana Patil, microbiologist and scientific business head of Metropolis Healthcare, says people in India are not as vaccine-resistant (objecting to vaccines) as they are vaccine-hesitant (being unsure about getting the vaccine). “Risk perceptions and demographic characteristics, socioeconomic status and political ideology have all led to a decline in India’s vaccine uptake,” he says.

This hesitancy stems from various dubious, uncorroborated claims being circulated online, such as videos claiming that vaccines contain tracking devices, or can alter our DNA, says Nazakat. Other recent fear-provoking claims, he explains, have been that of the Bharat Biotech’s Covaxin containing calf-serum and few videos claiming that the vaccine has dangerous amounts of potassium chloride, which is used in lethal injections. “The most dangerous has also been the false claims that people aged below 50 who took the vaccine are expected to die within five to 10 years. Vaccine hesitancy grows largely from this kind of misinformation,” explains Nazakat.

RIPPLE EFFECT IN RURAL INDIA

Rural India is home to 65 percent of India’s population, amounting to nearly 90 crore people. As per a *Reuters* analysis, published on June 7, titled ‘India’s Vaccine Inequity Worsens as Countryside Languishes’,

114 of India's least-developed districts, home to about 18 crore people, had administered only 2.3 crore doses of Covid-19 vaccines. Almost the same number of vaccines had been administered across nine cities—Mumbai, Delhi, Kolkata, Chennai, Bengaluru, Hyderabad, Pune, Thane and Nagpur—“which combined have half the population of the least developed districts”, the report states.

Adding to this is unflinching fear. “People think they are test subjects for the government, and that if something happens to them post-vaccination, no one will help them. It is hard to explain to them that vaccines are for their benefit,” says Anuradha Jakhoda, an ASHA worker in Bichpuri village of Uttar Pradesh. “For the past few months, getting them to believe in us has been difficult.”

A case in point is Beena, a domestic worker in Jalandhar, Punjab, who does not want to get vaccinated. “I won't be able to bear the expenses of hospitalisation if anyone in my family gets sick after vaccination,” she says, adding that she has heard that people in the village died after taking the shots. “Vaccination is not for us, it is for those who can afford treatment,” says Beena, a single mother of four children.

“The biggest challenge with misinformation in rural and urban India is not just that false information makes people believe unscientific and harmful claims, but it is also making them less likely to accept truthful information,” explains Nazakat.

Some villages are using language and culturally-relatable messages in awareness campaigns that are proving to be effective. Examples include messages in the local dialect in rural Nashik, Maharashtra; songs and memes in the Wagdi dialect in Banswara and Dungarpur in southern Rajasthan; videos in Kurku, the indigenous language of tribals in the Amravati city of eastern Maharashtra.

WHO is working closely with the central and state governments to

identify and correct rumours. “We do this by actively listening to people's concerns and addressing them by sharing verified information. This creates information literacy that builds resilience to misinformation and fake news, and empowers communities to identify genuine sources to make evidence-based choices,” says Ofirin. “Health care workers, ASHAs in particular, are the first point of information source for the community and WHO supports the provision of latest, accurate and simplified information for them to deliver.”

WHO's field workforce in India constitutes 2,600 people in 23 states, who act as amplifiers and listeners. They have become the voices for credible information.


PERILS OF SOCIAL MEDIA

A January 2021 study by doctors from Rochester, US, and Pune, published in the *Journal of Medical Internet Research*, points out that 30 percent Indians use WhatsApp for Covid-19 information, and just about as many

fact-check less than 50 percent of messages before forwarding them. About 13 percent of respondents say they never fact-check messages before forwarding. “Rumours on WhatsApp have resulted in chaos, panic, and mob lynching in many parts of the country. People are led to believe anything,” says Nazakat, adding there have also been cases of doctors and health care workers falling for misinformation.

To aid medical experts and curb the spread of misinformation, Elsevier has launched the Covid-19 Healthcare Hub, a platform for evidence-based information and tools. “We aligned localised resources with global care standards to provide frontline workers with a single source of credible data to help with prevention and management of the disease,” says Sonika Mathur, global chief content officer, Elsevier.

Over the past year, Elsevier has researched the Alpha, Gamma, Zeta, Beta and Delta variants, and has partnered with experts to provide vaccine administration resources and clinical guidance on vaccines available for use and in development. “The judiciary and the government have also had a role to play in combating misinformation and vaccine hesitancy,” says Biranchi Narayan P Panda, assistant professor (law), Xavier Law School. Some of the initiatives taken by the government, he explains, include setting up a 24-hour portal to curb the spread of fake news on the direction of the Supreme Court, invoking Section 54 of the Disaster Management Act, 2005, to punish persons indulging in spreading fake news, and directing social media companies to remove posts spreading misleading information around Covid-19.

Nazakat says the dangers of misinformation are worse than most people realise. It needs a multifaceted, multi-disciplinary and long-term approach. “There is no magic bullet,” he says. “Combating misinformation should be the topmost priority.” 

WhatsApp and Covid-19 Misinformation



A scientific study published in the *Journal of Medical Internet Research (JMIR)* in January 2021 surveyed 1,137 Indians for an insight into how Covid-19 misinformation on WhatsApp shaped behaviour:

31% Indians use WhatsApp as a source of information

30% Fact-check less than 50% of messages before forwarding

76% People think an attached link and/or citing of sources increases the credibility of messages

33% Respondents trust messages from unknown senders

Most likely to receive misinformation: People above the age of 65

Least likely to receive misinformation: Those under the age of 25

SOURCE: ‘Demographic Factors Influencing the Impact of Coronavirus-related Misinformation on WhatsApp’, JMIR (January 2021)



What Women Want

Women's health is still usually misunderstood as just reproductive health. While femtech startups are trying to change that, the industry is underfunded and witnessing a slow growth

By **ANUBHUTI MATTA**

ANIRUDHA KARMAKAR FOR FORBES INDIA



70

In 2019, 500 women were tested in a Pune-based OPD for cervical cancer and 20 of them showed pre-cancerous lesions. A previous Pap smear test had missed these in 14 women.

They were tested with Smart Scope, a hand-held cervical health screening system that uses artificial intelligence (AI) to classify abnormalities in a body cavity to enable a trained health worker to provide results in a single visit. The Smart Scope, says Veena Moktali, can provide results in under seven minutes.

Moktali and co-founder Koustubh

Naik's Periwinkle Technologies launched the Smart Scope in 2019. It is an innovation in the femtech sector, an industry that is still at a nascent stage due to underfunding despite its massive potential, given that women in India lack awareness around sexual health and access to medical intervention.

A term that encompasses products and technology that cater to women's health needs, femtech has so far been limited to period tracking, fertility, pregnancy, maternal and child care, and family planning to empower women to better track

PERIWINKLE TECHNOLOGIES

Co-founders: Veena Moktali, Koustubh Naik

What's it about: In 2019, the startup launched Smart Scope, an AI-based hand-held cervical health examination system

"Cancer screening facilities are only available in specialty hospitals or labs in big cities. As a result, over 90 percent of Indian women never get screened and many don't even know that they are at a pre-cancerous state."

—Veena Moktali

and understand their data.

"However, women are much more than their reproductive capabilities, and women's health

goes beyond the needs of fertility and reproduction,” says Suchismita Das, industry analyst-health care and life sciences practice-at research and consulting firm Frost & Sullivan.

“India still has a lot of room for development to create awareness, affordability, and accessibility to cater to specific women’s health issues. Femtech in India needs to spread its wings from just period care to advanced technologies that can make life better for women,” she adds.

Moktali agrees. In India, 17 percent of all cancer deaths among women aged between 30 and 69 are due to cervical cancer. The National Center for Biotechnology Information estimates that cervical cancer will occur in approximately 1 in 53 Indian women during their lifetime compared to 1 in 100 in developed countries.

Despite the alarmingly high figures, India does not have a nationwide government-sponsored screening programme, even though breast cancer and cervical cancer can be cured if diagnosed at an early stage.

“The current cervical cancer screening methods are subjective and time-consuming. Moreover, these facilities are only available in specialty hospitals and labs in big cities. As a result, over 90 percent of Indian women never get screened and many don’t even know that they are at a pre-cancerous state,” says Moktali.

Smart Scope can be made available even in small private clinics, nursing homes, municipal dispensaries, primary health care centres and district hospitals. It has benefited over one lakh women spanning six states in India and has made remote expert reviews available across three continents. Not only its portability, but also its low operational cost is helping many more women get diagnosed in the early stages. Moktali says under the Ayushman Bharat scheme, a Smart Scope test and a colposcopy-guided biopsy can cost under ₹1,000, whereas in private setups, the clinician can provide the Smart Scope test at



MYAVA

Founder: Evelyn Immanuel

What’s it about: Through its website and an app, women with chronic conditions such as PCOS, thyroid and insulin resistance can get access to gynaecologists, nutritionists, fitness coaches, dermatologists and personalised plans for a fee

“One in five Indian women in India has PCOS. Despite the incidence, there is very little help available that offers holistic solutions. There was a huge unmet need for such interventions and MyAva is bridging that gap.”

—Evelyn Immanuel

a cost similar to a Pap smear test, but without the dependency on an external lab and associated delays.

But its major advantage, she says, is that it gives quick results, compared to the week-long turnaround of a lab-based test. This has helped in many ways. She recounts an incident of a tribal woman who didn’t visit a clinic that was four hours away for further investigations despite being advised by a visiting doctor in her village that her symptoms signal cancer.

“For women in villages, daily wages are far more important than their own health. They will not spend

days travelling for tests and results. For this woman, when the Smart Scope showed her in the red band immediately after she got tested, she understood the complexity of the situation and turned up at the clinic the next day,” Moktali says. For another bank manager, the device helped her detect the pre-cancer in grade-II stage and she was able to access a minimally-invasive treatment on the same day instead of having to take more work days off.

The aim is to now expand operations in other states, increase private health care sales and enter markets outside India.

While Smart Scope could possibly be an answer to the long-standing problem, it is still a drop in the ocean considering the gamut of women’s needs that remain unaddressed. The industry’s focus has only now started to shift towards pre-menopause and menopause issues, along with other areas such as endometriosis, pelvic health, fibroids, thyroid problems, mental health issues, and PCOS.

MyAva is one such platform that was founded to help women



OOWOMANIYA

Co-founders: Krutika Katrat,
Sneh Bhavsar

What's it about: An online network for women to discuss their health and emotional wellness safely and privately with doctors and counsellors

"It is a tragedy that even in present times, women's health is one of the most neglected subjects when it comes to funding, supporting or encouraging. As a business, often it doesn't attract the typical investors and for many of them, bold communication and feminism doesn't fit into their cultural orientation."

—Krutika Katrat

deal with chronic health issues. Launched in July 2020, the Bengaluru-headquartered lifestyle management website and app helps women deal with polycystic ovary syndrome (PCOS), thyroid, and insulin resistance.

According to medical reports, one in every five women in India suffers from PCOS, a hormonal disorder characterised by irregular menstruation, obesity, excess hair growth and acne. MyAva's founder, 31-year-old Evelyn Immanuel, is one of them.

"The idea was born out of the frustration of being prescribed birth control pills after pills, and moving from doctor to doctor. The fact that there was no holistic solution to this made me want to look at offering an integrated management for chronic conditions in women," says Immanuel.

On the platform, a team of various experts, including gynaecologists, nutritionists, fitness coaches, dermatologists and mental health professionals are currently helping 15,000 women navigate various chronic conditions that require a holistic approach and often demand lifestyle changes. Through its community page, women can discuss their PCOS journey, avail of a PCOS guide curated from clinical research papers that are free of cost. Through its subscription plans priced between ₹2,500 and ₹14,000, the platform offers counselling, a personalised PCOS diet



and workout plans, infertility support and hair and skin treatment plans.

For Dr Apoorva Pallam Reddy, a fertility specialist and laparoscopic surgeon who has been associated with MyAva for over a year, platforms like these are important

because they make medical care a little more accessible to all.

"There has always been a gap between gynaecologists and Indian women especially because they fear being judged or get unsolicited advice. Technological platforms are now helping bridge this gap and help patients get access to friendly, non-judgmental care," says Dr Reddy. "If women don't reach out, it prevents them from taking the right course of treatment and in conditions such as PCOS, it might lead to long-term fertility issues. And Covid-19 has highlighted the need for more such platforms," she adds.

Realising the need for having a safe and non-judgmental space for women, Krutika Katrat and Sneh Bhavsar launched OoWomaniya in 2014.

What started as an anonymous experience-sharing platform is now a one-stop solution for women to access information, experts and services related to their health, says the duo. On a website, it brings together a panel of credible and reputed experts to help in verifying

Prime Growth Segments in Femtech Pre-Covid-19

Fertility solutions

Menstrual care

Pregnancy care

Avenues of Growth Post-Covid-19

Menopause and geriatric care

General health and wellness

Pelvic health

SOURCE Frost & Sullivan

content and answer user queries.

“We also felt the need to pivot to offline services to tackle the acute lack of information and basic knowledge about reproductive health issues among women. We expanded to colleges, schools, corporates and even in rural areas to educate girls and women on menstrual hygiene, pregnancy and other health-related issues,” says Bhavsar.

While these offline programmes are run in five states, women can also access information through their web portal and content partner sites. An expert consultation is available through web and mobile applications for ₹99. This has helped more than 1.5 million women.

“OoWomaniya as a digital platform will grow at a steady pace, more so because of the pandemic. It has changed the way people access information and services. We look forward to growing the digital apps to reach out to more and more people in the coming five years,” says Bhavsar.

In addition to these health-centric femtech startups is another startup to tackle women’s hygiene. Woloo is a tech-enabled loo-discovery platform, funded by JetSynthesys, which helps women locate the nearest washroom whenever they are away from home or office, says its co-founder Manish Kelshikar.

Through the Woloo app, women can easily find Woloo hosts (premium restaurants, and QSRs that have tied up with the company) and Woloo powder rooms near suburban train and bus stations, temples, and tourist places through a subscription plan for ₹99 a month.

“When you think of a toilet facility, there is an assumption of the stink, unhygienic and unsafe environment that comes to your mind. That is precisely what we wanted to change,” says Kelshikar.

These powder rooms with toilets are air-conditioned facilities with a café and a women-centric convenience store selling sanitary products



“Pregnancy and motherhood are unfortunately the only need most men as investors can relate to.”

SHUBHRA JAIN

Physician-turned-investor, who is also on the advisory board of Femtech Collective



Picking Up Pace

- At least **50%** of the **core femtech companies** globally are managed or founded by **women entrepreneurs**, either as a part of solution to their own health problems or by understanding the gaps in **health care**
- Over the **past five years**, femtech has received more than **\$15 billion** in private and public funding. Funding across the key segments through VC has exceeded **\$1 billion**
- Investments are mostly from the **US (72%)** followed by **China (11.5%)**, **Israel (5.74%)** and **EU** (a total of **10%** from the **UK, Switzerland, Sweden, Spain, Germany, Netherlands and Ireland**)
- Other countries like **India (0.5%)**, **Africa and Hong Kong (0.2% each)** are slowly picking up pace

SOURCE: Frost & Sullivan

and more. They also have diaper changing stations and feeding zones.

While the plans were to open 10 powder rooms a year, there are now 1,500 in Mumbai, including Woloo hosts that have tied up with the organisation to make their toilets hygienic and safe. On the drawing board are more than 25,000 geo-tagged washrooms in over 160 cities.

“More than eight million people, 41 percent of whom are women, use Mumbai’s local trains and they don’t have access to clean toilets. Women we’ve spoken to say they don’t drink water for hours before they have to travel for the fear of having to use a public toilet. Woloo is not just a toilet but a place for women to catch breath, relax, or wait for someone if they need a safe space to do so... our mission is to provide hygiene dignity to 150 million urban working women,” says Kelshikar.

MEN vs WOMEN

Although femtech startups are slowly starting to emerge and are revolutionising women’s health, the industry remains a stepchild of digital health, feels Das.

According to a Frost & Sullivan report, the femtech market revenue will cross \$1 billion by 2024, growing at a compound annual growth rate (CAGR) of 12.9 percent (2019-2024). Despite a cumulative of \$2 billion that has been invested in the women’s health space, it represents less than three percent of the total digital health investments between 2013 and 2020.

In addition, while the pandemic led to a huge jump in funding for digital health solutions, femtech solutions have not experienced the same growth, Das says. “A major chunk of this amount, approximately 65 percent, directly goes to companies addressing fertility, pregnancy, and motherhood—areas that have somehow managed to collectively represent femtech as an industry,” says Das.

This is because VC (venture capital)

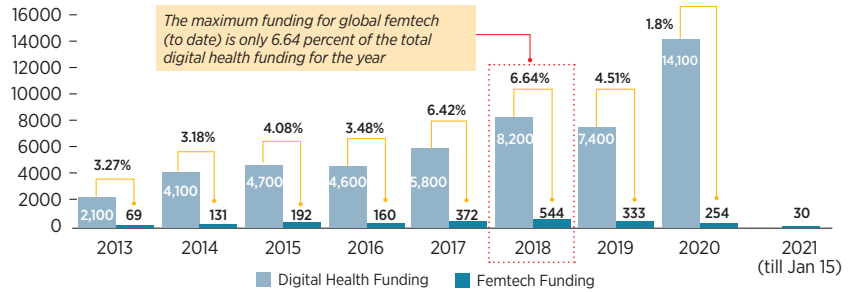


funding is still witnessing gender bias wherein male investors are unable to understand and relate to women's needs and solutions. "If a comparison is drawn between menopause and erectile dysfunction, the latter led companies to heights, whereas the former remained underfunded and insignificant," Das adds.

Another problem with the paucity of women in boardrooms and senior leadership is that it is often difficult for major corporations to fathom business opportunities that femtech products capture. "They are often dismissed as 'niche' opportunities with a 'small market', says Dr Shubhra Jain, a physician-turned-investor, who is also on the advisory board of Femtech Collective, a global network of health tech professionals. "Pregnancy and motherhood are unfortunately the only need most men as investors can relate to. There is a whole sector of the female population beyond the age of 40-45 who struggle with challenges like menopause, vaginal dryness, incontinence and more which have still not gained much attention. There is also a whole industry around sex-tech and pleasure-tech to empower and enable women to take control of their pleasure and life whose potential remains untapped," she adds.

Katrat of OoWomaniya, who raised seed funding through a private investor and won grants from the government's startup funds, says, "Investors have often looked at us as a non-profit that works for women. It is a tragedy that even in present times, women's health is one of the most neglected subjects when it comes to funding, supporting or encouraging. As a business, often it doesn't attract the typical investors and, for many of them, bold communication and feminism doesn't fit into their cultural orientation." She adds, "We have had our share of disappointments from investors, industry leaders, but our users have always valued our work, so we have sustained our business without being

Digital Health vs Femtech Funding (\$ mln)



Note: Excludes sexual health and Femtech pharmaceutical funding
Funding data for Digital Health is only provided for the US

SOURCE: Rock Health (for Digital Health Funding), Frost & Sullivan Funding

financially dependent on investors." Katrat's experience is something investors are aware of.

In its research phase before launching the Athena scaling programme to mentor women entrepreneurs and offering funding



"Women are much more than their reproductive capabilities... their health is beyond the needs of reproduction."

SUCHISMITA DAS
Industry analyst, Frost & Sullivan

to selected startups, Anthill Ventures spoke extensively with them. And some common themes emerged, says partner and leader of the programme, Kabir Kochhar. "Financial planning and fundraising are concerns, especially with female founders that, at times, don't have a male co-founder. There is also a large concern with government relations and vendor management where women at times are not taken as seriously as male counterparts. There is a need to connect first-time female founders with their entrepreneurial peers and strengthen their own networks," he says.

Given equal opportunities, women businesses perform on a par with men-led enterprises, says Arati Menon-Gupta, a partner with the programme. "Women are underrepresented in the investor community, and by this, I mean both as VCs and investors and also as venture-backed entrepreneurs. Stereotypically, if you are a VC, you are almost certainly a man," she says.

"It has also been observed that women-led companies, with some degree of risk aversion, are less inclined to pursue external financing options. Many of them prefer to provide a large chunk of startup capital by themselves. A combination of all the above factors and gender bias on the part of men leads to this vicious cycle that has been difficult to break," she adds. **F**

By the time Devina Bose, 65, noticed a lump in her breast, the tumour had advanced to stage four. Tests revealed that the cancerous cells were hormone receptor positive, which means they needed estrogen and progesterone to grow and spread, but HER2 negative, referring to a growth-promoting protein found on breast cells.

She was immediately put on hormone therapy drugs to lower her female hormone levels and make them less available to the growing cancer cells. Bose, a high court judge whose name has been changed, responded well to the treatment, says Dr Pramod Kumar Julka, director of oncology at Max Hospital in Delhi and former dean of AIIMS.

But to better understand how likely the tumour was to grow and spread, Julka suggested genomic sequencing. A “liquid biopsy” or sample of blood was sent off to a specialised lab to look for pieces of DNA from the tumour cells circulating in Bose’s blood. The results revealed a mutation in a gene called PI3K found in about 30 to 40 percent of breast

Fixing The Code

Even as genetic-sequencing technology becomes cheaper and faster, the adoption of precision medicine, which decodes a patient’s DNA to treat them in a more personalised, targeted way, remains limited in India. What will it take to turn it into an everyday reality?

By **VARSHA MEGHANI**

cancer patients. Luckily for Bose, a drug called Alpelisib, developed by Novartis to specifically inhibit the PI3K mutation in advanced breast cancer patients who are hormone receptor positive and HER2 negative, was approved by the FDA only two years ago. She’s recently started the medication; clinical trials have found it to cut the risk of death or disease progression by a third.

If not for genomic sequencing which is the key to precision medicine or idea of treating patients in a more personalised, targeted way, Julka would have relied on the cookie-cutter approach of surgery, radiation, and a blast chemotherapy to rein

in Bose’s cancer. “No two patients with the same stage of disease respond to the same treatment,” says Julka. “Precision medicine is not the future, it is the present.”

Ever since the first human genome was sequenced in 2003—taking 13 years, hundreds of scientists and costing almost \$3 billion—doctors have been predicting an age of precision medicine. Back then, much of it was hype, given the costs and time involved in sequencing a single genome, that is reading every one of the three billion letters of genetic information contained within the DNA in every cell of the human body. Over the years, the technology



Scientists working on genome sequencing at the MedGenome lab in Bengaluru



has become faster and cheaper—a genome can now be sequenced for \$1,000 in a single day—yet the practice of precision medicine is yet to take off in the manner predicted.

“Cost is the biggest challenge in the adoption of precision medicine,” says Dr Ramesh Hariharan, co-founder and CEO of Strand Life Sciences, a Bengaluru-based company that sequences genomes. Unlike the US where insurance companies cover health care costs, patients bear out-of-pocket expenses in India. That explains why genomic testing has become a routine, standard of care in the US for cancer patients, whereas in India, patients like Bose have to shell out vast sums—₹6 lakh in her case—for similar tests.

In fact, rarely do doctors require a patient’s whole genome to be sequenced. Usually “panel sequencing” is performed where a few hundred genes relevant to the patient’s ailment—as opposed to all 20,000 present in the human body—are examined for abnormalities.

For example, in the case of a neurological disorder, a doctor can request for panel comprising a few hundred genes and gain valuable insights. Companies like Strand or MedGenome—leaders in the space in India—carry out for anywhere between \$200 and \$400. In the US, while base tests would cost a similar amount, overheads such as costs connected with the interpretation and analysis of the data generated and genetic counselling can take the total up to \$3,000, says Hariharan. “No one can afford that in India, so we don’t charge for overheads. That enables more patients to opt for sequencing. As we achieve scale, our costs will drop,” says Hariharan.

But waiting to achieve scale before prices fall is a chicken and egg situation. Costs must first fall for patients to opt for reading their DNA, but only if more people opt for the latter will prices fall. “The lowest hanging fruit is the cost of reagents



“Cost is the biggest challenge in the adoption of precision medicine... As we achieve scale, our costs will drop.”

DR RAMESH HARIHARAN,
Co-founder and CEO,
Strand Life Sciences

that go into genome sequencing machines,” says Hariharan. They help to process the DNA and are currently imported from the US. But import duties are as high as 50 to 55 percent, says Hariharan. If that’s rationalised, costs would come down considerably.

NEEDED: LOCAL SEQUENCING

Besides, India lags behind in cataloguing local genomes; such reference databases form the very foundation of precision medicine. While the first human genome was sequenced in 2003, the first Indian genome was sequenced in 2008 by a team of scientists led by Dr Sridhar Sivasubbu and Dr Vinod Scaria at CSIR-Institute of Genomics and Integrative Biology (CSIR-IGIB) in Delhi. Once a patient’s genome is sequenced, the data generated needs to be compared to a healthy reference genome to look for any variants or mutations. At present, reference

databases are skewed towards Caucasian populations. South Asian representation is a mere 10 percent, according to 2019 study by Sirugo et al.

While this does not matter in the case of monogenic disorders caused by a single gene, according to Hariharan, it does matter when identifying mutations in polygenic disorders caused by genetic and lifestyle factors. For monogenic disorders, companies like Strand Life Sciences and MedGenome draw on global datasets to find gene mutations as well as their in-house data compiled over the years.

“India represents 17 percent of the world’s population with extensive genetic diversity but is underrepresented in global sequencing datasets,” says Sivasubbu. Even efforts like the GenomeAsia100K study, a global effort to sequence the genomes of Asian people, included just 598 samples from India—mostly specific castes from the south.

“Population-specific genome sequencing of Indians can help in characterising variants associated with diseases, improving precision medicine outcomes,” explains Sivasubbu. This was the “impetus” for the ‘IndiGen’ programme which sequenced the whole-genomes of 1,029 healthy Indian individuals in 2019. The database is publicly available. In a parallel effort, the GenomeIndia Project, spearheaded by Vijayalaxmi Ravindranath, was launched in January 2020 and aims to carry out whole-genome sequencing for 10,000 Indians from various representative communities.

But sequencing an individual’s genome is not the “ultimate aim”, says Scaria. Turning the reams of data generated by genome sequencing into “actionable results” is the end goal. This led Scaria to set up the Genomics for Understanding Rare Diseases India Alliance Network (GUARDIAN) along with Sivasubbu. Over 300 clinicians across 80 health care centres in the country refer rare disease patients to the GUARDIAN team who, in turn,

sequence their genomes or exomes, followed by computational analysis to identify variants in the patients' genes. If mutations are indeed found, the team works to develop low-cost diagnostic tools and therapies to help the patient. For example, a few years ago, the team was able to diagnose a rare mutation in the MLC1 gene connected with neurological and muscular growth. Six children from a family belonging to the Nalband community in Agra were crippled by frequent seizures, bamboo-thin limbs and bloated heads. Their condition worsened with every passing year, so much so that the parents petitioned the government to terminate their lives. Local newspapers carried news of the family's predicament, which caught the attention of the CSIR-IGIB scientists. A doctor at AIIMS noted that the symptoms appeared to fit a rare class of genetic disorders called leukodystrophies. Whole exome sequencing revealed a variation in the MLC1 gene of all the affected children.

As a follow up for this, an additional 83 members of the community were screened. Out of these, 24 were found to be the carriers of the gene and nine were affected. In order to aid the community, a polymerase chain reaction (PCR)-based test for the mutation in MLC1 was developed by the GUARDIAN consortium for carrier status determination and prenatal screening, at an affordable cost. "This is where you see the real impact of our work," says Sivasubbu.

PRIVACY WORRIES

While "significant" progress has been made in using genomic sequencing to detect and treat various forms of cancer, for paediatric neurological disorders and rare genetic diseases, there are legal and regulatory hurdles that need to be overcome before precision medicine percolates to the grassroots, says Dr Vedam Ramprasad, CEO of MedGenome, a large player in the genomic sequencing space, based in Bengaluru. Since genetic

tests reveal underlying conditions or the risk of developing those conditions later on, the information can be used to discriminate against individuals. Insurance companies may deny premiums; employers may choose not to hire them. The US has legal protections against such discrimination but India does not have substantial laws in this regard. "Until you have safeguards against such discrimination, precision medicine cannot truly be achieved," he says.

Additionally, in the absence of data privacy laws in India, the onus is on companies to safeguard sensitive medical data. "We put it upon ourselves to comply with the

"You can monitor data from smart devices and implants. We're getting closer and closer to the human body to unlock real-time information."

DR ENG LIM GOH,
Chief Technology Officer
for Artificial Intelligence,
Hewlett Packard


EU's GDPR and the US-based Hipaa data protection laws," says Hitesh Goswami, founder and CEO of 4BaseCare, a Bengaluru-based startup that is developing curated panels to be used in sequencing cancerous tissues.

A GENOME ANALYTICS ECONOMY

Genomes are but one source of personal health data. There are several other sources such as information from medical tests, electronic health data like the kind collected by telemedicine companies since the onset of the pandemic and

real-time data from wearables like smart watches. All of these sources combined can help doctors better tailor treatments to individual patients. "You can monitor data from smartphones, wearables like smart watches and even embedded devices like implants. So we're getting closer and closer to the human body to unlock intimate, real-time information. This is all in addition to genome sequencing data," says Dr Eng Lim Goh, chief technology officer for artificial intelligence at Hewlett Packard. The rise of artificial intelligence and machine learning tools will help analyse these reams of data, adds Goh.

It helps that India has a strong IT sector, points out Praveen Gupta, managing director and founder of Premas Life Sciences, the Indian partner of US-based Illumina which makes state-of-the-art genome sequencing machines. "Pundits say that in the next five to six years, 15 percent of the world's population will be whole genome sequenced. If it takes 100 GB of data for a genome sequence, for 1.5 billion people, 25 to 30 exabytes of data will be needed. To put that in perspective, the entire data content on YouTube, globally, is 0.8 exabytes. Imagine the kind of data generation and analytics possibilities." People will be needed to make sense of this data. Says Gupta, "If we can train our manpower, we can be leaders in this industry. We didn't invent computers, but we created the IT industry. In the same way, we haven't invented genome sequencing but we can create a genome informatics economy."

The possibilities are endless and the promise enormous. "Genome sequencing should become as routine an MRI," says Sivasubbu. No one can pin down how long that will take, but the Covid-19 pandemic has thrust forward the agenda. Says Strand's Hariharan, "It's created a large amount of awareness about genome sequencing. Nothing could have built this in such a short span of time." 

Streaming Now: BookMyShow and its Fightback

Battered by the pandemic, BookMyShow is trying to reinvent itself by getting into multiple streams. Can it put up a good show?

By RAJIV SINGH

First came the climax. “Early last March, movie ticket sales were at an all-time high,” recalls Ashish Hemrajani.

BookMyShow, India’s largest movie and event ticketing company, was set to end the fiscal year on a high note. “Everybody was riding high. The entertainment business was doing phenomenally well,” says the founder and CEO of BookMyShow. The company posted ₹594.19 crore in revenue from operations in FY19, and was primed to stage a much better show in FY20. Hemrajani, the hero of the show, was excited about the future.

A few days later, entered the villain, and the anti-climax. Towards the end of March, the country went into a lockdown due to the Covid-19 pandemic. Everything got shut down, screenings stopped, events paused, and businesses came to a screeching halt. Nobody saw it coming. “There are things you can’t control,” rues Hemrajani. The show business braced itself for a merciless battering. Hemrajani, for his part, was getting mentally prepared for a long take. “It won’t end soon. Maybe a year, if not longer,” he prophetically told one of his friends last April.

Hemrajani’s caution stemmed from experience. At the peak of the dotcom bust in 2001, and just two years into his venture of digitising ticketing solutions for cinemas and



MEXY XAVIER

booking movie tickets via phone for customers and delivering to their homes, Hemrajani was forced to cut the headcount of Big Tree Entertainment by 96 percent. From 150, the rolls shrank to six. “We did what was right for the organisation,” he says. “It’s [cutting jobs] not a happy moment. It doesn’t make us proud.” His voice falters and he pauses for a moment. “We are battle-hardened as an organisation,” he lets on.

Two decades later, it’s time for another battle. After posting revenues of ₹701.40 crore in FY20 and getting

close to 95 percent of it from the sale of movie tickets and events, BookMyShow has been mauled by the pandemic. After a partial reopening last year (five months of FY21, from November to March), theatres are shut again, as the country battles the second wave of the pandemic. On-ground events are still a thing of the past, and movies are released on ‘over the top’ (OTT) platforms. What this means for BookMyShow is a prolonged period of pain. The headcount, this time, has been slashed by 48 percent—from 1,450 to 750.

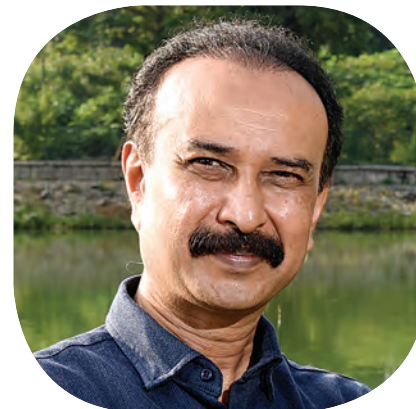
Though Hemrajani declined to share financials for FY21, one can get a sense of the hit that companies in the entertainment and movie industry have taken from the performance of PVR, India’s biggest theatre player. The multiplex operator posted a total revenue of ₹749 crore in FY21 as against ₹3,452 crore in FY20.

While Ebitda during the same period shrunk from ₹1,114 crore to ₹134 crore, PVR posted a loss of ₹748 crore as against a profit after tax of ₹27 crore a year earlier. “FY21 was marked by never before seen challenges for the multiplex industry,” said Ajay Bijli, chairman and managing director of PVR, earlier in June.

While PVR is doing its bit to keep a lid on fixed costs, shoring up liquidity and generating revenue from new sources like, among others, private screenings, BookMyShow has been exploring new levers of business in a bid to reinvent itself. Take, for instance, BookMyShow Stream. The Transactional Video on Demand (TVOD), or ‘pay per movie viewed’, was rolled out this February, with 600 movie titles. Within four months, the service has seen a brisk uptick: Over 2 lakh streams, 33 percent new transacting users and 1,200 titles. “Over 40 percent of the content is exclusive to BookMyShow,” asserts Hemrajani.

Last year, the company started BookMyShow Online, a video streaming for live entertainment

HEMANT MISHRA



“We are bullish on the strategy ahead and BookMyShow’s category leadership is all set to compound.”

PRASHANTH PRAKASH
FOUNDING PARTNER, ACCEL

across music, comedy, and other performing arts. This vertical too has been promising growth. Till last December, 37,381 hours of content was streamed, and over 2.35 lakh consumers bought tickets to watch virtual events. “We just need to make sure that when we come out of Covid, we are more efficient, nimble and agile,” says Hemrajani, sounding optimistic about the future.

He is not alone in seeing a silver lining. The backers of BookMyShow too sound upbeat. “We are absolutely bullish on the strategy ahead,” says Prashanth Prakash, founding partner at Accel. The venture capital (VC) firm first invested in the company’s series A round in 2012, and followed it up with funding in series B and C rounds in 2014 and 2016, respectively. “We have no doubt that BookMyShow’s value creation and category leadership is all set to compound,” he adds. While the pandemic has persisted and has

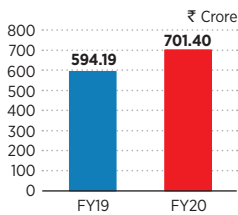


The Covid-19 pandemic is not the first crisis Ashish Hemrajani, founder and CEO of BookMyShow, has faced. And he wants to make sure BookMyShow comes out of it more efficient and agile

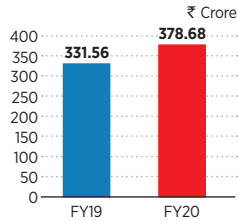
Revenue grew at a brisk pace till FY20...



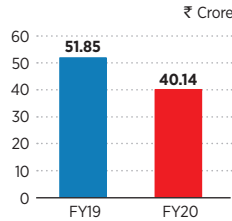
Consolidated revenue from operations...



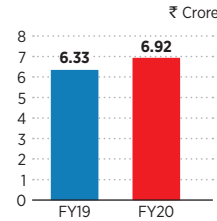
...and the break-up
Income from online
ticket booking



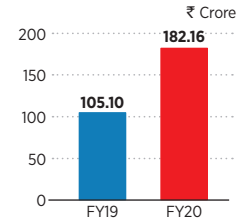
Income from turnkey
ticketing solutions



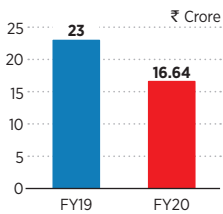
Income from sale and
maintenance of software



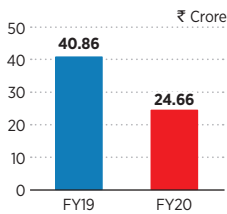
Income from live events



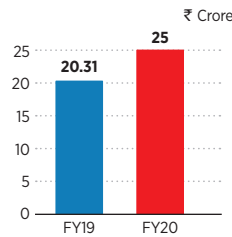
Income from advertising
and marketing



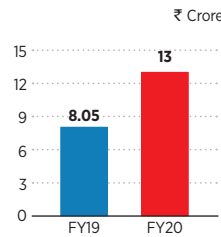
Ticketing revenue
(bulk booking)



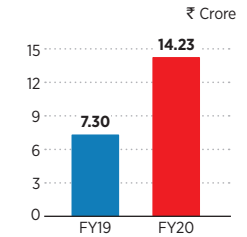
Income from breakage



Income from sale of food
and beverages



Other operating income



SOURCE: Company/RoC

hurt the entertainment industry significantly, BookMyShow's ability to react swiftly and change track to move from out-of-home entertainment to all-things-entertainment is a result of the deep foresight and experience of its founding team, he maintains.

What gives Prakash hope is the history of the ticketing major, which has battled crises in the past. The company, he says, has experienced multiple challenges in its journey, but has successfully adapted each time, and bounced back stronger. Apart from Accel, other backers of BookMyShow include TPG Growth, Stripes Group, Elevation Capital, and Network18, which publishes *Forbes India*.

Exploring new streams of revenue, reckon analysts, is the need of the hour. "BookMyShow will have to reinvent itself," contends Surya Mantha, senior partner at VC fund

Crises, layoffs...

2001

Dotcom bust

96% cut;
from 150 to 6

2020-21

Covid

48% cut;
from 1,450 to 750

Unitus Ventures. The company needs to figure out if there is a similar value to aggregation of online streaming events at one destination. They could experiment with new revenue models of content-led subscription packages. The company, Mantha says, may also have to become a bigger producer of events as opposed to simply curating and marketing them on its platform.

The task, though, won't be easy. Reason: Sales from online streaming and virtual events are not likely to make up for the loss of movie ticketing and physical events, which form a bulk of the revenue. Moreover, it would be naïve to expect the four-month-old BookMyShow Stream to turn into a money-spinner overnight. There is another problem. Though growing at a fast pace, TVOD is still a niche space in the OTT world, which is dominated by advertising VOD (AVOD) and

subscription VOD (SVOD) players like Netflix and Amazon. “The strong identification of BookMyShow as a ticket booking platform might hinder wide adaptation of its streaming vertical,” says Ashita Aggarwal, marketing professor at SP Jain Institute of Management and Research. One needs to build awareness as well about the new offering. Take, for instance, Flipkart and Amazon. Both the ecommerce majors had to spend considerable time to let consumers know that they can shop for grocery on the platform. “It can’t happen overnight,” she says.

Hemrajani, for his part, is confident of the new strategy. He starts with the biggest reason. “We understand movies better than anybody else,” he says. BookMyShow, he claims, has 200 million customer visits per month, and 80 million monthly active users. What this means is that data analytics will reveal how many of the users did not watch a certain film or a piece of content. “So we built our stream as a second opportunity for them to catch the product,” he says. BookMyShow Stream offers users the option to rent a movie for a finite duration or buy it for unlimited access with prices ranging from ₹40 to ₹700, depending on the rent or buy option, as also the recency and scale of the movie.

The second strong moat is the ‘windowing period’, which enables it to stay away from taking on OTT players head-on. After any theatrical release there’s a windowing period of four to six weeks before the content goes into the long tail of OTT. “This is how we position BookMyShow Stream,” he says. What BookMyShow needs to do, he says, is to ensure that the right content is married to the right data set.

But will the streaming gambit pay off? After all, BookMyShow did try to dabble in radio streaming in the past, but it bombed. Hemrajani is convinced about hitting the bull’s eye. “Our success is founded on a pile of failures,” he says, acknowledging

...And the fightback with new initiatives



BOOKMYSHOW ONLINE

- **Online video streaming** for live entertainment launched in May 2020
- Offers content across **music, comedy,** and other **performing arts**
- Hosted **virtual music festival Sunburn Home Festival**, apart from international performances such as **Rambo Circus’** digital edition
- Till last December, **37,381 hours** of content was streamed
- Over **2.35 lakh** consumers bought tickets to watch virtual events



BOOKMYSHOW STREAM

- Launched in February this year with **600 titles**
- Stream offers option to **rent a movie** or buy it for **unlimited access**
- Charges range from **₹40 to ₹700**; has sold over **2 lakh streams**
- Stream has added **33%** new transacting users, and has **1,200 titles**; target is to have over **2,000 titles** by next **February**
- Over **40%** of the content is exclusive to **BookMyShow**



BOOK A JOB

- Started in **June** this year, consumers can **book slots**, make online payments via **BookMyShow app** and **website**
- BMS offers discovery, search, authentication, booking of **vaccine slots** as also **certificate access** across cities
- BMS charges a **convenience fee**; has facilitated over **2 lakh jobs**

that diversifying into radio streaming was not a right move. So what went wrong? While BookMyShow was deeply immersed in movies, the entrepreneur didn’t have any clue about the nuances of radio, content acquisition cost, and driving customer adoption. “But we learnt from it,” he says. The biggest learning was sticking to the core: Movies. “Movies and theatres are very much going to stay,” he says. The era of hyper growth, he believes, will be back from next year.

Analysts too predict a rebound in the fortunes of the entertainment world across the world, including India. “Whenever things go back to normal, the movie industry will be back with a vengeance. It has already started happening in the US and Europe,” says Depesh Kashyap, media and entertainment analyst at Equirus Securities. As the pace of vaccination gathers steam, and movies start releasing, people will go back to the theatres. “BookMyShow’s main revenue stream will see a sharp uptick whenever things start rolling,” he predicts. Over the next few months, the new business verticals will revolve around the core ticketing and event business. “For the company, it’s just a question of surviving the storm,” he says.

Meanwhile, Hemrajani is not thinking too much about the results. “When the disruption is external, one just needs to focus on inputs,” he says. Underlining that the pandemic is not the last challenge the company would face, Hemrajani outlines his dual approach to deal with such crises. First is the realisation that everybody has been hit by the storm. “You’re not alone, you keep reminding yourself,” he says. Second is to be ready for the future. So would BookMyShow be better prepared whenever the next normal comes? “Hundred percent,” says Hemrajani. “I have no sleepless nights, knowing that I did my best,” he says.

Will BookMyShow meet a befitting climax? Well, the show is on. **F**

Value To Valuation

For over two decades, serial entrepreneur Bhavin Turakhia stayed bootstrapped. With Zeta now a billion-dollar company, can he script bigger success with loads of external money and his obsession with focus?

By RAJIV SINGH

July 2019. A bootstrapped warrior finally raised money. Bhavin Turakhia's Zeta was being valued at \$300 million by French employee benefits giant Sodexo, which pumped in an undisclosed amount in the banking tech startup. The funding was interesting for two reasons. First, Zeta managed to get the backing of an MNC biggie, which liked the global aspirations of the startup co-founded by Turakhia and Ramki Gaddipati in 2015.

What made the funding most fascinating, though, was the background of serial entrepreneur Turakhia. He founded a bunch of companies with his brother Divyank, kept all the ventures self-funded, sold the first company Directi for \$160 million in 2014, and his brother Divyank sold adtech venture Media. Net to a consortium of Chinese buyers for \$900 million. In fact, the brothers were on the 2019 Forbes India Rich List with a net worth of \$1.54 billion. For most founders, raising external money for the first time might have called for uncorking of a champagne bottle, but not for Turakhia, who got down to penning his thoughts.

The jottings were neither about funding nor valuation. They were about how staying bootstrapped helped him avoid mistakes that could kill funded startups. "I've always been concerned about how the media glamourises lofty valuations and achieving unicorn status much more

Ramki Gaddipati (left), co-founder and CTO, Zeta, and Bhavin Turakhia, co-founder and CEO



than value creation,” he wrote in his blog in July 2019. “We will soon run out of letters in the alphabets,” he exclaimed, alluding to entrepreneurs focusing on running through Series A to Series F. The focus is always on the next round of valuation. “I’m not against funding,” he explained. Focusing on valuation, though, is not the same as focusing on value creation.

Cut to May 2021. Zeta makes a grand entry into the unicorn club by raising \$250 million from SoftBank Vision Fund 2, and gets a valuation of \$1.45 billion, a jump of nearly five times since its last round in 2019. For Turakhia, valuation still doesn’t matter. “I still don’t have anything against funding,” he emphasises. He is, however, quick to underline

why the context has changed this time. “My every subsequent bet has to be bigger in size,” he explains. In Directi he co-invested ₹25,000 and it grew to a \$160-million company. In Radix, the domain registry firm started in 2012, the Turakhia brothers pumped in \$25 million; in enterprise collaboration platform Flock, another \$30 million was invested and in Zeta too, the co-founders invested \$40 million till 2019. All the ventures, he explains, didn’t need external funds.

Then why now with Zeta? What has changed? Turakhia reckons it’s the global opportunity, and aspiration to take a bigger, bolder bet. Banks across the globe, he maintains, spend roughly \$200 billion in IP spend. “Our goal is to try and get Zeta to address a significant chunk of that,” he says. Zeta has over 750 employees across its offices in the US, UK, Middle East and Asia “We have extremely ambitious plans to scale up,” he adds.

The investors are backing the vision. Banking software is a \$300 billion industry globally, says Munish Varma, managing partner at SoftBank Investment Advisers. Most banks still employ technology which is significantly older than their customers, impacting user experience and engagement. Zeta’s modern Omni Stack will drive banking software upgrades catering to the digital consumer, and innovations in financial services globally, he adds.

What has also whetted Turakhia’s global appetite is the massive tailwind over the last year. The pandemic,

“It’s okay to fail, but the thing that scares me the most is not giving my best shot.”

BHAVIN TURAKHIA
CO-FOUNDER, ZETA



he explains, has made almost the entire economy, including banks, think digital first. “Our product lineup was just fit for their needs,” he claims. What made banks come out of their comfort zone was a bunch of pluses for them. A cloud-native SaaS (software as a system) that requires minimal capital investment, minimal IT infrastructure and training is something the banks couldn’t resist in their pursuit of a digital-first product strategy, he adds. Moreover, most financial institutions are looking to accelerate digital transformation and have realised the benefits of a cloud-native modern stack that can enable them to launch new-age banking products. “We saw a massive interest and uptake during this pandemic,” he says, declining to share the financials of Zeta. “We haven’t provided any guidance around revenue numbers,” he says, adding that Zeta counts among its customers over 10 banks and 25 fintech firms across eight countries.

Industry watchers are not surprised with Zeta’s growth. “Anyone who has used a banking website or app will see the need for a player like Zeta,” reckons Srikrishna Ramamoorthy, partner at venture capital fund Unitus Ventures. He explains what’s wrong with the banks. The user experience is not the best; in fact, at times it’s broken; and traditional banking technology hasn’t kept up with the times. Such issues have fuelled the rise of neo-banks and fintechs across the globe. Customers now want the ecommerce-like experience or the app store experience in banking which old banks can’t provide. “Zeta helps traditional banks reduce the ‘technology debt’ that most of them have carried for decades,” he says. By doing so, he adds, Zeta helps the bank upsell and cross-sell better.

What has also worked for Zeta is morphing into a one-stop solution for banks. The fintech startup, Ramamoorthy lets on, has managed to ‘productise’ requirements of the banks, which might have earlier been

Zeta’s Tech Factor

How chief technology officer Ramki Gaddipati turned out to be the X-factor

Ramki Gaddipati knows only one thing: Product engineering. In 2008, he joined Directi as a project lead, and closely worked with the Turakhia brothers to build various platforms and multiple messaging services. Take, for instance, Flock. Started in 2014, the enterprise and a real-time team messaging and collaboration platform focussed on simplifying communication and boosting productivity. “We shared mutual trust and transparency,” says Bhavin Turakhia. Back in 2014, the duo often discussed and expressed frustration around payments. Banking, both believed, was one of the last industries where customer experience had stayed stagnant. “Even space travel got disrupted before banking,” exclaims Gaddipati, who exited Directi in 2014 as senior director at software engineering. After a year, he co-founded Zeta with Turakhia.

In 2015, Zeta was staring at a huge problem, and an opportunity. The co-founders set a goal of building a modern platform to enable banks to offer state-of-the-art experience that can be deployed rapidly. The task, though, was not easy. Banks were used to multiple vendors offering disconnected solutions. It’s almost impossible for a bank to work with all of them in unison to create new experiences for customers. “Banking software systems are relics of legacy,” says Gaddipati.

While the world moved away from licenced software to SaaS, banks were still running mainframes for critical applications. Consequently, failures of the systems became a norm.

Gaddipati devised a solution to disrupt the banking structure. He built Tachyon, a banking and payments platform, that replaced traditional core banking systems and mainframe based payment systems and switches with a cloud-native technology. The product was offered as a SaaS, liberating banks from running IT infrastructure and software upgrades. “This is a first-of-its-kind in the \$300 billion banking IT industry,” says Gaddipati. Six out of the top 10 private sector banks in India have adopted Tachyon for various use cases, within a year of launch, claims the chief technology officer at Zeta. The platform, he adds, has now been launched in the US as well.

Turakhia acknowledges the tech heavy lifting done by Gaddipati. “Ramki’s work paves the way for banks to embrace and excel in the fintech revolution,” he says. Banks now can work with each fintech as a digital branch of the bank, in lieu of the traditional brick-and-mortar branches. Over 21 fintech firms have built their business using the embeddable banking solution from Zeta and half a dozen banks have adopted it to partner with fintech, he says.

managed by using a dozen vendors. As banking needs are fairly similar across the world, it now makes sense for Zeta to cater to the wider global market.

“That’s the bold bet now,” he says.

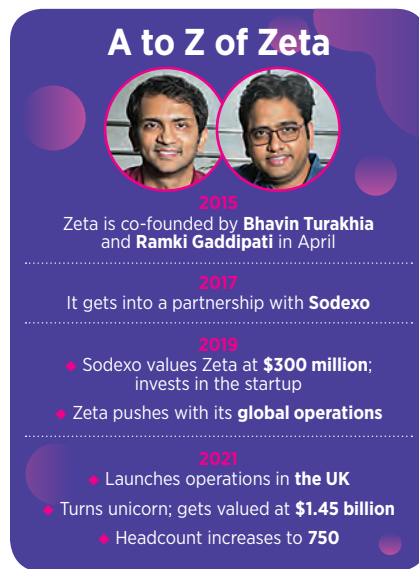
Back in 2015, a bunch of Zeta’s domestic bets didn’t pay off. Turakhia calls them experiments. For a few

months, the co-founders started to build the payments business, and piloted a wallet in Mumbai and Bengaluru. The idea was to design an effective payment mechanism for everybody, including autorickshaws, shops, and merchants. Unfortunately, the venture couldn't scale. "But it had a lot of learning," he recalls.

The young startup then took a stab at solving the pain-point of cafeterias. The plan was to automate payments. Cafeterias, Turakhia recalls, are one of the most stressful places to collect payments. A typical lunch break lasts for an hour, and the entire campus or company descends on a restaurant. The scene gets all the more chaotic if hungry people get angry with poor services. "It's quite challenging as compared to any other payment problem," he says. The experiment again couldn't scale.

Gaddipati, Zeta's co-founder, points out another memorable mistake. "Bhavin and I got excited about a product called Collect Card," he recounts. "We felt it was a magical innovation," he laughs. The logic behind the card flipped the notion of how payment cards work. Most card solutions are about customers carrying a card, taking to a card machine and then the merchant swiping it. Zeta did exactly the opposite. While making the payment, the merchant would swipe his card, and the customer just needed to enter a PIN for the transaction to complete. The co-founders were delighted with the idea, which simply meant that merchants would not have to worry about getting a new payment terminal or sticking a certain QR code or anything. "We thought this would dramatically solve the mobile-based payment problem across the country," he says. The product and the experiment were discontinued after a few months. Excitement, he lets on, at times doesn't translate into success.

Turakhia, though, views the imposters—success and failure—from a different lens. "We don't tend to think of success as an objective and



failure as an outcome," says the man who turned entrepreneur when he was a teenager. In 1998, Turakhia and his younger brother founded Directi as a web-hosting business from their parents' house in Mumbai. The duo took a loan of ₹21,000 from their father, and within four years, their fledgling business posted a revenue of \$1 million. Over the next few years, the revenues leapfrogged to \$10 million. Entrepreneurship, Turakhia maintains, is like a journey towards mastery. "There is no binary outcome. There is no final outcome. It's a lifetime journey," he says. The serial entrepreneur views success and failure too from the same lens. "You learn from failures and you celebrate successes," he says. The goal is to become a better version of oneself.

Having an almost 100 percent strike rate in all ventures so far, does the thought of missing the bull's eye play on his mind? "I believe it's our moral obligation to make an impact proportionate to our potential," he says. Having a fearless mindset is something that he learnt from his father. Turakhia recalls the words: You can achieve anything if you set your mind to it, his father had said. What he is scared of at times, though, is something that most might find amusing. "It's okay to fail, but

the thing that scares me the most is not giving my best shot," he says.

Turakhia now wants Zeta to become the best in the world. The target over the next 24 months is to be present in every country in the world. "Our goal is to make Zeta the default model platform for banks," he says.

Back in India, it has been raining goals of a different kind: Startups getting the prized tag of unicorns, privately-held companies with a valuation of \$1 billion or more. Turakhia tries to decode why India is witnessing a flurry of \$1 billion-plus companies. When any ecosystem reaches a level of maturity, he explains, the impact that the same people can make becomes much bigger. Eighteen years ago, the impact that a startup in India could have made was small. Reason: The domestic market was not big; the ability to scale globally was missing and opportunities were limited. Though things have changed massively in India for startups over the last few years, for entrepreneurs, the focus must be on value, and not valuation, he insists.

Though Zeta's offering makes it unique, is there something that differentiates it from a sea of fintech startups that have emerged? Turakhia names just one factor: Focus. In 2014, when he was brainstorming about disrupting the financial ecosystem, there were three options. First, start a bank. Second, become a fintech player. And last, turn into a technology service provider. The temptation to do all was hard to resist. After all, the precedent was there. Taxi cab operators add fintech products; fintech players add ecommerce businesses and ecommerce businesses add travel services, Turakhia wrote in his blog in 2019. Capital tempts into buying and juggling more balls. But one needs to learn how to catch one before adding five more. "Your probability of success," he concludes, "is directly proportional to focus and inversely proportional to the number of balls you juggle." **F**

Reimagining Banking For Teens

FamPay, a neo-banking startup for teenagers, has whipped up excitement among users and VCs, but can navigating the regulated fintech ecosystem be child's play?

By RAJIV SINGH

Over 85 kilos of food getting wasted in his college canteen was not acceptable for Sambhav Jain.

“Imagine this used to happen every month!” recalls the Indian Institute of Technology [IIT] Roorkee undergrad. What made the sin grave was the fact that the discarded food could easily have been used. “It is no rocket science,” wondered 19-year-old Jain, who then, along with batchmate Kush Taneja, started working on project Appetiser in 2017.

Jain recounts that students used to skip meals to have food from outside, while the hostel administration prepared food for all. Result: Wastage.

The solution devised by the duo involved preparing a weekly menu, making it available to students on an app and giving them the power to decide which meal they would like to skip. There were dual benefits: First, the hostel administration would not have to prepare extra food. Second, students would get the money back for the meals they did not consume. “The students loved it,” says Jain, now 23. The app, he says, has become the official mess app at IIT-Roorkee.

Two years later, in 2019, Jain and Taneja felt irritated. The first of many issues was the lack of financial literacy among students. In a market research done with close to 100 children aged below 14 in Bengaluru, the duo got another insight: Over 90 percent respondents did not have a bank account. This brought them to



IIT-Roorkee graduates Sambhav Jain (left) and Kush Taneja, co-founders of FamPay

the second issue: Why were banks and other financial institutions not talking to kids and teens? “There was a big gap,” Jain says, alluding that all financial products are focussed on adults. Another slice of data egged the duo to take the entrepreneurial plunge. “Around 40 percent of India’s population is under 18,” Jain says.

The friends chose to look at banking from a fresh lens. The idea was to making it cool, fun, and at the same time, empower kids in terms of financial literacy and responsibility.

Three months after graduating from IIT-Roorkee, the duo floated the idea of FamPay, a neo-banking platform for teens, and managed to close a seed round of \$4.7 million

in September 2019. They got a bunch of backers such as Kevin Lin, co-founder of American live streaming platform Twitch, Vladimir Tenev, co-founder of financial services company Robinhood, and Amrish Rau, CEO of merchant commerce platform Pine Labs.

Over the next few months, Jain and Taneja started building the product and the team. The task, though, was no kid’s play. The biggest challenge, Jain recalls, was navigating the regulated fintech space. By February 2020, FamPay was ready to go live.

Then came Covid-19 and the lockdown. “There was so much uncertainty. Schools got shut down,” Jain recounts. Finally in July 2020,

FamPay was launched by rolling out FamCard, India's first numberless card in partnership with IDFC Bank. The debit card can be ordered once the account is set up on the app, after both the parent and teen complete their KYC (know your customer) online. Within eight months, the startup got two million registered users.

In June 2021, FamPay raised \$38 million in Series A round of funding led by Elevation Capital. Existing investors, including Sequoia Capital India, Venture Highway and Y Combinator, as well as new backers such as General Catalyst, Rocketship VC, and Greenoaks Capital participated in the round.

The backers reckon FamPay is on track to reimagine banking for teenagers. "We are extremely impressed by FamPay's product innovations, growth trajectory and customer love," Mridul Arora, partner at Elevation Capital, said in a media release. All these early signs, Arora added, indicate that FamPay is destined to become the destination app for Gen Z, and a gateway for their access to fintech services and beyond.

What makes funders bullish on teen neo-banking is the fact that India has a sizeable population of 250 million adolescents. "Catering to this unserved audience with innovative products contextualised to their needs and behaviours will create a valuable business," Arora added. Sequoia India, which came on board during the seed round last year, is also upbeat. "They understood their users, and had nuanced views on how to serve them best," Shailendra Singh, managing director, Sequoia Capital (India) Singapore, said in the media release.

Though the funding and growth have come at a super brisk pace, the beginning, especially the time leading up to the founding of FamPay, was not easy. The founders were seen as 'robinhoods' during their college days, disruptive in their ideas.

When a bunch of their collegemates started to learn coding, it appeared

jarring to Jain and Taneja. "Don't you guys hate to code? Then why are you doing it?" they asked. The answer was unexpected, but practical. 'It will get us high-paying jobs. Our life would be sorted' is what the friends said. The duo couldn't understand how money could be the only reason to do a job. So both skipped the placement season at college. Result: Their friends mocked them while the others were dismissive. Their families, too, couldn't understand the method behind the madness. Placements, Jain explains, are the biggest part of IIT education. "At least that's what we have been hearing for years," he smiles.

"We are extremely impressed by FamPay's product innovations, growth trajectory and customer love."

MRIDUL ARORA,
PARTNER, ELEVATION CAPITAL

Once the duo started to build FamPay for teens, the bankers were dismissive. Most traditional banks could not understand how 20-somethings could disrupt payments. After the product was ready, Jain and Taneja travelled from Bengaluru to Mumbai at least three times a week to pitch their idea. There were no takers. 'Teens don't earn, so they won't spend' was the widely accepted norm. Despite multiple rejections, the duo persisted.

Almost a year into the journey, Jain feels vindicated. Every year, he underlines, millions of new teenagers will start using their first smartphone and FamPay envisions becoming their go-to brand. The

brand is connecting with them young, and is building an early relationship. "FamPay will become the gateway for brands to target Gen Z," he says. The startup, he lets on, is approaching banking from a new lens, with its recipe of community and gamification to match the Gen Z vibe.

Industry watchers, however, point to potential roadblocks. First is the monetisation. Though FamPay plans to partner teens in their financial journey and intend to become the only bank they will ever need, the problem is teens would eventually graduate to become adults. And a product for teens would not resonate with adults. Second problem is stickiness. Wallet brands also think that users will migrate to their banking platform, but it seldom happens. Third, the product is dependent on parents' consent. "Hence, the startup needs to ensure that parents see long-term benefit and don't find it a hassle along with other managed products," says Anil Joshi, founder at Unicorn India Ventures.

Jain is aware of these challenges and figured them out while naming the startup. Though the idea was to target teens, the flip side would have been losing them once they became adults. Moreover, parents are the financial engines behind the teens and their spending power. So it made sense to have the family involved in the venture. Fam, Jain underlines, is a cool Gen Z lingo for family. "This makes us a young brand. Our branding too is not childish," he adds. FamPay's goal, he explains, is to enable a financially-aware generation understand the fundamentals of personal finance and empower them to take financial decisions with confidence.

The new kid on the block will have to ensure two things over the next few years: First, living up to the erratic expectations of the teens. Second, generating enough cash—through revenue and not funding—to ensure that banking finally becomes a child's play. **F**

50 Over 50

The List

For these dynamic women, growing older is about getting wiser—and bolder. Meet the inaugural class of entrepreneurs, leaders and creators who are part of an exhilarating movement redefining life's second half and proving that success has no age limit

Edited By MAGGIE MCGRATH



Julie Wainwright: “You need to think of your career as a long-term investment. Never stop taking risks. And even when you think you’re there, you’re not there yet. Learning happens at every age.”

By MIKA BRZEZINSKI

Even as a kid, I knew I wanted to be a reporter. Closing my eyes, I had an image of what that future looked like for me after college, when I was 30, then 40. All with a family mixed in some way, somehow.

Anything at 50 and beyond, though, proved mental white space. Did women even have careers at those ages? Looking around back then for role models in my desired field, or pretty much any position of authority, it sure didn't seem so.

Now, four years into my 50s, I wish my teenage self could have conjured what I see now. Women over 50 are having a moment. A 56-year-old woman is vice president of the United States. A 64-year-old woman runs UPS. At 74, Janet Yellen runs the US Treasury; 81-year-old Nancy Pelosi serves as speaker of the House. Far better, though: All these women, like millions of us, achieved their best success after 50. Rather than just hanging on, experience and wisdom translate into our most productive days still in front of us.

That's why *Forbes*, in partnership with Know Your Value, believes the time for this inaugural 50 Over 50 list couldn't be better. Our criteria highlight why: First, yes, it's just for women. (Men already have their own 50 Over 50 lists: the Business Roundtable. NFL owners' meetings. The US Senate. And so on.) Second, we're not necessarily looking for the most powerful women, but rather those who leveraged their life experience to achieve their greatest success past 50, with extra points for adversity overcome. Finally, we're looking for scale—and purpose. Women, of course, recognise that the former is useless without the latter. To help focus, we sorted candidates into three major buckets: Rainmakers (from CEOs to private



Mika Brzezinski: The *Morning Joe* co-host and founder of Know Your Value has partnered with *Forbes* for this inaugural edition of 50 Over 50

equity titans), visionaries (whether tech entrepreneurs or artists) and changemakers (from politics to social entrepreneurship). Most of these extraordinary women touch all three.

We received more than 10,000 nominations for the 50 Over 50, and reviewed every single one, amazing story after amazing story. A large team of screeners winnowed that initial list, using the criteria above, to a few hundred. From there, we convened an incredible panel of outside judges: Diane von Furstenberg, Andrea Jung and Janice Bryant Howroyd. These iconic women over 50 helped us develop this final list.

The results are inspiring. “We need these women to tell their stories, share their paths to success,” US’s First Lady, Jill Biden, recently told me when I relayed some of the names we had discovered, or rediscovered. Those paths have never

extended further or looked more beautiful. Just as modern technology has done its work on the biological clock, relieving many women of the need to pack everything into their 30s (freeze your eggs if you need to!), this list, we hope, removes some of the professional tick-tock pressure traditionally lurking for younger women. It chronicles what’s possible for older women. And it’s a reminder to all of us that there’s no rush—that we can stop and smell the flowers and enjoy every experience, every twist and turn, all of which provide yet another building block.

How do I know this is taking hold? Because in a world that has valued female youth for millennia, where shaving a few years down felt expected, our fact-checkers found several prospective listees who had lied up to get themselves over our age threshold. Now that’s change we can believe in. **f**

Forbes
50
OVER
50
[know your value]

The New Golden Age

Selected from 10,000 nominees, these 50 women are running companies at scale (\$20 million or more in revenue), leading movements and changing the world. They're also paying forward their after-50 success

Reporting By ELANA LYN GROSS & LISETTE VOYTKO

Madeleine Albright • AGE: 84

Diplomat

Born in the former Czechoslovakia in 1937, Albright escaped Nazi occupation with her family, eventually arriving at Ellis Island in 1948. A half-century later, when she was 59, Albright was appointed the nation's first female Secretary of State. She has spent the last 20 years working to safeguard democracies around the world, and in 2018 published *Fascism: A Warning*.

Nandita Bakhshi • 62

CEO, Bank of the West, Co-CEO, BNP Paribas USA Inc

In 2008, Bakhshi was working at Washington Mutual when it became the biggest bank failure in American history. Not knowing what to do with her career, she returned to her native India to spend time with family and work at a microfinance organisation, lending money to women in rural areas. She came back to the US the following year and was tapped in 2016 to be CEO of Bank of the West, a subsidiary of BNP Paribas, where she's using what she learnt about gender equity in finance to advocate for women in P&L roles.

Mary Barra • 59

Chair and CEO, General Motors (GM)

When Barra was named the CEO of GM in 2014, she became the first woman to lead one of the nation's Big Three automakers. Barra has since pushed the 112-year-old company to focus on 21st-century innovations, including self-driving cars and electric vehicles; she has pledged that the entire GM fleet will be electric by 2035.

Gail Becker • 57

Founder and CEO, Caulipower

Becker's career has taken her from Capitol Hill (she was a broadcast journalist in the late 1980s) to the halls of Warner Bros, where she worked as a communications strategist in the earliest days of the DVD. In 2016, when Becker was running strategic

partnerships for communications firm Edelman, she had a breakthrough idea in her kitchen—where she spent too much time and made too big a mess assembling homemade cauliflower-crust pizzas for her two then-teenage sons, both of whom have Celiac disease. Unable to find good frozen options, she decided to package and sell her own, inadvertently creating a new category of cauliflower-based food. Today, Caulipower is one of the fastest-growing food brands, with more than \$100 million in annual sales.

Kathy Bolhous • 61

CEO, Charter Next Generation

As the ninth of 10 siblings, who also put herself through college, Bolhous knows a thing or two about healthy competition and hard work. These lessons served her well: In 2010, when Bolhous took the reins as Charter Next's CEO, the plastics company was worth a paltry \$62 million. Bolhous kept her head down, investing in the company's technology and, in 2019, engineering a merger with a competitor to form a bigger, better Charter. Investors approve: In May 2021, the company landed an investment (of an undisclosed amount) from KKR that puts Charter's new market value at \$4 billion.

Diana Bomar • 74

Founder and CEO, Platinum Cargo Logistics

Bomar dropped out of college to raise her children, but by the time she turned 57, those kids were adults. She realised she was now free to leave a career spent working in sales for other people and go into business for herself. So she launched Catalyst Solutions, an independent logistics company. Four years later, Bomar spun Catalyst into Platinum Cargo Logistics, a domestic and international shipping provider with a staff of 130 and north of \$50 million in annual revenue.

Rosalind 'Roz' Brewer • 58

CEO, Walgreens Boots Alliance

In 2021, Walgreens Boots Alliance appointed Brewer its CEO, making her the only Black woman at the helm of an S&P 500 company. The daughter of assembly-line workers at General Motors, she was a first-generation college student who started as a trained chemist at Kimberly-Clark. In 2017, Brewer became the first woman and first African-American to serve as COO of Starbucks.

Tracy Chadwell • 55

Founding Partner, 1843 Capital

Only 2.4 percent of venture capital founders are women, but after a career spent in law and banking, Chadwell felt ready to take on the challenge. In 2016, she founded 1843 Capital (named after the year that Ada Lovelace wrote the first computer program) as a vehicle to invest in early-stage startups founded by women and operating in the "silver tech" space—that is, technology geared toward improving the lives of people over 50.

Carmen Chang • 73

General Partner, New Enterprise Associates (NEA)

Born in Nanjing, China, and raised in Taiwan, Chang came to the US to attend Stanford. She then spent decades as a lawyer representing some of the world's biggest tech companies: Tencent, Lenovo, Huawei and Foxconn. At 64, Chang switched careers, becoming a venture capitalist. In 2013, she was named NEA's first female general partner. Her eye for Chinese deals has been valuable: Her portfolio of investments includes TikTok's parent, ByteDance, and software company Tuya, which has had the second-largest IPO by a Chinese company in 2021 so far.

Anna Maria Chávez • 53

Executive director and CEO, National School Boards Association

In June 2020, Chávez was appointed to the biggest job of her life: Running an organisation that represents the nation's 50 million public-school students during a pandemic that has shuttered in-person learning for more than a year. A longtime advocate for better STEM education for women and the former head of Girl Scouts of America, Chávez is using her position to lobby for more coronavirus relief for schools, arguing that the \$54 billion deployed in December is insufficient in the face of municipal budget cuts.

Liz Cheney • 54

Congresswoman, Wyoming—At Large

A conservative who was first elected to her congressional seat at 50, the daughter of the former vice president has risen to national prominence as her party's most vocal critic of former US President Donald Trump. One of

Tracy Chadwell:
 “I never saw any other women investors. I never saw any women founders of companies. And all of a sudden, we had this perfect storm of women being interested in building businesses, and no capital. So I said, I’m going to start by investing in women.”



just 10 House Republicans to vote to impeach the former president in January, she has since fought claims that the 2020 presidential election was “stolen”, a stance that led her party to vote to remove her as leadership chair in May.

Jennifer Doudna • 57

Co-founder, Mammoth Biosciences

Doudna, a biochemist, was awarded a Nobel Prize in December for her work in CRISPR gene editing, which enables the genomes of living organisms to be modified. She’s also an entrepreneur: In 2017, she co-founded CRISPR disease-detecting firm Mammoth Biosciences, which in 2020 raised a \$45 million Series B round and counts Apple CEO Tim Cook among its early investors; today, she’s the chair of the company’s scientific advisory board. Doudna has also applied CRISPR technology to the pandemic through Mammoth’s creation of a Covid-19 diagnostic test, though it has not yet been deployed at scale.

Fran Dunaway • 60

Co-founder and CEO, TomboyX

At 52, Dunaway co-founded gender-neutral intimates and loungewear maker TomboyX with her wife. They’ve gone from working out of their garage to running a fast-growing business whose sales jumped 50 percent last year, to \$24 million. The company also represents the community it serves, with 81 percent of the 35 employees identifying as female or genderqueer/non-conforming, 42 percent as LGBTQ and 16 percent as non-white.

Cathy Engelbert • 56

Commissioner, WNBA

In 2019, at 54, Engelbert was named commissioner of the WNBA, the oldest professional women’s sports league in the United States. Immediately prior to that, she spent four years as Deloitte’s CEO, the first woman to hold that position. She also sits on the board of McDonald’s.

Amy Errett • 63

CEO and Founder, Madison Reed

Errett worked at Bankers Trust, E-Trade and venture capital firm Maveron before starting her at-home hair colour company, Madison Reed, in 2013. Sales for the brand have boomed as the pandemic shuttered salons, including her own. She grew her customer service team, hosted virtual tutorials with colourists and expanded TV advertising. The pivot paid off: Madison Reed raked in more than \$100 million in 2020 revenue, double that of the previous year. The company raised \$52 million in February, bringing its total funding to nearly \$200 million.

Janet Evanovich • 78

Author

Evanovich had been writing romance books with moderate success when, at 51, she published her first crime novel, the first in what became the Stephanie Plum series. Forty of her books have been *New York Times* bestsellers; her advances, which once amounted to \$7,000, now routinely top seven figures.

► Aicha Evans • 52

CEO, Zoox

Growing up in Senegal and Paris, Evans idolised Marie Curie and dreamt of becoming a technologist—one who would make an impact on the world. In 2019, after more than a decade of working for Intel, Evans got that chance: She was tapped to become the CEO of autonomous-vehicle company Zoox. Less than a year later, she orchestrated its \$1.2 billion sale to Amazon but held on to her C-suite spot. “When you’re a little girl born in West Africa, you’re not exactly supposed to be—at least in this current world—sitting where I am,” she says.

Anne Finucane • 68

Vice chair, Bank of America

Bank of America’s vice chair since 2015, Finucane is on the cutting edge of corporate and social responsibility initiatives with a \$300 billion budget to spark climate action and \$1.25 billion to support racial justice and equality for people of colour. She is a confidante of CEO Brian Moynihan, who once joked that “we all report to Anne”.

Jane Fraser • 53

CEO, Citigroup

Fraser became the first female CEO of a major Wall Street bank in March when she took the job at Citi as the first woman to lead the 209-year-old firm. Born in Scotland, Fraser started her career as an analyst at Goldman Sachs in London in 1988. After earning her MBA in 1994, she joined McKinsey & Co as a part-time consultant while raising her two young children; she later became a partner.

Ina Garten • 73

Chef, TV Host

In 1978, Garten left her job as a budget analyst at the White House to buy a specialty food store in East Hampton, New York. After 18 years, she sold the business and decided to write a cookbook. In 1999, at 51, she published the best-selling *The Barefoot Contessa Cookbook*, catapulting her career. Her popular Food Network show debuted in 2002, and she has written 12 chart-topping cookbooks in all.

Marla Ginsburg • 65

CEO and Owner, MarlaWynne

At one point a high-ranking television producer with credits including *Highlander* and *La Femme Nikita*, Ginsburg saw her career prospects and investments wiped out after the 2007 TV writers’ strike and 2008 recession. So in 2009, Ginsburg bought a sewing machine and taught herself to make clothes. The result: Her fashion brand MarlaWynne, which peddles “real woman sizes” and is aimed at Boomers growing older. It has found success on QVC and HSN,



Aicha Evans: “I feel free. I don’t really have anything to prove to anyone in the grand scheme of things. Life is good.”

where it’s one of the top brands. Revenue topped \$60 million last year.

Kamala Harris • 56

Vice president of the United States of America

On January 20, 2021, Harris became the highest-ranking woman in American political history. She is the first woman, the first Black person, the first South Asian-American and the first graduate of a historically Black college to become vice president of the United States.

Teresa Y Hodge • 58

Founder, CEO Mission Launch

When Hodge was 44, she was found guilty of mail fraud and served 70 months in jail. Five years after getting out, in 2017, she co-founded an alternative background-check

service, R3 Score, with her daughter (the startup was accepted into incubator Techstars) and Mission Launch, a non-profit that works with financial institutions to help the formerly incarcerated obtain access to capital to start their own businesses.

Lori Hotz • 54

Co-founder and co-CEO, Lobus

Three years ago, Hotz started the asset-management platform she wished existed when she was a global managing director at Christie’s. Now with \$5 billion in assets, Lobus leverages blockchain technology to provide artists, collectors and advisors with management tools including real-time market pricing information, portfolio analytics and a digital inventory. Its mission is to give artists continued ownership over their work so they profit from future sales.

Arianna Huffington • 70**Founder and CEO, Thrive Global**

In 2005, at 54, the journalist and author founded her own media company, The Huffington Post. She collapsed two years later due to sleep deprivation and burnout. It led her to change her habits and, eventually, her career trajectory. At 65, she left to start Thrive Global, a company that aims to help people reduce stress and burnout via media and technology.

➔ Dr Katalin Karikó • 66**Biochemist and senior VP, BioNTech**

The Hungary-born scientist immigrated to Philadelphia in 1985 with her husband, daughter and roughly \$1,200 stuffed in a teddy bear for safe keeping. She pioneered research into mRNA technology in the early 1990s but for years toiled away in obscurity. At one point, she was demoted because a boss deemed the technology too nascent. Now she's being hailed as a hero whose work helped accelerate the development of the Pfizer and Moderna Covid-19 vaccines currently being distributed across the globe.

Kay Koplovitz • 76**Co-founder and chair, Springboard Enterprises**

Koplovitz started USA Today Networks in 1977 and helmed the company until it was sold for \$4.5 billion in 1998. In 2000, at 55, she started the accelerator Springboard Enterprises to increase funding for female founders. Since then, Springboard's 835 portfolio companies have created more than \$27.5 billion in value.

Ellen Latham • 64**Founder, Orangetheory Fitness**

In 2010, Latham co-founded Orangetheory Fitness, a boutique workout that has developed a cult following and, pre-pandemic, hit \$1 billion in franchise-wide sales. Starting the company marked a rebound for Latham: When she was 40, she had been fired from her job as a physiologist at a high-end spa. She was a single mother, so to pay the bills she started teaching Pilates out of her home; this eventually morphed into what is now the signature science-backed Orangetheory workout.

Karen Lynch • 58**President and CEO, CVS Health**

Lynch ascended to the top role at the 300,000-person health-services company in February. She joined Aetna in 2012 and was appointed its president three years later. She joined CVS as executive vice president when it completed its \$70 billion acquisition of Aetna in 2018, and has led its Covid-19 response effort since last March. To date, CVS has administered 23 million Covid



Dr. Katalin Karikó:
“Everybody was saying no, no, no. But as long as I had one person who was for the idea... if you focus, you can stay on course.”

tests and more than 17 million vaccines in its stores and long-term care facilities.

Susan Lyne • 70**Founder, BBG Ventures**

In 2014, Lyne founded BBG Ventures, a firm focussed on early-stage consumer companies with female founders. Her portfolio reads like a who's-who of such startups, with investments in Glamsquad, Full Harvest, Lola and Zola, among others. Lyne made the jump to entrepreneur/venture capitalist after a career spent in corporate America; she held various leadership positions at Disney, ABC, Martha Stewart Living Omnimedia, Gilt Groupe and AOL's Brand Group.

Gail McGovern • 69**CEO, American Red Cross**

McGovern was tapped as Red Cross CEO in 2008, when its reputation and finances were in need of rescue. Using nearly 30 years of corporate experience at places like AT&T, McGovern streamlined the Red Cross's 720

chapters by consolidating purchasing, marketing and other vital resources to cut costs and increase efficiency. More than a decade later, she has been largely credited for revitalising the organisation, which responds to some 60,000 disasters every year.

Cindy J Miller • 58**CEO, Stericycle**

Miller began her career as a UPS delivery driver, ultimately spending more than three decades with the logistics company before joining medical-services provider Stericycle as president and COO in 2018. A year later, at 55, Miller was promoted to CEO. She has since led Stericycle to a \$7 billion market capitalisation—up 55 percent since her promotion—and overseen its rollout of pandemic-related medical waste disposal.

Donda Mullis • 57**Co-founder and CMO, Raw Sugar Living**

After decades as a marketer helping other people develop their brands, Mullis decid-

Kim Ng:
 “To be rejected that many times [after interviews with 10 teams over the years] is tough on anybody’s ego. But at the end of the day, it’s hard to lose hope in your dreams, and you just have to keep pushing on.”



REBECCA MILLER FOR FORBES

ed it was time to build her own company at 51. In 2014, she and husband Ronnie Shugar launched Raw Sugar, a clean-beauty brand now sold in Target stores nationwide. Estimated sales last year were \$60 million.

◀ **Kim Ng • 52**

General manager, Miami Marlins

Ng, who played softball at the University of Chicago and wrote her thesis on Title IX, has spent her career in baseball’s front offices and unsuccessfully sought the GM job with 10 teams over the years; the Dodgers, Mariners and Angels are among the franchises that turned her down. It was a 2020 interview with Derek Jeter’s Marlins that got her around the bases at last. Ng is the first woman in Major League Baseball history to become a team’s GM.

Catherine O’Hara • 67

Actor

O’Hara started her career as a comedian in 1974 and appeared on television and in movies throughout the ’80s and ’90s (notably, she played Kevin’s mother in *Home Alone*). But her theatrical portrayal of *Schitt’s Creek*’s Moira Rose from 2015 to 2020 propelled O’Hara to new levels of fame and meme-ability. As her now-iconic character might say: “I can hardly hear you! The cheering and accolades are drowning out your gentle voice.”

Eren Ozmen • 62

Owner, chairwoman and president, Sierra Nevada Corporation

Ozmen and her husband, Fatih, both Turkish immigrants, used their house as collateral to get a loan to buy Sierra Nevada Corporation for \$5 million in 1994. They grew what was then a 20-person electronics business into a multibillion-dollar global aerospace and national-security company with nearly 5,000 employees. In 2008, they bought their now-famous Dream Chaser spacecraft, signalling their move into that sector; nine years later, Ozmen became a billionaire. In 2020, NASA selected Dream Chaser to provide cargo services for the International Space Station.

Bettie J Parker • 72

Mayor, Elizabeth City, North Carolina

When Parker was born in 1948 in Elizabeth City, North Carolina, Jim Crow ruled the land. Growing up, she was not allowed to use most city services, including the public swimming pools. Sixty-nine years later, in 2017—and after a 33-year career as a math teacher at the town’s high school—Parker was elected its mayor. She is the first woman to hold the position.

Screen Queen

Shonda Rhimes spent the first 12 years of her TV career contributing to Disney's empire. Now she's building her own

By **MADELINE BERG**

Last Christmas, as millions of people were watching *Bridgerton* for the first time, Shonda Rhimes was at home in Los Angeles with her three daughters, unwrapping gifts. Her first hints of the mania her debut Netflix series was sparking were multiple gushing texts from the streaming giant's CEO, Ted Sarandos. Then came an email from Hillary Clinton.

"How does one cure oneself of a Duke obsession?" Clinton asked, referring to the actor Regé-Jean Page and his beloved portrayal of aristocrat Simon Basset in the Regency-era drama.

With her adaptation of the popular romance novels, Rhimes, 51, has done the seemingly impossible: Created a must-see sensation in a world overflowing with binge-worthy television. In the first 28 days it was available, 82 million households—40 percent of Netflix's paying audience—watched the eight-episode series, smashing the service's previous viewing records. Sarandos booked a second season within weeks, and in April he agreed to fund seasons three and four. A spinoff is in the works. Rhimes, who is already making about \$30 million a year to create exclusive content for the streamer, is expected to receive millions in bonus pay because of the series' success—a rare feat in typically frontloaded streaming deals.

"I never worried that I deserve the money," Rhimes says. "I deserve every penny I make... I always find these young women who have been conditioned to believe or to speak of themselves in ways that make them smaller. It drives me bonkers."

Bridgerton's resounding success is proof that jumping ship in 2017 from ABC, her home for more than a decade, has paid off. "I don't know how you do things without betting on yourself," the show creator says. "If I was going to play it safe, I would've stayed exactly where I was and kept doing exactly what I was doing. It wasn't like a crazy leap to believe in myself."

Not after all her success. Rhimes has brought in more than \$2 billion to ABC's parent company, Disney, with hits such



Shonda Rhimes: "I'm very clear on my track record... I'm no longer worried about negotiations in any way, shape or form."

as the medical drama *Grey's Anatomy*; *Scandal*, which cast Kerry Washington as the first Black female lead in a network drama in almost 40 years; and *How to Get Away with Murder*, starring Viola Davis, who became the first Black woman to win a Best Lead Drama Actress Emmy for her role.

Even so, Rhimes had to constantly fight for higher writing and producing salaries (she went from making about \$30,000 per episode to \$250,000 since *Grey's* premiered in 2005, *Forbes* estimates) and a larger cut of the show's profit. Network executives would eventually step up, she says, but it was always a battle.

"It's really startling to realize how much money your work is earning for a place and then to discover how much they think that you're worth versus that," she adds of the years she spent wrangling with ABC.

When she began negotiations with Sarandos in 2017, Rhimes dispensed with any pretense of modesty. "I was very clear that everybody was going to make it happen in the way that I wanted," she says. Sarandos concurs: "I've been astonished by Shonda's total clarity about what she wants in this next chapter. [She] is at the very top of her game."

"Shonda Rhimes is a force like no other," says Michelle Obama, who first met Rhimes when the showrunner sat in the Obamas' box at the 2013 Kennedy Center Honors. "All you have to do is look at the empire that keeps growing year after year to see that her stories—her example—are something people are hungry for."

That empire, dubbed Shondaland, is now 50 staffers strong and, like the casts of her series—some of the most racially diverse on television—is "uncommonly inclusive", according to Rhimes. While half are engaged in creating television, the others are working in new areas. There's Shondaland Audio, a partnership with iHeartRadio, which has a *Bridgerton* companion podcast, as well as shows hosted by Laverne Cox and *Scandal* star Katie Lowes. Shondaland.com, a partnership with Hearst, is a mix of articles meant to empower women and update fans on Rhimes's series. There's also an eight-week Peloton programme based on her 2015 inspirational book, *Year of Yes*, and a top-selling master class.

Forbes estimates Rhimes will earn close to \$40 million from Netflix this year thanks to her *Bridgerton* bonuses, plus about \$8 million in producing fees for *Grey's Anatomy* and *Station 19*, another \$17 million for her share of the profits from *Grey's*, *Scandal* and *How to Get Away with Murder*, and a few million more from Shondaland ventures, including podcasts, web content, books and more. All told, Rhimes should take home close to \$70 million before taxes in 2021, her biggest payday yet. Since her television career began, she has earned more than \$350 million, pre-tax.

All that is just the beginning, too, as Rhimes looks decades ahead. "We're not working for anybody... We do things the Shondaland way," she says, adding: "In 30 years, somebody should look around and not know there's a Shonda to the Shondaland."

➔ Nancy Pelosi • 81

Speaker of the House of Representatives

First elected to Congress at the age of 47, Pelosi became the first woman to lead a major political party when she was elected Speaker of the House in 2007. She regained her position and started her third term as speaker in 2019 after the Democrats retook the House in the 2018 mid-term elections, becoming the first person to serve three terms as the head of the House in more than 60 years.

Esther Perel • 62

Psychotherapist, author and podcast host

Perel has run her New York City-based practice for more than 35 years, but the release of her 2017 book, *The State of Affairs*, and the launch of her podcast, *Where Should We Begin*, turned her into the nation's pre-eminent relationship and sexuality expert. Perel's three TED Talks have racked up 30 million-plus views, and two bestsellers have been translated into nearly 30 languages.

Shonda Rhimes • 51

Founder, Shondaland

The creator of *Grey's Anatomy* scored this year with *Bridgerton*, the first show she produced for Netflix under her landmark \$150 million deal.

María Elvira Salazar • 59

Congresswoman, Florida-27

Salazar came to politics after a three-decade career as a journalist for Spanish-language television. She first ran to represent Florida's 27th congressional district in 2018, positioning her past interviews with Fidel Castro and Venezuela's Nicolás Maduro as confrontations with "corrupt elites." Though she lost that 2018 race, she engineered an upset victory in 2020 with support from President Trump and a surge of conservative Cuban-American voters in Miami-Dade County.

Miyoko Schinner • 63

Founder and CEO, Miyoko's Creamery

In 2014, then-57-year-old Schinner founded vegan cheese company Miyoko's Creamery from her California kitchen. She now oversees a 200-person team, and her plant-based cheese and butter products are sold in more than 29,000 stores across North America and Australia. The vegan and self-proclaimed "former cheese-aholic" also runs Rancho Compasión, a sanctuary that rescues neglected farm animals.

Melisse Shaban • 60

Founder and CEO, Virtue Labs

The keratin used in Shaban's hair-care products to repair damaged hair was developed



Nancy Pelosi:
"People make their own decisions about their timing, and they don't have to comply with somebody else's view of how that should be. It's about what works for them."

by the military to heal battlefield injuries. Shaban started Virtue Labs in 2014, two years after meeting the scientists behind the keratin; her first products launched in 2017. In just four years since its launch, Virtue has won more than 50 editorial and industry awards and signed Jennifer Garner as a celebrity partner (her hairdresser recommended the product). Its revenue doubled year-over-year to \$30 million in 2020.

Judy Sheindlin • 78

TV Courtroom Judge

The Manhattan criminal and family court judge known for her tough demeanor captured the attention of millions with her courtroom programme *Judge Judy*, which debuted in 1996 when she was 53 (after she retired from her court job). It became the top-rated daytime TV show, and her \$47 million annual salary starting in 2012 made

her one of television's highest-paid stars. In 2021, *Judge Judy* goes off the air after 25 seasons, but Sheindlin will soon debut a new show, *Judy Justice*, on cable and streaming.

Rea Ann Silva • 59

Founder, Beautyblender

Silva was working as a makeup artist on the show *Girlfriends* when she formed the beginnings of what would become a category-creating product: She cut makeup sponges into egg shapes to smooth skin imperfections to a degree that not even high-definition television would show. Actors swiped them for themselves—helping convince her to found Beautyblender in 2007. Silva kept her day job as a makeup artist as she worked to scale the company but didn't move to the business full-time until Beautyblender's products expanded nationwide in 2012. Today, sales are close to \$200 million.

Ruth J Simmons • 75**President, Prairie View A&M University**

Simmons has had multiple “firsts” in academia, but her biggest have come past 50. In 2001, she was named president of Brown University, making her the school’s first female president and the first African-American to lead an Ivy League institution. In 2017, at 71, she was named the first female president of Prairie View A&M, a historically Black college in Texas.

➔ Dr Laura Stachel • 62**Co-founder and executive director, We Care Solar**

A trained concert pianist whose dexterity helped during her two-decade career as an obstetrician, Stachel had been a busy clinician until a back injury sidelined her medical career in her mid-40s. She went back to school, getting her master’s in public health. When she was 51, she co-founded We Care Solar, an energy company that provides “solar suitcases” (briefcases filled with solar-powered lighting and emergency communication tools) to underserved health clinics and hospitals throughout Africa. To date, 6,000 of them have helped more than 7.5 million mothers and newborns.

Carol Tomé • 64**CEO, UPS**

Tomé, a longtime Home Depot executive who had been passed over for the top job there, started 2020 in retirement. But when UPS (a company on whose board she’d sat since 2003) came calling, Tomé readily re-entered corporate life. Shares of the logistics giant have doubled since she took over last June, and the company proved to be a lifeline for essential household goods during coronavirus stay-at-home orders.

Julie Wainwright • 64**Founder and CEO, The RealReal**

Once the CEO of dotcom bubble casualty Pets.com (she shut it down in 2000 the same day her husband asked for a divorce), Wainwright started over again in 2011 at 53 with luxury-goods consignment shop The RealReal. She took the second-hand marketplace public in 2019; the company, which has \$300 million in sales (trailing 12 months), is now worth \$1.3 billion.

Cathie Wood • 65**CEO, Ark Invest**

A star stock picker, Wood founded Ark Invest in 2014 at 58; her hedge fund has \$29 billion in assets. Known for her bold predictions (bitcoin will one day hit \$500,000, she says), Wood is one of Tesla’s biggest boosters—she invested in the electric-vehicle manufacturer in 2018, predicting then that its stock would hit \$4,000. It reached that number in January, two years before she expected it to. **i**

Dr Laura Stachel:
“What was once viewed as the most devastating setback to my career ended up opening the door to probably even a more exciting career... I loved working with patients one on one, but now I know I’m touching literally millions of lives.”



Julie Wainwright: Photography by Celeste Sloman for *Forbes*. Floral design by Emily Thompson Flowers, assisted by Suzette Lee. Produced by Peter Schnaitmann. **Mika Brzezinski:** Photography by Rebecca Miller for *Forbes*. Floral design by Emily Thompson Flowers, assisted by Alison Layton and Kinga Mojsa. Hair and makeup by Suzannah Halliii. Photographed at the Four Seasons Hotel Washington, DC. **Tracy Chadwell:** Photography by Rebecca Miller for *Forbes*. Floral design by Emily Thompson Flowers, assisted by Alison Layton and Kinga Mojsa. Hair and makeup by Suzannah Halliii. Photographed at the Four Seasons Hotel Washington, DC. **Aicha Evans:** Photography by Celeste Sloman for *Forbes*. Floral design by Emily Thompson Flowers, assisted by Suzette Lee. Hair and makeup by Dawn Suti. Produced by Peter Schnaitmann. **Dr. Katalin Karikó:** Photography by Rebecca Miller for *Forbes*. Floral design by Emily Thompson Flowers, assisted by Alison Layton and Kinga Mojsa. **Kim Ng:** Photography by Rebecca Miller for *Forbes*. Floral design by Emily Thompson Flowers, assisted by Peter Schnaitmann. Photographed at loanDepot Park in Miami, Florida. **Shonda Rhimes:** Photography by Jamel Toppin for *Forbes*. Floral design by Emily Thompson Flowers. Hair by Verlyn Antoine, makeup by Armond Hambrick, styling by Dana Asher Levine. **Nancy Pelosi:** Photography by Rebecca Miller for *Forbes*. Floral design by Emily Thompson Flowers, assisted by Alison Layton and Kinga Mojsa. Hair and makeup by Suzannah Halliii. Photographed in the National Statuary Hall, US Capitol, Washington, DC. **Dr Laura Stachel:** Photography by Celeste Sloman for *Forbes*. Floral design by Emily Thompson Flowers, assisted by Suzette Lee. Hair and makeup by Dawn Suti. Produced by Peter Schnaitmann.

Be careful about reading health books. You may die of a misprint.

—**MARK TWAIN**
American author



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The cheerful mind perseveres, and the strong mind hews its way through a thousand difficulties.

—**SWAMI VIVEKANANDA**
Indian monk

Good health is not something we can buy. However, it can be an extremely valuable savings account.

—**ANNE WILSON SCHAEF**
American clinical psychologist



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Keeping your body healthy is an expression of gratitude to the whole cosmos—the trees, the clouds, everything.

—**THICH NHAT HANH**
Vietnamese spiritual leader

SHUTTERSTOCK



To keep the body in good health is a duty... otherwise we shall not be able to keep the mind strong and clear.

—**BUDDHA**
Founder of Buddhism

I have chosen to be happy because it is good for my health.

—**FRANÇOIS-MARIE VOLTAIRE**
French philosopher

Healing is a matter of time, but it is sometimes also a matter of opportunity.

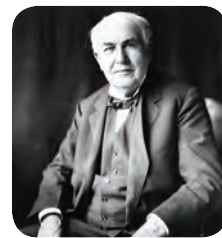
—**HIPPOCRATES**
Ancient Greek physician



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He who has health, has hope; and he who has hope, has everything.

—**THOMAS CARLYLE**
Scottish historian



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The doctor of the future will give no medicine, but will instruct his patients in care of the human frame, in diet, and in the cause and prevention of disease.

—**THOMAS EDISON**
American inventor and businessman



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A sad soul can be just as lethal as a germ.

—**JOHN STEINBECK**
American author

Health is not valued till sickness comes.

—**THOMAS FULLER**
English historian



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Physical fitness is the first requisite of happiness.

—**JOSEPH PILATES**
German physical trainer



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