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Techceleration

Evolution of Digital Sphere

Techceleration and Biotechnology

**How COVID-19 triggered the digital
and e-commerce**

Startups and Techceleration

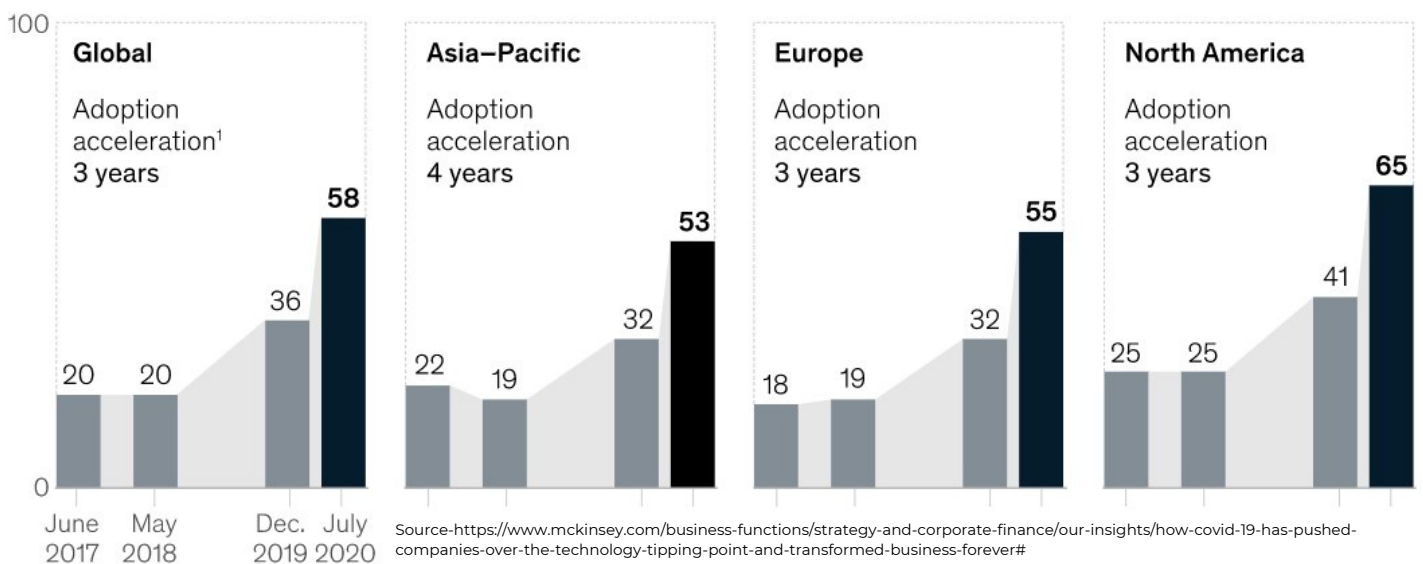
Mumbai Covid Treatment Model

Techceleration

The year 2025 or even 2030 is here today. COVID-19 has accelerated into months what was expected to take years — the movement toward digitizing government, businesses, and societies. The introduction and acceptance of new technology, and technology being used in new ways, have accelerated beyond expectations: The Economist calls it “Tech-celeration”.

Change is occurring at an increasingly fast pace as a result of strategies for crisis prevention or minimizing the loss, the effects are in the form of technological advancements. Changes happening in neuroscience, quantum technology, nanotechnology, renewable fuels, genomics, healthcare, education, and numerous other fields of study will fundamentally change the way that society operates over the next decade.

While most of these advancements will improve our quality of life, they will also bring massive changes. A few of the more profound changes are expected to include autonomous vehicles, universal translators embedded in your earphones, cures to long confounding diseases like Alzheimer’s and many cancers, contact lenses that read digital information embedded in the landscape, drugs that enhance mental abilities and brain interfaces that may help the paralyzed to function normally in society.



The crises of 2020 turbocharged consumers’ technology adoption and usage. While the pace of change is impressive, consumers’ swift adaptation to life among screens is not entirely radical.

Online shopping in America has seen 10 years’ growth in three months. Even here, the growth in online shopping has been dramatic. The expansion of e-commerce platforms has been complemented by the growth of PESONet and InstaPay deals. According to the Bangko Sentral Pilipinas, electronic payments coursed through the National Retail Payments System reached P444 billion as of September 2020. Year-on-year transactions increased by more than 160 percent. The central bank expects these figures to continue to grow rapidly over the next few years as people shop from the comforts of their home and e-commerce platforms further expand.

As McKinsey said: “Recent data show that we have vaulted five years forward in consumer and business digital adoption in a matter of around eight weeks.” We are moving rapidly into a world that will be dominated by IT and communications, one that COVID-19 has accelerated. It has brought with it vast opportunities. The world’s largest companies are IT-related, yet they didn’t exist 20 years ago.

Doctors are switching to remote video consultations (I hope they’re getting cashless payment), and that will improve dramatically as gadgets that can measure your vitals become ever more prevalent, comprehensive, and affordable for personal use.



Source- <https://opinion.inquirer.net/137835/tech-celeration>

When looking at the time periods with the greatest growth in wealth and the quality of life over the last 80 years, the Scientific Technical Revolution of the 1950s and 1960s created great prosperity and great leaps in healthcare. The Digital Revolution that started in the early 1990s did the same. Once the exclusive purview of science-fiction writers, Future Technology is here, accelerating and moving into every element of life. Historically, periods like these create the greatest increase in global wealth and the quality of life. While massive change poses great challenges for the unskilled and skilled alike along with businesses or governments unable or unwilling to adapt to changing times, those who can adapt to the Techceleration that is underway may find this a golden era like no other.

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- Aman Garg

Evolution of Digital Sphere

With the majority of European countries starting to open, the digital world is the new center for exchange, collaboration, and human interaction. Therefore, unsurprisingly, we have already witnessed major shifts in the digital sphere. This goes a long way to explaining the increase in internet traffic and the use of social media platforms around the world.

In 2020, India had almost 700 million Internet users. This number is expected to rise to over 974 million users by 2025. It was believed to increase in both urban and rural regions, indicating a substantial growth in internet accessibility because of the affordable mobile data rate, rapidly rising numbers of users, and the enhanced utility value of smartphones contribute to the mobile-heavy Internet access in India.

Throughout the nationwide lockdown in India, people were compelled to remain in the safety of their homes with limited access to shops or entertainment avenues. This led to increased Internet consumption and various online platforms. So brands had no alternative but to adopt a 'digital first' strategy.



Few industries which grew drastically

E-commerce expansion: In 2020, India's e-commerce platforms raked in \$8.3 billion in gross sales during the online festive sale season, which lasts around a month, from October through November.

The post-pandemic landscape led to 88% customer growth compared to 2019, with around 40 million active online shoppers. Presently, most Indian consumers rely heavily on digital and social media platforms for purchase-related research such as beauty tutorials, reviews, eventually buying products over the Web.

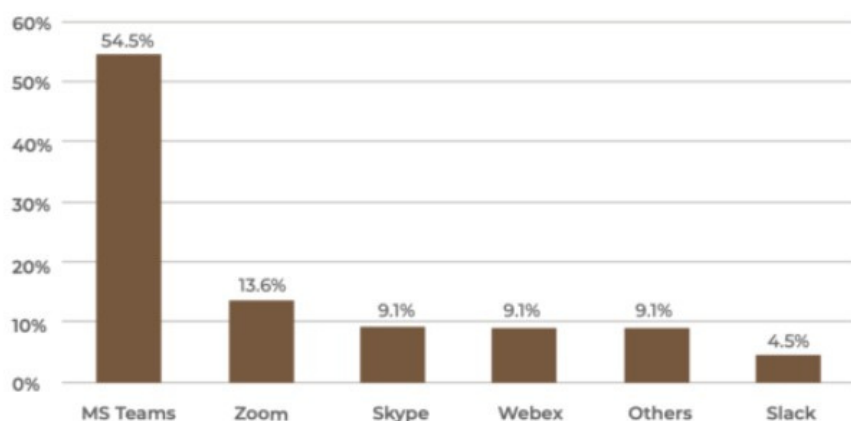
Rapid growth opportunities: Owing to the continuously increasing Internet user base and favorable market conditions, India has a significant amount of untapped potential in the e-commerce industry. Growing exponentially, the market value of India's e-commerce industry was approximately \$50 billion in 2018. This number is estimated to reach a massive \$200 billion by 2027.

	Advertising Industry	Digital Advertising Industry
2020	₹56,490 Cr. (\$7.74 Bn)	₹15,782 Cr. (\$2.16 Bn)
2021	₹62,577 Cr. (\$8.57 Bn)	₹18,938 Cr. (\$2.59 Bn)
2022	₹70,343 Cr. (\$9.64 Bn)	₹23,673 Cr. (\$3.24 Bn)
	11.59% CAGR	22.47% CAGR

Increase in online learning/Communication prospects: Worldwide, there were around more than 1.2 billion children in 186 countries affected by school closures due to the pandemic in 2020. According to the recent survey of Analytics India states that MS Teams has been gaining immense popularity in this space, with 54.5% of the analytics teams utilizing the platform to remotely connect and network with other members of their analytics team, and 13.6% of the employees using the new conferencing tool — Zoom. The other tools that gained traction among remote workers are Skype and WebEx having 9.1% of respondents equally, and 4.5% used the workplace networking tool, Slack.

These numbers alone show that MS Teams has overtaken Zoom, Skype, and other collaboration platforms in popularity and usage, at least among Indian enterprises.

5 -Which Collaboration Tools are Enable for WFH ?



The company's stronghold in the enterprise market with its Office suite helped the platform to already have an existing base in this competitive collaboration market.

In order to strategically position itself in this thriving collaboration market, Microsoft offered MS Teams free of cost to all Office 365 users.

The company also decided to standardize MS Teams as the primary communication tool for collaboration within Office 365, which in turn forced enterprises to replace Skype for Business with MS Teams.

Demand is also growing and tend to increase more in the coming years for artificial intelligence-powered virtual focus groups that permit companies to go beyond what's possible in physical conference rooms.

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- Shivangi Pilani

Techceleration and Biotechnology

External developments such as world crises, diplomatic pressure, economic downturns, wars, or illness are often catalysts for rapid technological development. The COVID-19 pandemic has fueled the need for scientific progress. Scientists, architects, and entrepreneurs have risen to the occasion by doing what they do best: planning, constructing and prototyping.

Let us have a look at some of the major tech advancements in the field of Medical and Biotech before and during COVID-19.

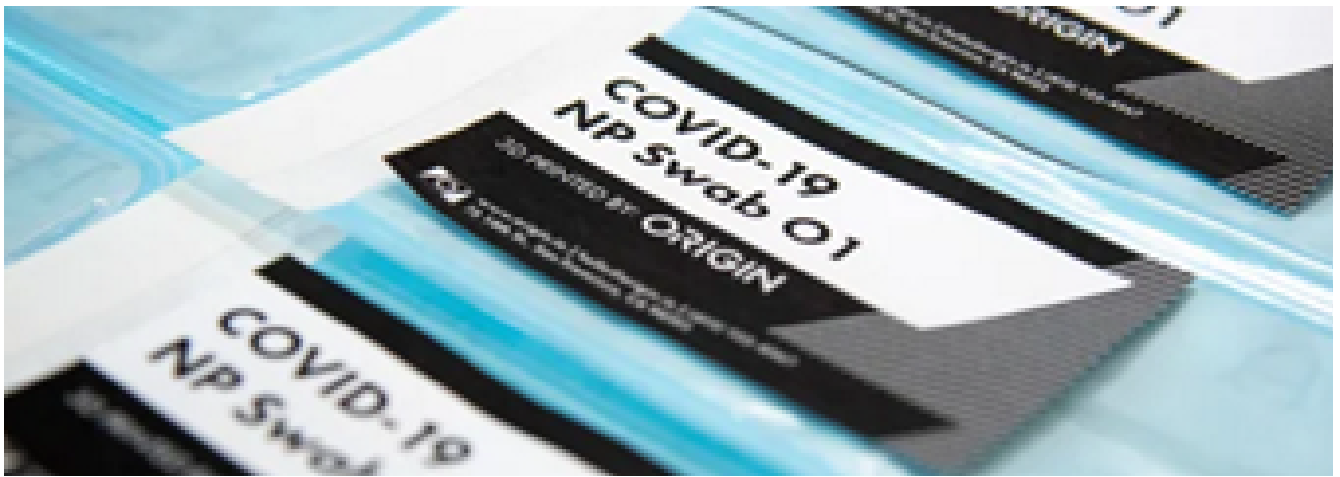
Wearable tech and early illness detection

Wearable gadgets such as the Apple Watch and others will continuously track the patient's blood oxygen saturation, heart condition, breathing, and activity. Since COVID-19 affects the lungs, blood oxygen saturation must be monitored (SpO2). It monitors the number of red blood cells that are oxygen-saturated. Wearables can detect COVID-19 or other illnesses' signs before they become visible. Although wearables have shown their ability to diagnose illness early, the signs they detect are not specific to COVID-19. These signs may be indicative of a variety of diseases or other health improvements.



3D-printed COVID gear designed with AI -

Companies such as Axial3D, an artificial intelligence tech company that specializes in medical 3D printing to produce anatomical models, have used its 3D capability in novel ways, such as printing face shields, ventilator bits, and nasopharyngeal swabs for research. Although 3D printing is often considered a [slow] last resort, the functionality of a printed swab may be superior to that of a conventional swab.



Use VR For Training

Hospitals are transitioning to augmented reality testing for diseases including and other than COVID-19 because they are unable to meet in big numbers but also want to easily train on up-to-date procedures. Doctors and nurses use AR, VR, and AI to simulate being in a room with a real patient, and their actions affect the simulation outcome in real time. The technology keeps healthcare staff in peak condition while still keeping them safe and at a safe distance.



Artificial food as a possible solution to food scarcity -

Some creative ideas are already available, offering a way to alleviate natural resource scarcity while also feeding millions of people. The Cultured Beef Project, for example, takes muscle cells from a cow's shoulder and feeds them a nutrient mix in a Petri dish, where they mature into muscle tissue. From a few starter cells, one can derive tons of meat.



Machine learning in healthcare -

There are several methods of learning, such as guided, unsupervised, semi-supervised, and reinforcement learning. It has the power to change healthcare systems and patient tasks in unparalleled ways in the future – and it has already begun its silent transformation. An algorithm, for example, will provide an accurate map of potential measles epidemic hotspots based on statistics on measles vaccine rates and disease outbreaks from various data sources, as well as non-traditional health data, such as social media and syndromic surveillance data provided by software that mines a vast array of medical records sources.



Use of Drones For Medical Supplies Deliveries -

Drone engineers and enthusiasts are using drones to track social distancing steps in huge crowds as well as to carry critical medical supplies to rural hospitals and clinics. Drones that detect viruses are now being used as early diagnostic instruments, taking people's temperatures and detecting the spread of infection.

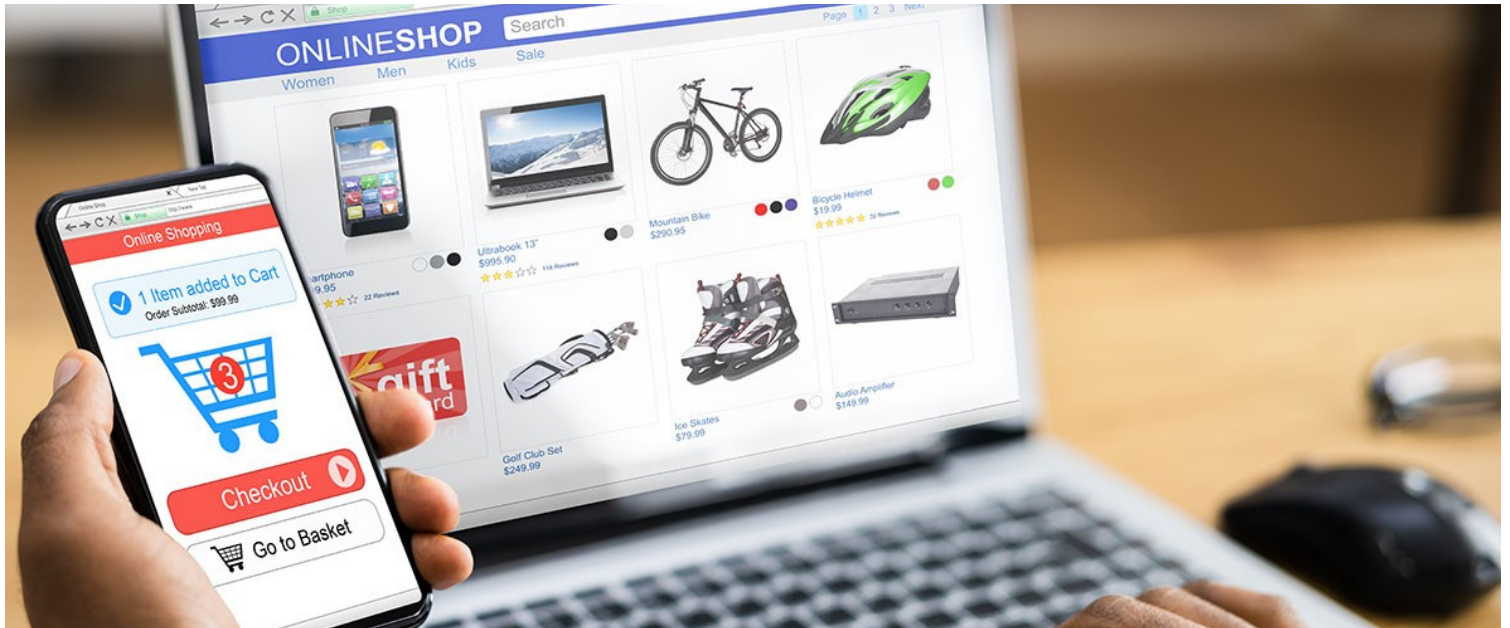


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- Surya Dhar

How COVID-19 triggered the digital and e-commerce



This article is based on United Nations Conference on Trade and Commerce

In years to come, we will look back at 2020 as the moment that changed everything. Nowhere else has unprecedented and unforeseen growth occurred as in the digital and e-commerce sectors, which have boomed amid the COVID-19 crisis.

Amid the slowing economic activity, COVID-19 has led to a surge in e-commerce and accelerated digital transformation. As lockdowns became the new normal, businesses and consumers increasingly “went digital”, providing and purchasing more goods and services online, raising e-commerce’s share of global retail trade from 14% in 2019 to about 17% in 2020.

Some benefit, others fall behind – a global view

Latin America’s online marketplace Mercado Libre, for example, sold twice as many items per day in the second quarter of 2020 compared with the same period the previous year. And African e-commerce platform Jumia reported a 50% jump in transactions during the first six months of 2020.

China’s online share of retail sales rose from 19.4% to 24.6% between August 2019 and August 2020. In Kazakhstan, the online share of retail sales increased from 5% in 2019 to 9.4% in 2020. Thailand saw downloads of shopping apps jump 60% in just one week during March 2020. The trend towards e-commerce uptake seen in 2020 is likely to be sustained during recovery, the report says.

But in many of the world’s least developed countries, consumers and businesses haven’t capitalized on pandemic-induced e-commerce opportunities due to persistent barriers.

These include costly broadband services, overreliance on cash, lack of consumers' trust, poor digital skills among the population, and governments' limited attention to e-commerce.

"Countries that harness the potential of e-commerce will be better placed to benefit from global markets for their goods and services in this digitalizing economy, while those that fail to do so the risk

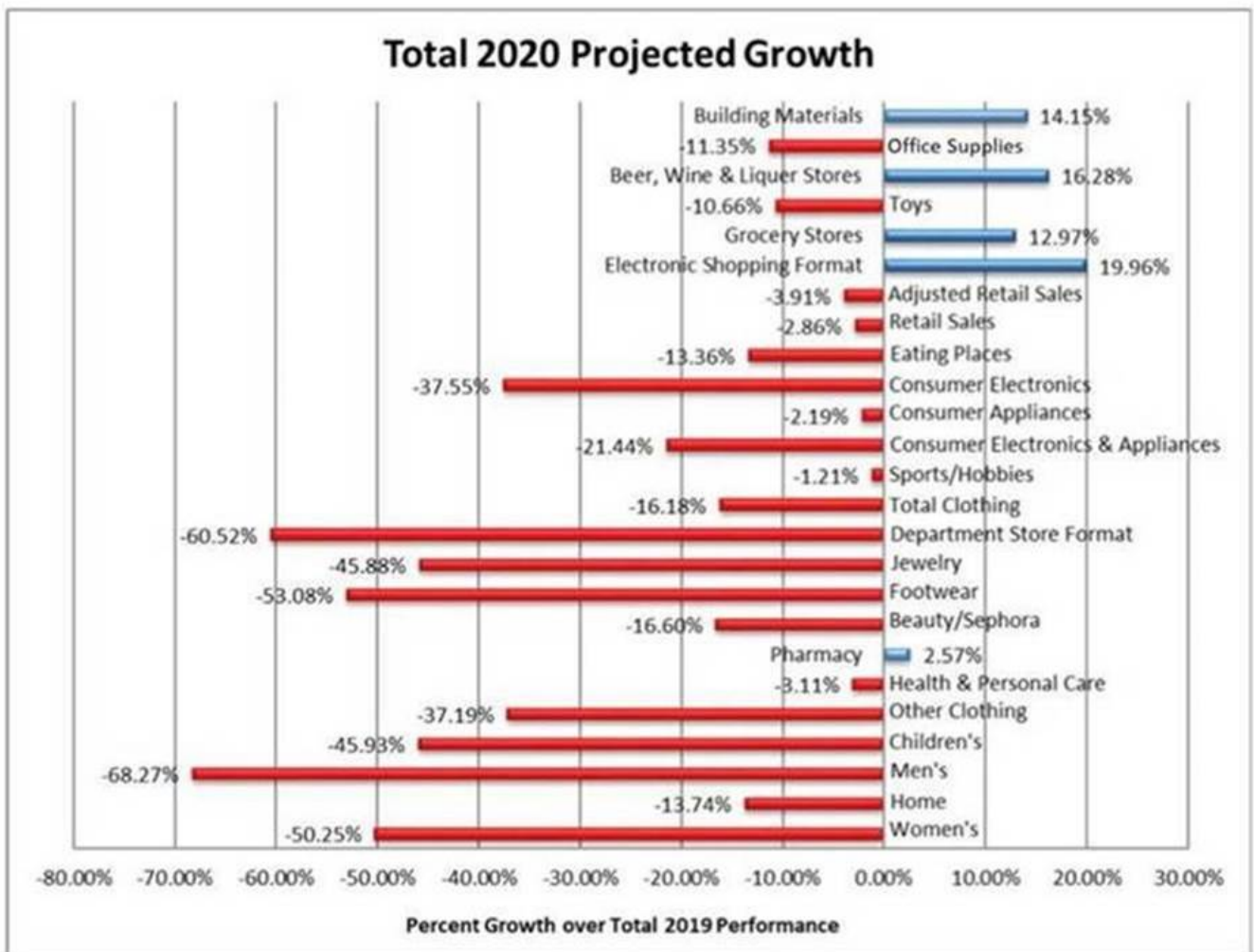
falling behind even further. One of the challenges is that the pandemic has mostly benefited the world's leading digital platforms.

Many solutions being used for e-commerce, teleworking, and cloud computing is provided by a relatively small number of large companies, based mainly in China and the United States.

Smaller players may have gained a deeper foothold, but their market presence is still dwarfed by the digital giants, which could entrench their predominant role during the pandemic.

In Asia, Indonesia launched a capacity-building program to expedite digitization and digitalization among micro, small, and medium enterprises.

Covid-19 pandemic accelerated shift to E-commerce by 5 years



As the COVID-19 pandemic reshapes our world, more consumers have begun shopping online in greater numbers and frequency. The pandemic has accelerated the shift away from physical stores to digital shopping by roughly five years. Department stores, as a result, are seeing significant declines. In the first quarter of 2020, department store sales and those from other “non-essential” retailers declined by 25%. This grew to a 75% decline in the second quarter.

Department stores are expected to decline by over 60% for the full year. **Meanwhile, e-commerce is projected to grow by nearly 20% in 2020.** The pandemic has also helped refine which categories of goods consumers are essential. Clothing, for example, declined in importance as more consumers began working and schooling from home. However, other categories, including groceries, alcohol, and home improvement materials, accelerated, by 12%, 16%, and 14%, respectively.

Large retailers like Walmart and Target have embraced omnichannel fulfillment to their advantage. In Walmart’s case, the pandemic helped drive e-commerce sales up 97% in its last quarter. Target set a sales record as its same-day fulfillment services grew 273% in the quarter.

Both retailers have also invested in online grocery, with Walmart today offering grocery pickup and delivery services, the latter through partners. Target has also just now rolled out grocery pickup and runs delivery through Shipt. Amazon, naturally, has also benefited from the shift to digital with its recent record quarterly profit and 40% sales growth.

The growth in e-commerce due to the pandemic has set a high bar for what’s now considered baseline growth. According to the Q2 2020 report from the U.S. Census Bureau (https://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf), U.S. retail e-commerce reached \$211.5 billion, up 31.8% from the first quarter, and 44.5% year-over-year. E-commerce also accounted for 16.1% of total retail sales in Q2, up from 11.8% in the first quarter of 2020.

Finally, how much of this pandemic resulting online spending is a temporary shift, and to what extent is it impacting longer-term forecasts? The answer, at least in this estimate, is that this pandemic pushed the industry ahead by around five years. The shift away from physical stores was already underway, but we’ve now jumped ahead in time as to where we would be if a health crisis had not occurred. This is a similar trend to what other industries have seen as well, including things like streaming/cord-cutting, gaming and social video apps, and more.

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- Anshula Arya

Startups and Techceleration

Across sectors in India, the Covid-19 crisis pushed businesses to embrace technology at a rate they wouldn't have thought possible otherwise. In such ways, 'Digital Transformation', a term commonly associated with businesses looking to use technology to improve their operations, is slowly becoming a reality even in small-town India, driven by the sheer need for innovation during a global pandemic.



The state government of Maharashtra in November, launched a programme called **SWADHYAY** to improve the online education of children around the state. The programme tapped WhatsApp to provide weekly assessments and learning activities to students in classes 1 to 10. Six weeks into the programme, some 1.1 million students in the state were using the service, according to CONVEGENIUS, a Noida-based education tech-social enterprise.

Maharashtra tapped the expertise of ConveGenius and Leadership For Equity, an organization working to bring positive change to education systems. A cloud services company, Cloudstrats, is helping the state put the program on the internet. The program is open to students of schools affiliated with the state education board and is run by the State Council for Education Research and Training.

The Covid-19 pandemic has forced businesses and governments to embrace digital transformation with an enthusiasm they had never been able to summon before. Years of adoption of digital technologies at pre-Covid rates have been compressed into days, a survey by the consultancy McKinsey has found. Many of those changes will be permanent, the survey's respondents say.

There are many such examples of tech adoption across various sectors of businesses in these Covid times.

DUKAAN, for instance, was started in 2020. It is a do-it-yourself platform for a small merchant with no programming skills to set up his online store within 30 seconds, according to the startup. Each merchant gets a unique store link on which to showcase products or services and further share this link with customers on social media platforms. It was used by over 2.7 million merchants in the three months since its launch. Merchants have generated over 600,000 orders, resulting in a total gross merchandise value of over Rs 100 crore.

Accelerated response

Time required to respond to changes

■ Organisational Changes
■ Industry-wide changes

	EXPECTED (No of days)	ACTUALS	ACCELERATION FACTOR, multiple
Increase in remote working and/or collaboration	454	10.5	43
Increasing customer demand for online purchasing/services	585	21.9	27
Increasing use of advanced technologies in operations	672	26.5	25
Increasing use of advanced technologies in business decision-making	635	25.4	25
Changing customer needs/expectations	511	21.3	24
Increasing migration of assets to the cloud	547	23.2	24
Changing ownership of last-mile delivery	573	24.4	23
Increase in near shoring and/or insourcing practices	547	26.6	21
Increased spending on data security	449	23.6	19
Build redundancies into supply chain	537	29.6	18

SOURCE McKinsey & Co

Matchmaking platform SHAADI.COM said over one lakh members have used its new in-app video calling feature 'Shaadi Meet' to connect with their potential partners instead of face-to-face meetings at coffee houses and restaurants amidst the COVID-19 pandemic.

Shaadi.com launched the feature on June 19. It claims that on the day of the launch, around 75,000 members used the video calling facility. On Day 2, the number went up by 40 percent to 1.05 lakh. The overall engagement on the platform since the launch of Shaadi Meet has gone up by 21 percent, a statement said.

Health tech Startups are coming up with their digital prowess in helping to fix the age-old Indian healthcare system.













Bengaluru-based DOZEE has developed a contactless health monitoring system that helps doctors, patients, and hospitals maintain the social distancing protocol without impacting the quality of treatment. Dozee is turning normal beds at home into step-down and makeshift ICU beds, thus helping several state governments and private hospitals. Using our contactless and remote monitoring model, hospitals and doctors have been able to automate the entire monitoring of vital signs. They are also working with 55+ hospitals in 15 cities and powering 3,000+ Covid-19 beds in step-down ICUs with our technology. So far, we have monitored 7,000+ Covid-19 patients in hospitals.

Many startups have come up to help the SMB sector in India by building utility solutions. Founded in 2018 Bengaluru-based fintech startup, KHATABOOK (a digital ledger app) enables micro, small, and medium businesses to track transactions safely and securely. The company also offers online payment collection through UPI and QR, sends periodic reminders to creditors via messages, and generates reports.

The app is cut out for India's MSME (Micro, Small, and Medium-Sized Enterprise) sector, including Kiranas, medical shops, tuition centers, gyms, distributors, wholesalers, etc. Khatabook relies heavily on cutting-edge open-source technologies. The company continuously uses ML models for problem-solving. The app is available in 13 languages to ensure maximum digital adoption in all the districts of India. The startup is leveraging AI and machine learning to offer online digital transaction services.

More startups have come up with solutions for the Covid Relief from the Indian Startup ecosystem.

How Startups Are Supporting Covid-19 Treatment

Startups	Covid-Related Products
	Contactless health monitoring
	COVID-19 progression monitoring tool – qXR Pandemic Response Care Platform – qScout
	Testing, homecare, SP2 app - oxygen saturation tracker
	AIoT-based thermal scanner
	CoVawe, a screening tool for Covid-19
	Command centre for healthcare enterprises, telehealth tools for clinics, other providers
	Infrared thermal sensor with AI algorithms to predict COVID-19 in real time
	ICU ventilators and high-flow oxygen therapy
	Video consultation
	Homecare and testing
	eConsultancy, WONDRx SMART Rx paper to digitise handwritten Rx
	Covidsafe – a Covid 19 risk management solution

Source-
(<https://inc42.com/features/how-indias-healthtech-startups-are-countering-second-covid-19-surge/>)



But the biggest disruption of the Covid times is that most companies have turned into tech companies of sorts by embracing digital technologies, mandated by nationwide lockdowns and social distancing norms.

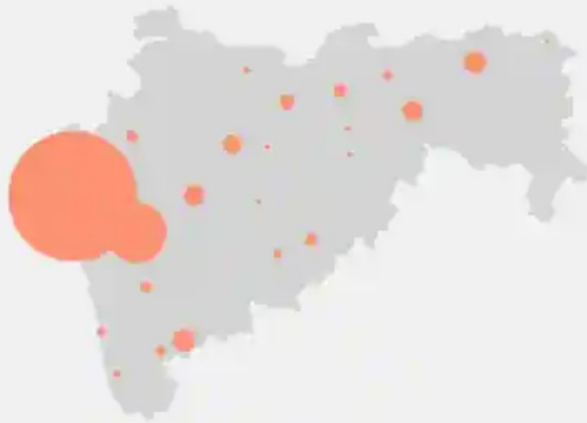
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Mumbai Covid Treatment Model

Abstract: The way Mumbai BMC Commissioner Iqbal Singh Chauhal handled the ongoing second phase of Covid-19 in Mumbai is very surprising. A detailed approach, planning, and foresight helped BMC to avoid panic, which helped reduce the rush for hospital beds, black marketing of beds, and Oxygen cylinders. The sincerity displayed by the BMC administration in tackling the ongoing Coronavirus menace, its patient friendliness, and hygiene-conscious efforts have attracted loads of appreciation and laurels from not only across India but from around the world too.

Number of cases by district in Maharashtra
(as of Apr 10, 7:30 PM)



In the case of a pandemic, in this case, Covid 19, it is of great interest for Operations professionals to know how the Brihan Mumbai Municipal Corporation (BMC) planned the attack on the Covid virus in Mumbai. The BMC Commissioner Iqbal Singh Chauhal planned the strategy to face the second wave almost six months back.

Even though the virus made its entry in early March 2020 in India, the real panic started in April to July. The low virulence of the virus during Dec, Jan 21, etc led the political leadership to prematurely conclude that the virus had lost its fight in India. But actually, the virus was going into a genetically variant form, mutating. When the Indian government ordered the elections to five state legislative assemblies to be held along with the KumbhMela, preponed by a year, usually it is conducted once in 12 years, the medical fraternity could not raise many protesting voices or cry foul.

During such pandemics, the following points are important to be considered. We shall handle each of the points.

1. Availability of healthcare professionals
2. Infrastructure - Hospital and beds
3. Informing test results to people
4. Assigning beds to patients
5. Transportation of patients
6. Ensuring Oxygen availability
7. Controlling Hosp costs
8. A patient care, fumigation, and follow up
9. Waste disposal of Covid-19 patients
10. Emergency care and response
11. Handling dead bodies
12. Effective directions and Leadership

- **Availability of healthcare professionals:** The demand for doctors and health professionals will be high during such pandemics. At short notice recruiting new doctors and nurses is a near-impossible task. But by offering a high salary (about Rs 50,000 pm) and free accommodation near to the hospital, BMC could attract many medical professionals.
- **Infrastructure** - all the hospitals had to earmark a number of their beds for Covid patients. The max rates for customers were fixed and hospitals could not charge anyone arbitrarily
- **Informing test results to the public** - There were about 54 testing centers in Mumbai. The test results would be available by evening. Instead of patients collecting the test results and creating panic, searching for hospitals and beds, all the testing centers were asked to forward the test results to the central war room from where it would be sent to each of the 24 sub war rooms corresponding to the different areas during the night. By morning 8 am, BMC officials would visit the homes of Covid positive patients, and if they needed urgent hospitalization would be given the information regarding it and directed to the necessary hospital and bed. Less severe patients were advised to undergo home quarantine. This reduced the rush of the patients and their relatives to the hospitals.
- **Assigning beds to patients** - the patients knew beforehand which hospital and which bed was assigned to them before they left the homes. This avoided panic and rush, unnecessary verbal exchanges, and was very comforting for the patients.
- **Transportation of patients** - about 800 SUVs in Mumbai city were rented and the driver's seat was partitioned with plastic glass partitions. Suddenly 800 more ambulances were made available in the city. In addition, Uber was asked to help with their software platform to orderly assign the SUVs to the right patients and hospitals to transport patients. A lot of confusion was avoided by this action.
- **Ensuring Oxygen availability** - BMC Commissioner Chauhal firstly augmented the Oxygen capacity in the city by building 16 Oxygen generating plants in 12 Mumbai hospitals. Indian Institute of Technology Bombay converted its existing Nitrogen plant into an oxygen plant. With proper allocation of beds to patients and Oxygen supply to these hospitals assured, there was no hoarding and black marketing of oxygen cylinders. There were 6.6 L patients in Mumbai and they required just 270 MT of O₂ compared to 93,000 patients in Delhi at the beginning of May where almost 550 T of O₂ was needed.
- **Controlling Hospital costs** - an upper ceiling for bed charges were decided by the govt and hence no black marketing of hospital beds was possible. Covid treatment costs are not a nightmare as it is in other parts of the country.
- **A patient care, fumigation, and follow-up** - Patient care and follow-up were superior as they had enough Oxygen and ICU facilities. Once a patient is under quarantine, the BMC officials have been following up with the patients almost 3-4 times daily. This was specially mentioned by the home quarantined patients. BMC officials make sure that the homes where Covid patients are quarantined are fumigated at least once and more times if the patient requests.

- **Wastes disposal of Covid patients** - unheard in the country, BMC takes special care to dispose of the biowastes of the Covid patients. BMC takes special care to collect the biowaste from the Covid patients separately safely and dispose of them very responsibly and scientifically.
- **Emergency care and response** - Seven jumbo hospitals in open areas and playgrounds were opened in Mumbai in different areas. Patients who were feeling sudden breathlessness could visit these Jumbo hospitals for treatment. Almost 20,000 patients took treatment this way. This facility helped decongest the existing hospitals.
- **Respectfully handling dead bodies** - The premier technological Institute of the country Indian Institute of Technology (IIT) Bombay provided the required IT support, arranged a giant screen on their campus, and coordinated the functioning of the 54 crematoria in the city to give respectful burial of the dead. They helped give the relatives of the dead patient information regarding the cremation slots and times at the respective crematorium. This assured there was no unexpected rush at the crematorium and the dead were given a decent and respectful cremation in the presence of the grieving relatives.
- **Effective directions and leadership** - BMC Commissioner Chauhal has shown great leadership in effectively and timely directing the Covid care treatment efforts. The highly disciplined BMC staff have been very helpful for the Mumbai citizens both at the identification and follow-up stages by delivering high-quality care.



Though BMC has done a good job so far, considering the third phase coming in October, it is not known how the virus will spread or be contained. A constant lookout for any outbreak in any location in the huge metropolis of Mumbai and sustained effort at containment is the need of the hour.

Since vaccination efforts are continuing at a slow pace with only 2% of the population vaccinated so far, it is unclear whether infection-induced herd immunity will precede vaccine-induced immunity in the country.

The emergence of new viral variants causes much confusion regarding treatment protocols. It is also unclear how events will emerge in the coming weeks and months. Cities and towns across the country are now learning from BMC on how to handle this infection by reducing the mortality rate.

- **George Escaw**