COVID-19 Perspectives

Objectives of this document

COVID-19 is a global societal crisis

We at BCG believe that the COVID-19 outbreak is first and foremost a societal crisis, threatening lives and the wellbeing of our global community. Society now, more than ever, needs to collaborate to protect people’s lives and health, manage mid-term implications, and search for lasting solutions.

Leaders need to drive an integrated response to navigate the crisis

It is the duty of health, political, societal, and business leaders to navigate through this crisis. A complex interplay of epidemic progression, medical response, government action, sector impact, and company action is playing out. This document intends to help leaders find answers and shape opinions to navigate the crisis in their own environments. It encourages thinking across the multiple time horizons over which we see the crisis manifesting itself.
COVID-19 will be a journey with three distinct phases, requiring an integrated perspective

Typically the initial phase after a pandemic outbreak—goal is to urgently limit number of new cases, especially critical care

Social distancing (lockdown) and partial business closures lead to economic recession with large employment impact

Finding paths to collectively fight the virus, restart the economy, and support society in balancing lives and livelihood

Increasing economic activity with recovering GDP, some business reopenings, and social distancing on sustainable level

Disease controlled through vaccine/cure/herd immunity, and treatment within sustainable medical capacities possible

Reactivated economy with strong business rebound and job growth, social restrictions limited or completely suspended

1. Disease progression, health care system capacity, and response
2. Government policies and economic stimulus
3. Economic scenarios
4. Business engagement and response
5. Public engagement and response

All of the above five factors result in specific economic and social outcomes in each phase

Source: BCG
9 action areas for business leaders

Navigate through Flatten, Fight, and Future

**Flatten**

1. Develop Scenario-Based Planning Approach to manage uncertainty

2. Create a Rapid Response and Transformation (RR&T) team

3. Revamp organization for the New Reality

4. Sensing Consumer Behavior and seizing Demand Shifts

5. Stabilize and restart Supply Chain, Manufacturing

6. Restructure Cost, manage Cash & Liquidity

7. Emerge Stronger, drive advantage in adversity

8. Accelerate Digital and Technology transformation


Note: RR&T = Rapid Response and Transformation Team
Source: BCG
Executive Summary | COVID-19 BCG Perspectives

To protect and grow topline through the crisis, it is critical for companies to rapidly sense consumer behavior and seize resulting demand shifts

- COVID-19 drives changes in consumer behavior; leaders should understand de-averaged perspectives on geographies, sectors, channels, and target groups
- Two imperatives emerge for protecting and growing B2C and B2B top line: building deep sensing capabilities ("Lighthouse") and extending brand relevance and reach
- Build "Lighthouse" by leveraging high frequency data to sense short-term and structural demand shifts; key asset in a world that sees amplified speed of change
- Extend brand relevance and reach by purposefully aligning to new shape of demand; reinvent offering and channel mix, supercharge marketing, and personalize value
- Leaders augment organization capabilities in advanced analytics, scalable tech architecture, digital experiences, and innovation to win in the new reality

Across countries, efforts to flatten the curve and ramp-up testing continue; the impact on economy, businesses, and consumer sentiment persists

- Globally, 2.1 million patients have recovered from COVID-19 and the case-doubling rate has improved to 35 days
- As countries move into the 'Fight' phase, several have started to see a decline in daily cases; while some emerging economies continue to see an increase
- Testing landscape is changing rapidly, molecular testing continues as “gold standard;” continued efforts to improve test/case ratio
- Economic forecasts deteriorating for US and Europe; rebound of global GDP not expected before 2021
- Total Shareholder Return still not back to pre-crises level for any sector across regions; 11 sectors have >10% of companies with high probability of default
- Consumers increasingly display less pessimistic outlook than four weeks ago; have started stepping out for work and essentials (with easing of lockdowns)

We believe during this crisis leaders need to think along two dimensions:

1. Taking an integrated perspective on health/medical progression, governmental responses, societal reactions, and economic implications to understand business/sector impacts
2. Thinking multi-timescale in a Flatten-Fight-Future logic
Guide for leaders
Sensing consumer behavior and seizing demand shifts
How companies can adapt and transform to win

Updated epidemic progression and impact
Epidemic progression and virus monitoring
Economic and business impact
Consumer sentiment snapshot
# COVID-19: Impact dashboard

## Epidemic Progression

<table>
<thead>
<tr>
<th>Country</th>
<th># of cases</th>
<th># of recoveries</th>
<th># of fatalities</th>
<th># of days of case doubling</th>
<th># of reported recoveries as % of total cases</th>
<th># of countries with 1k+ cases</th>
<th># of tests / case</th>
<th># of tests / million</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>5.2M</td>
<td>2.1M</td>
<td>338K</td>
<td>24 Apr</td>
<td>28%</td>
<td>101</td>
<td>10</td>
<td>35</td>
</tr>
<tr>
<td>China</td>
<td>5.2M</td>
<td>2.1M</td>
<td>338K</td>
<td>08 May</td>
<td>34%</td>
<td>101</td>
<td>10</td>
<td>35</td>
</tr>
<tr>
<td>Europe</td>
<td>5.2M</td>
<td>2.1M</td>
<td>338K</td>
<td>22 May</td>
<td>39%</td>
<td>101</td>
<td>10</td>
<td>35</td>
</tr>
</tbody>
</table>

## Economic Impact

### GDP forecasts [%]

<table>
<thead>
<tr>
<th>Year</th>
<th>IMF</th>
<th>Banks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>-10</td>
<td>-30</td>
</tr>
<tr>
<td>2021</td>
<td>-8</td>
<td>-20</td>
</tr>
<tr>
<td>2022</td>
<td>-6</td>
<td>-10</td>
</tr>
<tr>
<td>2023</td>
<td>-4</td>
<td>-3</td>
</tr>
<tr>
<td>2024</td>
<td>0</td>
<td>-5</td>
</tr>
<tr>
<td>2025</td>
<td>2</td>
<td>-3</td>
</tr>
<tr>
<td>2026</td>
<td>4</td>
<td>-1</td>
</tr>
<tr>
<td>2027</td>
<td>6</td>
<td>-2</td>
</tr>
<tr>
<td>2028</td>
<td>8</td>
<td>-1</td>
</tr>
</tbody>
</table>

## Business Impact

### Stock market performance

<table>
<thead>
<tr>
<th>Stock Index</th>
<th>Change from 21 Feb to 22 May</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P500</td>
<td>-11%</td>
</tr>
<tr>
<td>FTSE100</td>
<td>-19%</td>
</tr>
<tr>
<td>DAX</td>
<td>-18%</td>
</tr>
<tr>
<td>CHN SSE</td>
<td>-7%</td>
</tr>
</tbody>
</table>

### Total Shareholder Returns

First column: 21 Feb to 20 Mar; Second column: 21 Feb to 15 May

<table>
<thead>
<tr>
<th>Country</th>
<th>Americas</th>
<th>Europe</th>
<th>Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharma</td>
<td>-19%</td>
<td>-20%</td>
<td>-22%</td>
</tr>
<tr>
<td>F&amp;B</td>
<td>-26%</td>
<td>-24%</td>
<td>-12%</td>
</tr>
<tr>
<td>Telecom</td>
<td>-17%</td>
<td>-20%</td>
<td>-14%</td>
</tr>
<tr>
<td>Software</td>
<td>-30%</td>
<td>-32%</td>
<td>-28%</td>
</tr>
<tr>
<td>Retailing</td>
<td>-42%</td>
<td>-36%</td>
<td>-24%</td>
</tr>
<tr>
<td>Capital goods</td>
<td>38%</td>
<td>-35%</td>
<td>-29%</td>
</tr>
<tr>
<td>Auto</td>
<td>-47%</td>
<td>-45%</td>
<td>-32%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>-42%</td>
<td>-26%</td>
<td>-22%</td>
</tr>
<tr>
<td>Energy</td>
<td>-56%</td>
<td>-45%</td>
<td>-41%</td>
</tr>
<tr>
<td>Banks</td>
<td>-41%</td>
<td>-44%</td>
<td>-26%</td>
</tr>
</tbody>
</table>

## Estimated current employment impact

<table>
<thead>
<tr>
<th>Country</th>
<th>Total employment 2019 (M)</th>
<th>Employees impacted (M)</th>
<th>% of employees impacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>~159</td>
<td>~39</td>
<td>~24%</td>
</tr>
<tr>
<td>UK</td>
<td>~33</td>
<td>~8</td>
<td>~25%</td>
</tr>
<tr>
<td>Germany</td>
<td>~45</td>
<td>~10</td>
<td>~23%</td>
</tr>
<tr>
<td>France</td>
<td>~28</td>
<td>~13</td>
<td>~46%</td>
</tr>
<tr>
<td>Italy</td>
<td>~23</td>
<td>~7</td>
<td>~30%</td>
</tr>
<tr>
<td>Spain</td>
<td>~20</td>
<td>~4</td>
<td>~20%</td>
</tr>
</tbody>
</table>

1. No. of doubling days based on 7 day CAGR
2. Median of values for top 15 countries by nominal GDP (except China)
3. Ongoing trials including pre-clinical, Phase 1 (first trial in humans), Phase 2, Phase 3, Phase 4
4. Ongoing trials including Phase 1/first trial in humans, Phase 2, Phase 3, Phase 4
5. 12 month development "best case", more likely to couple times to trials across population
6. Remdesivir is approved now, could be more widely available by Jul 2020 for the first wave, estimated timeline to Oct 2020 – April 2021
7. If first round of drugs being tested succeeds – 6 to 9 months. First - substantially longer
8. IMF April 2020 forecast; Vol for forecasts [where available] of International Monetary Fund, JP Morgan Chase; Morgan Stanley; Bank of America; Fitch Solutions; Credit Suisse; Danske Bank; ING Group; HSBC: As of reports dated 12 April 2020 to 12 May 2020
9. Available data as of May 2020; figures are changing rapidly and often being reported with a lag from the current date
10. Includes increase in unemployment and employees covered by government’s wage support programs.
11. Performance is ranked for two periods, first from 21 February 2020 (before international acceleration of outbreak) to 28 March 2020 (trough of the market) and from 21 February 2020 through 22 May 2020
12. Food & Beverage
13. Ongoing trials including Phase 1/first trial in humans, Phase 2, Phase 3, Phase 4
14. Ongoing trials including Phase 1/first trial in humans, Phase 2, Phase 3, Phase 4
15. 12 month development "best case", more likely to couple times to trials across population
16. Remdesivir is approved now, could be more widely available by Jul 2020 for the first wave, estimated timeline to Oct 2020 – April 2021
17. If first round of drugs being tested succeeds – 6 to 9 months. First - substantially longer
18. IMF January 2020 forecast
COVID-19 drives changes in consumer behavior; de-averaged perspective required, but four key trends observed

**Change in consumer behavior is not uniform**

De-averaged perspective required across geographies, sectors, sales channels, target groups, etc.

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**Large shifts in spend categories**

- 36% consumers trading up/down on products,
  60% of companies increase spend on IT/digital

**Significant turn to online channels**

- ~20% web-traffic increase observed for retail categories
  vs. ~60% drop in footfalls

**Fewer transactions with higher value**

- Groceries have seen a 30%+ increase in transaction value
  for month of April vs. pre-crisis

**Increased trust in brands with purpose**

- 35%+ net likelihood of buying from brands that have positively stood out during the crisis

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1. BCG-COVID-19 Consumer Sentiment Survey, April 14-20, 2020 (N = 2783 across US; unweighted)
2. DSR Digital Transformation Survey 2020 (n=217, as of April 30, 2020)
3. For Germany, Italy, US as of April 26, 2020; categories include consumer goods and retail, beauty and cosmetics, beverages, consumer electronics, fashion and apparel, jewelry and luxury products, furniture, restaurants and delivery, and home and garden
4. Spend data is based on consumer credit card/debit card/checking account activity from a panel of US consumers from Earnest Research (tracked responses exclude cash/other), May 6, 2020
5. BCG-COVID-19 Consumer Sentiment Survey, April 17-20, 2020 (N = 5728 across US, UK, Germany, Italy and China; unweighted)

Source: BCG Marketing, Sales, and Pricing, BCG GAMMA, Earnest Research, Bloomberg, BCG
Embedding deep sensing capabilities, and extending brand relevance and reach are key priorities for leaders

**Flatten**
- A. Develop rapid demand sensing capability ("Lighthouse")

In some cases, fully rebuilding demand models and forecasts may be essential

- 01. Leverage high-frequency data
- 02. De-average demand patterns

**Fight**
- B. Extend brand relevance and reach

- 01. Clarify and amplify brand purpose
- 02. Align to new shape of demand
- 03. Reinvent your offering
- 04. Reimagine omni-channel
- 05. Supercharge precision advertising
- 06. Personalize and de-average value

Source: BCG
Pace and de-averaged nature of change make rapid sensing capabilities a key imperative

Change is coming at fast pace and in different shapes

The pace of change has increased by multiples

“*We have seen two years’ worth of digital transformation in two months*”

– Satya Nadella, CEO of Microsoft

Change in consumer behavior is not uniform

Short-term sensing

Sensing short-term trends in demand based on high-frequency data

Medium-term scenarios

Understanding scenarios for changing shape of demand and structural shifts

Source: Microsoft; BCG
A.1

Leverage high-frequency data

How do we operate in a world where pace of change has increased by multiples?

A real time 'Lighthouse' to navigate uncertainty

Data

- **Internal**
  - Products and customers
  - Order intake
  - Sales
  - Production
  - Inventory
  - Promotional activity

- **External**
  - Epidemiological models
  - Macroeconomic and government
  - Consumer Activity Index™
  - Customer spend
  - Consumer sentiment
  - Footfall, search, social trends

Example

- **Real-time data cockpit**
  - Current selection: Italy

![Map of Italy with data visualization](image)

**Effective reproduction number**
- Estimated Past range
- Predicted Future range

**Change in footfall (indexed, in %)**
- Residential
- Workplace
- Transit
- Retail

- **Insight on current demand changes**
  - ...web traffic analysis predicts near-term actions

- **Outlook on future demand changes**
  - ...consumer sentiment analysis signals persistence

- **Fully rebuilding past models and analyses**
  - ...customer spend analysis offers retrospective

Source: BCG Lighthouse
To gain deep insight into consumer behavior, de-average across multiple factors

**Geography**
- Countries/states operate on different timelines
- Regional/local authorities decide reopening

**Sector**
- Not all industries are hit in the same way
- Dependency on global supply chain is critical

**Sales channel**
- E-commerce booming during "Flatten"
- Brick and mortar stores require reimagination

**Target group**
- Spend differs by customer generation
- Gen X more stable, millennials diverging

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### A.2

**De-average demand patterns**

How do we deal with wide range of change in consumer behavior?

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**Example | US Consumer Activity Index (CAI) can help prioritize business decisions**

As of April 2020

**Single metric available by geography** (down to the county or market level)

**Decision basis for optimizing marketing/advertising spend by region**

Source: BCG Consumer Activity Index; BCG
Key priorities for extending brand relevance and reach

1. **Clarify and amplify brand purpose**
   - Clarify your reason for being and connect it to changing needs
   - Create sustained advantage by taking bold and tangible actions

2. **Align to new shape of demand**
   - Discern short- and long-term shifts in customer demand
   - Capitalize on opportunities by placing the right bets

3. **Reinvent your offering**
   - Redefine your offering to service the new reality
   - Pivot to new products, services to target changed customer demand

4. **Reimagine omnichannel**
   - Invest to be where your customers are
   - Provide a consistent, customer-centric approach across channels

5. **Supercharge precision advertising**
   - Pinpoint and capitalize on pockets of high ROI
   - Implement targeted advertising spend to gain share

6. **Personalize and de-average value**
   - Reset price and promotion strategies to deliver value across segments
   - Create guardrails for short-term incentives that protect lifetime value
B.1 Clarify and amplify brand purpose

How can we authentically reinforce and live our brand purpose during this crisis?

Focus on how your brand can take a lead in evolving societal needs...

1. Lean into purpose and values internally and externally
2. Take tangible, bold, and relevant actions
3. Create emotional connection through authentic messages
4. Expand avenues for CEOs to speak directly to customers
5. Bolster 'social license to operate' on societal factors

Example | B2C airline leans into commitment to uplifting service

Before COVID-19, purpose-driven business with mission to lift the world
- Empowered agents to give consumers flexibility
- Established profit-sharing airline partnerships
- Offered the same benefits to all employees

During the crisis, reinforces purpose by:
- Offering free flights for medical personnel
- Extending statuses and benefits for a full year
- Waiving fee changes and lengthening ticket expiration dates for passengers

Source: BCG BrightHouse; BCG Case Experience
### Identify evolving demand spaces and customer needs

**Examples**

- Strengthened drivers of choice
  - Casualization of apparel

- Increasing 'table stakes'
  - Sanitation and hygiene expectations

- Pivots in lifestyles & habits
  - Cooking dinner at home

- Major shifts in supply
  - Disruption in retail landscape

### Capitalize on opportunities opened up by new shape of demand

**Examples**

- Emergence of new sales opportunities
  - Auto purchases as concern about alternatives rises

- Improved accessibility through leveraging digital
  - Virtual workout classes compared to gyms and fitness studios

- Expanded ways of customer engagement
  - Live-streaming via social media with integrated commerce

- New white space and innovation opportunities
  - Tech-enabled shopping leveraging AR/VR

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**Example | B2C fitness platform pivots from physical studios to digital classes**

<table>
<thead>
<tr>
<th>30k</th>
<th>90%</th>
<th>500+</th>
<th>2k+</th>
<th>11%</th>
</tr>
</thead>
</table>
| Partners across 30 countries | Partners closed indefinitely due to crisis | Studios that have added live classes | Pre-recorded audio and video workouts | Increase in monthly active users (vs. -1% last year)

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1. 3-month CMGR January 2020 to March 2020 vs. 3-month CMGR January 2019 to March 2019

Source: CNN Business; App Annie; BCG Consumer Sentiment Research; BCG Case Experience
B.3
Reinvent your offering

How do crises create an opportunity for reimagining?

Crisis creates opportunity for innovation and imagination

- **WW1 / Spanish Flu**
  - Founded: Airplane manufacturer, Auto maker, Rental car co.
  - Re-imagined: Auto company made aerospace engines, Auto company made tractors
  - Invented/Developed: Sun lamps, Blood banks, Sanitary pads, Stainless steel, Zippers

- **Great Depression**
  - Founded: Health care co., Tire manufacturer, Insurance co.
  - Re-imagined: Soap company sponsored soap operas, Bank entered retail brokerage
  - Invented/Developed: Disney first animated movie, Car radio, Supermarkets, Ritz Cracker

- **WW2**
  - Founded: Auto maker, Dollar store, Fast food chain
  - Re-imagined: Chemical company made synthetics, Airplane manufacturer made pressurized aircraft
  - Invented/Developed: Computers, Jet engines, Rockets, Penicillin, Atomic technology

- **’70s oil crisis**
  - Founded: Shipping co., Software co., Home improvement retailer
  - Re-imagined: Airline diversified
  - Invented/Developed: Biofuels, General purpose processor, Car fuel-efficiency

- **Dotcom / SARS**
  - Founded: Technology and internet co., Software co.
  - Re-imagined: Wholesale marketplace launched B2C ecommerce
  - Invented/Developed: iTunes, iPod, Surveillance technology, Wikipedia

Source: Havas Group, BCG Henderson Institute

Illustrative, Non-exhaustive
Reimagine and redesign offerings to meet new customer needs during COVID-19 crisis

1. Redesign offerings to serve cost-conscious customers
   - Innovate into lower price points: Develop low-cost product lines to capture cost sensitive customers

2. Reimagine role of store and deploy new formats
   - Reconsider store formats: Rationalize number of stores and transform large unprofitable stores into smaller stores that function as hubs for pickup and drop-off
   - Create unique in-store experiences

3. Enter and grow adjacencies to meet new customer needs
   - Introduce new products: Design products that meet health and safety needs
   - Pivot current product offerings: Target areas of increased customer demand

Example | B2C rideshare company pivots to double-down on food and other delivery services

Major decline to its core rideshare business
- Pre-crisis ~75% of revenue from core rideshare offering
- Rideshare revenue declined ~80% as stay-at-home regulation started

Reallocated resources to new delivery business
- Introduced new non-food delivery services
- Transitioned 40% of drivers to delivery
- Targeted cross-sell of users to delivery

April delivery bookings vs. last year +89%
### B.4 Reimagine omnichannel

How can we best serve our customers seamlessly across their purchase journeys?

#### B2C | Chinese cosmetic company

Leveraged a social media app to connect with consumers and sell online

- Designed **livestream shopping event**
- Leveraged **digital chat tools** for engagement
- Sent **direct 1-1 offers** to consumers

- **100+** Featured beauty advisors
- **120+** February 2020 vs. February 2019 sales

#### B2B | Animal health manufacturer

Established NextGen sales engine to deliver a customer-centric personalized experience

<table>
<thead>
<tr>
<th>Acquire</th>
<th>Nurture</th>
<th>Manage</th>
<th>Success</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEARN</strong></td>
<td><strong>BUY</strong></td>
<td><strong>USE</strong></td>
<td></td>
</tr>
<tr>
<td>Engage</td>
<td>Sell</td>
<td>Support</td>
<td></td>
</tr>
</tbody>
</table>

- Prioritized based on **account potential**
- Leveraged **always-on digital selling**
- Alerted sales reps to **take action** in real time

- **4-7x** Sales productivity improvement
- **-30%** Decrease in cost of sales

Source: Alibaba Group; MIT Sloan Management Review; BCG Consumer Sentiment Research; BCG Case Experience
Supercharge precision advertising

How can we capture and retain the surge in digital trial and demand?

1. Reinvent your brand now
   Take advantage of unprecedented customer attention

2. Capitalize on increasing ROIs
   Be ready to lock in low rates as others cut spending

3. Optimize media mix
   Increase flexibility of budget and shift spend to TV and digital

4. Invest thoughtfully in demand generation
   Tap into latent demand as regions and categories rebound

Example | B2C health and wellness retailer with increasing ROI on digital media

<table>
<thead>
<tr>
<th>Cost per ad</th>
<th>Basket size</th>
</tr>
</thead>
<tbody>
<tr>
<td>-63%</td>
<td>+23%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impressions delivered</th>
<th>Conversion rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>+176%</td>
<td>+10%</td>
</tr>
<tr>
<td>+8%</td>
<td></td>
</tr>
</tbody>
</table>

April vs. Oct/Nov

Example | B2B ophthalmic lens manufacturer adopts test/learnSCALE approach

Launch and measure rapid pilots then scale winners...

Accelerate
Launch pilots

Scale
Optimize media spend at scale

Sustain
Embed new ways of working

...to capture near-term value
Set-up cross-functional 'war room'
Run dozens of tests each week
Measure in real-time
Iterate weekly and adjust budget
2x return on marketing investment

Source: IAB survey of media buyers; BCG Case Experience
B.6

**Personalize and de-average value**

How should we price and promote our products to serve unique needs and ensure customer trust?

**Understand and serve de-averaged customer needs**

**Illustrative personas**

<table>
<thead>
<tr>
<th>Persona</th>
<th>Need</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployed person</td>
<td>Stretching his dollar</td>
<td>by buying in bulk and seeking discounts and promos</td>
</tr>
<tr>
<td>Frontline health care worker</td>
<td>Safety and convenience</td>
<td>of same-day home delivery</td>
</tr>
<tr>
<td>Millennial working from home</td>
<td>Ease</td>
<td>of subscription boxes and hassle-free returns</td>
</tr>
<tr>
<td>Retail shop owner</td>
<td>Flexibility</td>
<td>on inventory replenishment and lease payments</td>
</tr>
</tbody>
</table>

**Personalize value**

- De-average pricing in line with segments—premium to value
- Shift from mass promos to personalized offers, including value-add services
- Incentivize and reward desired customer behaviors
- Introduce new pricing models aligned to changing behaviors
- Create guardrails for short-term incentives that protect lifetime value

**Example | B2C convenience retailer shifts from mass to personalized promotions**

<table>
<thead>
<tr>
<th>Prior to and also during crisis</th>
<th>Optimized offers to drive real-time conversion and engagement</th>
<th>Offer redemption vs. last year</th>
<th>Incremental revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shifted budget from mass promos to vendor-funded 1:1 offers</td>
<td>+90%</td>
<td>+$100M</td>
<td></td>
</tr>
</tbody>
</table>

Source: BCG Case Experience
Companies will need to augment their capabilities to win in the new reality

Advanced Analytics
Build advanced analytics capabilities (including Lighthouse) to use high frequency data to sense demand shifts and consumer sentiments

Digital Experiences
Scale up e-commerce and omnichannel capabilities; invest in personalization and digital sales and marketing

Scalable Tech Architecture
Leverage the power of data and technology to simplify data and application landscape; aid scale-up of customer activities online

Innovation Mindset
Upskill human capital to establish a mindset for innovation and agility to secure and grow top line

Source: BCG
Guide to building an innovation mindset for organizations

<table>
<thead>
<tr>
<th>Carve out time for reflection</th>
<th>To see the big picture, stand back and reflect; create a rhythm of action and reflection in business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask active, open questions</td>
<td>Prompt questions that drive exploration of fresh ideas and approaches that can bring creativity</td>
</tr>
<tr>
<td>Allow yourself to be playful</td>
<td>Create an agile environment that allows for practice of imagining and improvising; loosen up from regular, goal-driven approach</td>
</tr>
<tr>
<td>Set up a system for sharing ideas</td>
<td>Facilitate collective imagination by creating forums for people to communicate without hierarchy</td>
</tr>
<tr>
<td>Seek out the anomalous and unexpected</td>
<td>Look externally to solve tough new problems; examine accidents, anomalies, and particulars</td>
</tr>
<tr>
<td>Encourage experimentation</td>
<td>Experiment and test ideas in the real world (often generates unexpected outcomes and stimulate further thinking)</td>
</tr>
<tr>
<td>Stay hopeful</td>
<td>Imagination feeds on aspirations and aggravations (give people grounds for hope, imagination, and innovation)</td>
</tr>
</tbody>
</table>

Source: Reeves M, Fuller J. We Need Imagination Now More Than Ever. HBR, Apr’20
Guide for leaders
Sensing consumer behavior and seizing demand shifts
How companies can adapt and transform to win

Updated epidemic progression and impact
Epidemic progression and virus monitoring
Economic and business impact
Consumer sentiment snapshot
~2.1M reported recoveries\(^1\) globally so far; case-doubling rate improves to 35 days

As of 22 May 2020

Days of doubling cases:
- 0-3 days
- 3-6 days
- 6-14 days
- 14-30 days
- >30 days

185
Countries with cases\(^3\)

5.2M \[^{\Delta 2\%}\] \(^4\)
Confirmed cases globally

338k \[^{\Delta 1.4\%}\] \(^4\)
Fatalities globally

---

\(^1\) Refers to total reported recoveries as a percentage of total reported infections (cases)
\(^2\) No. of doubling days based on 7-day CAGR
\(^3\) Basis Johns Hopkins CSSE
\(^4\) Daily growth rate basis 7-day CAGR
\(^5\) Community transmission defined basis WHO - Countries experiencing larger outbreaks of local transmission on basis of decided factors

Sources: Johns Hopkins CSSE; Our world in data; WHO situation reports; BCG

---

EPIDEMIC PROGRESSION & VIRUS MONITORING

24\(^{th}\) Apr’20

- 21 days

8\(^{th}\) May’20

- 29 days

22\(^{nd}\) May’20

- 35 days

# of days of doubling\(^2\) the cases globally

- 793k (28%)
- 1,322k (34%)
- 2,057k (39%)

Total # of recoveries (as % of confirmed cases)

- 41
- 51
- 71

# of countries with community transmission\(^5\)
As countries move into Fight phase, several have started to see decline in number of daily cases

As of 22 May 2020

Several countries increasing doubling rate...

...driven by decline in number of daily cases

1. Includes Middle East & Australia
2. Countries selected from the chart on the left

Source: Johns Hopkins CSSE; Our World in data; BCG
Some countries currently have cases doubling under 21 days; strong monitoring essential in the next few weeks

As of 22 May 2020

Some countries currently have high case growth rate...

...driven by increase in number of daily cases

1. Includes Middle East & Australia
2. Countries selected from the chart on the left

Source: Johns Hopkins CSSE, Our World in data; BCG
While countries further relax lockdown measures, continued testing capacity ramp-up is critical

As of 22 May 2020

For countries to move to the right, they need an Integrated Virus Monitoring System that includes testing, tracking, and tracing

1. Taken as 7-day moving average; 2. Includes Middle East & Australia

Source: Our World in Data, Worldometer, BCG Analysis
Two test types available for Covid-19 that differ in what they detect and how well they detect

1. "Gold standard" molecular tests provide the most accurate detection of the virus genetic material (RNA), typically from respiratory swabs, and can detect the virus before symptoms appear.

2. Serological tests detect the human immune response to the virus about one week after symptoms appear; many "rapid" serology tests launched vary significantly in accuracy.

---

### Illustration for US: Implications of Accuracy for Covid-19 Testing

Base data: 100,000 tests performed; 5% disease prevalence

<table>
<thead>
<tr>
<th>False Negative Patients (sick patients mis-diagnosed negative)</th>
<th>False Positive Patients (healthy patients mis-diagnosed positive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sick patients = 5,000</td>
<td>Healthy patients = 95,000</td>
</tr>
<tr>
<td>Current Molecular &quot;gold standard&quot; test for COVID-19</td>
<td></td>
</tr>
<tr>
<td>Sensitivity 98%</td>
<td>Sensitivity 98%</td>
</tr>
<tr>
<td>Specificity 99%</td>
<td>Specificity 99%</td>
</tr>
<tr>
<td>May detect ~2-4 days before symptom onset</td>
<td>May detect virus on similar timing as molecular testing</td>
</tr>
<tr>
<td>Antigen tests (currently under development)</td>
<td>Antigen tests (currently under development)</td>
</tr>
<tr>
<td>Sensitivity 80%</td>
<td>Sensitivity 80%</td>
</tr>
<tr>
<td>Specificity 99%</td>
<td>Specificity 99%</td>
</tr>
<tr>
<td>May detect virus on similar timing as molecular testing</td>
<td>May detect virus on similar timing as molecular testing</td>
</tr>
<tr>
<td>Rapid finger-stick serology &quot;high quality&quot;</td>
<td>Rapid finger-stick serology &quot;low quality&quot;^3</td>
</tr>
<tr>
<td>Sensitivity 75%</td>
<td>Sensitivity 30%</td>
</tr>
<tr>
<td>Specificity 95%</td>
<td>Specificity 60%</td>
</tr>
<tr>
<td>Detection ~6-10 days after symptom onset</td>
<td>Detection ~6-10 days after symptom onset</td>
</tr>
<tr>
<td>1,250</td>
<td>3,500</td>
</tr>
<tr>
<td>950</td>
<td>38,000</td>
</tr>
</tbody>
</table>

---

1. Roughly equivalent to US nationwide daily throughput as of March 31, 2020
2. Estimated using Quidel antigen test; while the specificity of that test was reported as 100% from 84 samples, 99% was used here as 100% specificity is unlikely in a large patient sample
3. The Guardian ("Coronavirus test kits withdrawn in Spain over poor accuracy rate", March 27, 2020)

Source: Expert interviews; Popular press articles; Product specifications; BCG
Ramp up of supply chains critical to fully achieve molecular testing potential

As of 18 May 2020

<table>
<thead>
<tr>
<th>Current daily MDx testing throughput: 200,000+</th>
<th>Capacity impact</th>
<th>Description</th>
<th>Workflow/install base impact</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote specimens</td>
<td>High</td>
<td>• Enabling all MDx equipped labs to receive remotely collected samples</td>
<td>• Non-/semi-automated</td>
<td></td>
</tr>
<tr>
<td>Saliva testing</td>
<td>High</td>
<td>• Validating and scaling saliva testing</td>
<td>• Non-/semi-automated</td>
<td></td>
</tr>
<tr>
<td>Swab kits</td>
<td>Medium</td>
<td>• Alleviating swab kit shortages</td>
<td>• Non-/semi-automated</td>
<td></td>
</tr>
<tr>
<td>EMR/Contracting</td>
<td>Medium</td>
<td>• Enabling all MDx labs to contract with and report results to hospitals</td>
<td>• Non-/semi-automated</td>
<td></td>
</tr>
<tr>
<td>Increased staffing</td>
<td>Medium</td>
<td>• Adding more lab staff and longer shifts</td>
<td>• Non-/semi-automated, Near-patient, POC</td>
<td></td>
</tr>
<tr>
<td>RNA prep kits</td>
<td>Low</td>
<td>• Alleviating RNA prep kit shortages</td>
<td>• Non-/semi-automated</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Low</td>
<td>• Such as, if install all inventory on hand by vendors under current supplies constraints</td>
<td>• All</td>
<td></td>
</tr>
<tr>
<td>Instrument inventory</td>
<td>Low</td>
<td>• If install all inventory on hand with all other levers in place</td>
<td>• All, esp. automated</td>
<td></td>
</tr>
<tr>
<td>Other MDx testing technologies (e.g. LAMP, TMA, CRISPR)</td>
<td>High</td>
<td>• Utilizing other high-throughput and POC MDx testing technologies beyond PCR</td>
<td>• All</td>
<td></td>
</tr>
</tbody>
</table>

Max pragmatic throughput: 400,000-500,000

Estimated directional impact to currently observed throughput

- **High**: >30%
- **Medium**: 15-30%
- **Low**: <15%

---

1. Average of empirically observed daily throughput in April to date
2. Impact of levers estimated semi-quantitatively when fully implemented, short term impact likely much smaller and will vary by lever
3. Source: Expert interviews; BCG
Economic forecasts deteriorating for US and Europe, rebound of global GDP not expected before 2021

As of 22 May 2020

GDP growth forecast vs. baseline

**US**
- **2020**
  - Forecast: -5.9%
  - Baseline: 2.0%
- **2021**
  - Forecast: 1.7%
  - Baseline: 4.7%

**China**
- **2020**
  - Forecast: 1.2%
  - Baseline: 6.0%
- **2021**
  - Forecast: 5.8%
  - Baseline: 9.2%

**Europe**
- **2020**
  - Forecast: -7.5%
  - Baseline: 1.3%
- **2021**
  - Forecast: 1.4%
  - Baseline: 4.7%

**India**
- **2020**
  - Forecast: 1.9%
  - Baseline: 5.8%
- **2021**
  - Forecast: 6.5%
  - Baseline: 7.4%

**Japan**
- **2020**
  - Forecast: -5.2%
  - Baseline: 0.7%
- **2021**
  - Forecast: 0.5%
  - Baseline: 3.0%

**GDP level forecast**

**US**
- **2021**
  - Forecast range: 97-100%

**Europe**
- **2021**
  - Forecast range: 107-112%

**China**
- **2021**
  - Forecast range: 95-99%

**India**
- **2021**
  - Forecast range: 103-111%

**Japan**
- **2021**
  - Forecast range: 96-99%

Note: As of reports dated 31 March 2020 to 05 May 2020, YoY forecasts 1. Announced by the German Federal Ministry for Economic Affairs and Energy on 29 Apr 2020 2. Range calculated with 25th & 75th percentile values of forecast range 3. Range from forecasts (where available) of International Monetary Fond; JP Morgan Chase; Morgan Stanley; Bank of America; Fitch Solutions; Credit Suisse; Danske Bank; ING Group; HSBC  Source: German Federal Ministry for Economic Affairs and Energy; Bloomberg; IMF; BCG
TSR still not back on pre-crises level across sectors; 
11 sectors have >10% of companies with high probability of default

As of 22 May 2020

Decline reflects economic scenario and consumer sentiment

<table>
<thead>
<tr>
<th>Healthier sectors</th>
<th>Pressured sectors</th>
<th>Vulnerable sectors</th>
<th>TSR performance¹</th>
<th>Companies with probability of default &gt;15%²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharma</td>
<td>-20%</td>
<td>-20%</td>
<td>0%</td>
<td>11%</td>
</tr>
<tr>
<td>Food/staples Retail</td>
<td>-10%</td>
<td>-6%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Household Products</td>
<td>-16%</td>
<td>-7%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Health Equipment</td>
<td>-31%</td>
<td>-8%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Semiconductors</td>
<td>-30%</td>
<td>-9%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Tech Hardware</td>
<td>-26%</td>
<td>-10%</td>
<td>0%</td>
<td>9%</td>
</tr>
<tr>
<td>Software</td>
<td>-30%</td>
<td>-12%</td>
<td>0%</td>
<td>8%</td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>-23%</td>
<td>-12%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Retailing</td>
<td>-40%</td>
<td>-13%</td>
<td>0%</td>
<td>41%</td>
</tr>
<tr>
<td>Telecom</td>
<td>-17%</td>
<td>-14%</td>
<td>0%</td>
<td>15%</td>
</tr>
<tr>
<td>Materials</td>
<td>-32%</td>
<td>-14%</td>
<td>4%</td>
<td>15%</td>
</tr>
<tr>
<td>Prof. Services</td>
<td>-30%</td>
<td>-15%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Transport</td>
<td>-34%</td>
<td>-15%</td>
<td>0%</td>
<td>36%</td>
</tr>
<tr>
<td>Media</td>
<td>-36%</td>
<td>-18%</td>
<td>0%</td>
<td>15%</td>
</tr>
<tr>
<td>Utilities</td>
<td>-30%</td>
<td>-19%</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Capital Goods</td>
<td>-35%</td>
<td>-20%</td>
<td>2%</td>
<td>11%</td>
</tr>
<tr>
<td>Auto</td>
<td>-41%</td>
<td>-22%</td>
<td>0%</td>
<td>33%</td>
</tr>
<tr>
<td>Financials</td>
<td>-35%</td>
<td>-23%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Durable Goods</td>
<td>-39%</td>
<td>-25%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Insurance</td>
<td>-39%</td>
<td>-29%</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td>Hospitality</td>
<td>-44%</td>
<td>-32%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Energy</td>
<td>-52%</td>
<td>-32%</td>
<td>0%</td>
<td>36%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>-39%</td>
<td>-33%</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>Banks</td>
<td>-39%</td>
<td>-35%</td>
<td>0%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Note: As of 6 May 2020; Based on top S&P Global 1200 companies; Sectors are based on GICS definitions ¹) Performance is tracked for two periods, first from 21 February 2020 (before international acceleration of outbreak) to 20 March 2020 (trough of the market) and from 20 March 2020 through 6 May 2020 based on median ²) Implied by 5-year Credit Default Swap based on median Source: S&P Capital IQ; BCG ValueScience® Center; BCG
Consumers continue to display less pessimistic outlook than four weeks ago

Respondents who agree that… (%) "The worst of the coronavirus is still ahead"

As of 11 May 2020

Question text: “How much do you agree with each of the following statements about the coronavirus?”
Source: BCG COVID-19 Consumer Sentiment Survey, March 6–May 11, 2020 (N =2000-3500), unweighted, representative within ±3% of census demographics
With easing of lockdowns, consumers have started stepping out for work and essentials

As of 16 May 2020

**Workplaces**
Tracked as changes in visits to workplaces

**Retail stores and recreation spaces**
Tracked as changes in visits to shopping centers, restaurants, theme parks, movie theaters, etc.

1. Taken as weekly average compared with decline from baseline (median value to corresponding day of the week during Jan 3-Feb 6 2020); Represented only for selected countries.

Source: Google Covid-19 Community Mobility Reports; BCG
### COVID-19 short term impact on long-term growth trends before the crisis

<table>
<thead>
<tr>
<th>Short-term COVID-19 impact</th>
<th>Trajectory before pandemic</th>
<th>US example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid acceleration</td>
<td>Declining growth</td>
<td>Mass retail, Pharmacy, Grocery, Personal care, Packaged food and beverages, Online marketplace, Online grocery, OTC health care, Pet food and care, Organic and fresh foods</td>
</tr>
<tr>
<td>Moderate impact</td>
<td>Moderate growth</td>
<td>Home and DIY retail, Hobby retail, Alcohol, Health, fitness, and beauty</td>
</tr>
<tr>
<td>Rapid deceleration</td>
<td>High growth</td>
<td>Restaurants, Away from home entertainment, Travel, Public transportation, Rideshare</td>
</tr>
</tbody>
</table>

**Note:** Based on credit card and IRI data from the US for March 2020 vs. Compound annual growth rate from January 2016 to January 2020 in same categories.

**Source:** BCG Gamma; BCG Henderson Institute; BCG
In-store purchase frequency has decreased while transaction size has increased

As of 06 May 2020

**Grocery sales | Year-over-year change (%)**

*Panic creates a bump*
During the initial outbreak, consumers bought more and more often, creating a major spike in sales

*Divergent behaviors stick*
Afterward, behaviors diverged, with consumers buying less often, but buying more

Note: Spending data is based on consumer credit card/debit card/checking account activity from a panel of US consumers from Earnest Research (tracked responses exclude cash/other)
Sources: Earnest Research; BCG
Shoppers preferring strong and integral brands in times of uncertainty

As of 20 April 2020

Net likelihood\(^1\) of buying brands that stood out in a positive way during the crisis (%)

<table>
<thead>
<tr>
<th>Country</th>
<th>US</th>
<th>UK</th>
<th>Germany</th>
<th>Italy</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+36%</td>
<td>+40%</td>
<td>+22%</td>
<td>+32%</td>
<td>+47%</td>
</tr>
</tbody>
</table>

\(\bar{\theta} +35\%\)

Example: How companies supported society during COVID-19

<table>
<thead>
<tr>
<th>Protective gear</th>
<th>Ventilators</th>
<th>Staff</th>
<th>Suppliers</th>
<th>Return flights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing company started producing 50,000 medical gowns and (2.5) million masks in April 2020</td>
<td>Automotive manufacturer is building 50,000-30,000 ventilators per month starting in April 2020</td>
<td>Fast-food chain lends 1,750 workers to grocery stores to cope with initial increase in shopping demand</td>
<td>Natural resources company accelerated (~$60M) payments to small suppliers by reducing payment terms</td>
<td>Airline company brought back 90,000 people in 160 flights, partially from countries not approached before</td>
</tr>
</tbody>
</table>

1. Difference between people that are likely to increase and people that are likely to decrease

Source: BCG-COVID-19 Consumer Sentiment Survey, April 17-20, 2020 (N = 5728 across US, UK, Germany, Italy and China; unweighted); press releases; BCG
Additional perspectives on COVID-19

COVID-19 BCG Perspectives

Edition #6
Restructuring costs, and managing cash and liquidity

Edition #5
Revamping Organizations for the New Reality

Edition #4
Accelerating digital & technology transformation

Edition #3
Emerging stronger from the crisis

Edition #2
Preparing for the restart

Edition #1
Facts, scenarios, and actions for leaders

Selected general publications

Marketing & Sales
COVID-19 Consumer Sentiment Snapshot #9: A Lighthouse to Navigate

Revenue Management
A Revenue Management Reset in Consumer Goods

Supply Chain
The New Reality for Chief Supply Chain Officers

Demand Sensing
Shining a Light on Customer Demand During the COVID-19 Crisis

People & Organization
People Priorities in the Ramp-Up and Return to Work

Leadership
Communicating Leadership During COVID-19

Selected sector publications

Consumer
COVID-19 Consumer Sentiment Snapshot #10: The Trip Back

Automotive
How to Avoid the Auto Industry’s Looming Price War

Retail
The $2.5 Trillion Opportunity for Grocers That Are First to the Future

Technology
Businesses in Asia-Pacific Can Find Resilience and Growth in the Cloud

Healthcare
The Timelines and Implications for COVID-19 Vaccines

Source: BCG
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