COVID-19 Industrial-Digital Trend Tracker

June 2020

Analysis Methodology

The objective of this research is to look beyond short-term crisis management to assess medium-long term trends that will be impacted by COVID-19. Insights were contributed by IoT ONE analysts as well as 36 business leaders from among our clients and partners regarding the impact of COVID-19 on operations, business performance, and markets. In total we prioritized 56 trends, of which 34 of the trends were already in motion and are labeled as "acceleration", while 22 "new trends" were significantly enabled by this crisis.

Trends have been segmented into five domains:

Technology   Adoption of technologies to address challenges or realize opportunities.

Business   Changes to business models, distribution models, and sales processes.

Operations   Changes to internal systems and processes.

Investment   Alteration of investment behavior and focus areas.

Macroeconomics   Macro trends with significant impacts across a range of stakeholders.

Each trend was evaluated according to four metrics:

Impact   How significantly does COVID-19 impact the trend?

Breadth   Will the impact be felt by few or many companies?

Timing   When did or will companies begin to react?

Duration   How long will the impact be sustained after the crisis ends?

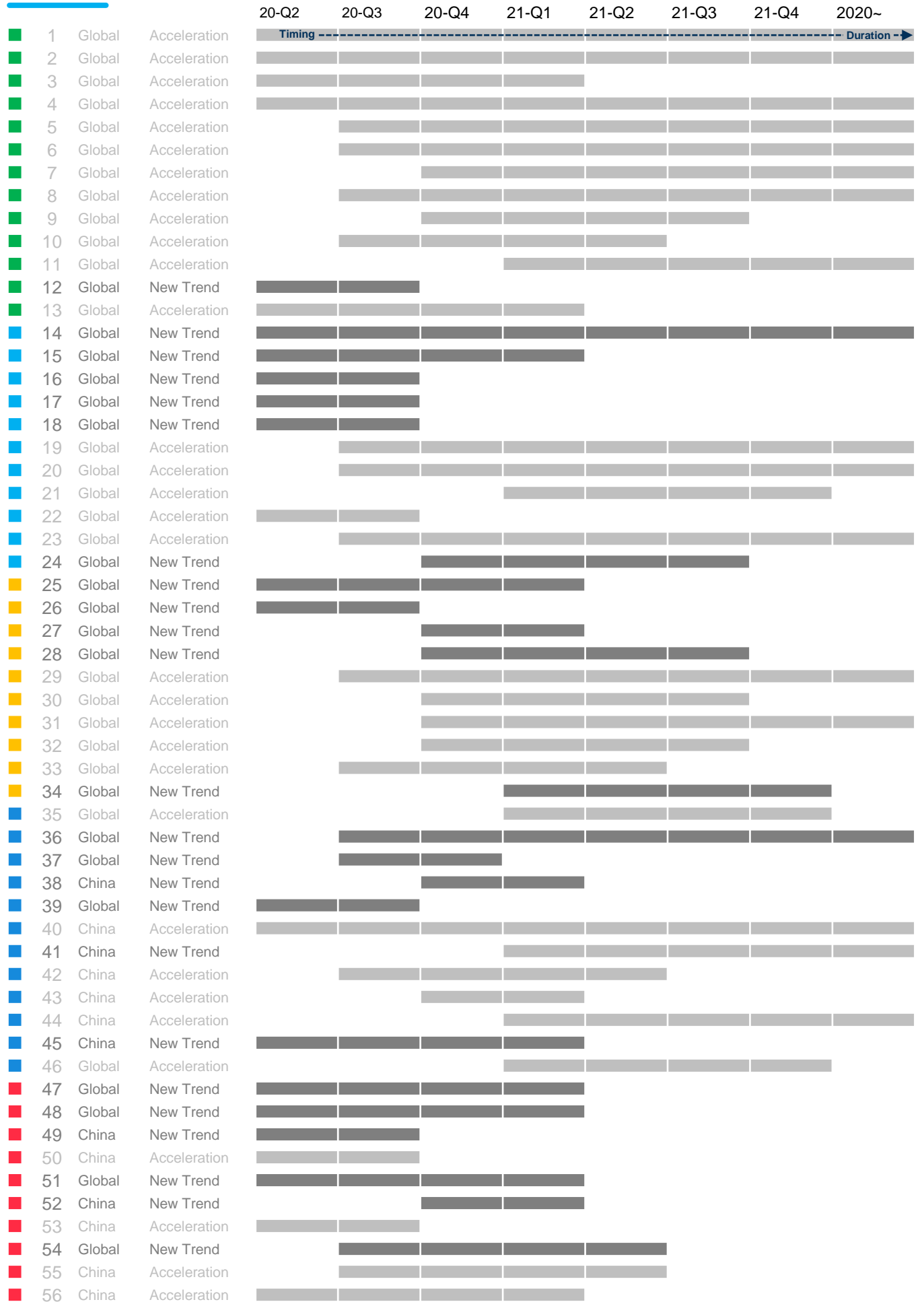## Contents:

Industrial-Digital Trends Impacted by COVID-19

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Technology

1. SaaS and PaaS dashboards provides real-time visibility into the availability and status of materials, goods, people, and assets
2. Internal collaboration tools for sharing solutions to problems and best practices across teams globally in real time
3. Cities accelerate development of "Smart City Platforms" to coordinate activities and track population health and behavior
4. Remote asset monitoring and track & trace systems are deployed to fill data gaps in critical systems
5. Robotic process automation (RPA) is used to automate standardized, labor intensive activities
6. Mobile technology and AR headsets enable remote collaboration during operations and maintenance activities
7. AGVs and drones are adopted to reduce reliance on people for warehousing and last-mile logistics
8. Mobile technology and AR headsets enable workers to perform new tasks without training
9. Machine learning is used to automate scenario analyses and modify supply chain flows
10. Wearables are adopted to track worker location and health status
11. Digital twins are used to run scenario analyses on supply chain interactions to assess sourcing options, risks and trade-offs
12. Additive manufacturing is used to print spare parts or critical components that are stuck in the supply chain
13. WhatsApp and WeChat are used by operational teams for real-time communication despite being unsanctioned tools

Business

14. Industrial GTM mix shifts towards inside sales with increased use of video-conferences to minimize travel
15. Major conferences move online and use private rooms and AR to simulate face-to-face communication
16. Smaller technology providers reduce prices significantly to generate cash floor and develop new customers
17. IoT vendors provide free upgrades and services to customers to generate goodwill and test new offerings
18. A wide variety of companies pivot to building PPE and applications to manage the COVID-19 crisis
19. Rapid growth in B2B e-commerce and automated / semi-automated procurement processes
20. OEMs add subscription offerings to create reoccurring revenue on top of CAPEX revenue models
21. Investment in demand forecasting algorithms to adjust supply to non-cyclical demand shocks
22. Big Tech market leaders invest heavily in M&A to expand into new markets
23. Software providers move from licenses to subscription models to stabilize cash flow
24. Infrastructure sharing with competitors among utilities to delay new investments

Operations

25. Companies develop processes and etiquette that cement virtual communication as default and business travel as exception
26. Technology roadmaps for small and non-critical projects are delayed due to travel restrictions and budget freezes
27. Companies reduce focus on just-in-time (JIT) supply chains in favor of increased regional resilience
28. Multi-sourcing strategies gain traction to reduce supply risk by activating suppliers in multiple countries
29. Manufacturers adopt cloud-based software for non-critical systems to take advantage of flexibility and remote access
30. Supply chain visibility and automation shifts from an operational to a strategic topic related to operational continuity
31. Accelerated growth of e-commerce necessitates restructuring of supply chains and distribution models
32. Pricing preference shifts from fixed pricing to as-a-service pricing as companies seek to reduce outbound cash flows
33. Security issues multiply due to rapid adoption of unsecure edge devices for monitoring and control
34. Organizational restructuring increases centralization of standardized functions and localization of execution functions

Investment

35. Companies with liquidity to invest in innovation gain market share from competitors that retrench
36. Startup location becomes less importance as accelerators and incubators develop virtual business models
37. Technical skill shortages are reduced for companies with the ability to hire as talent becomes available
38. Multinational companies divest from businesses in China where they are uncompetitive and refocus on strengths
39. Venture investment slows due to tight capital markets and difficulty evaluating founders due to social distancing
40. China plans $7.1 trillion infrastructure investment 5G, IIoT, AI, data centers, utilities, e-vehicle charging, and metro/rail
41. "Local for local" strategies gain traction in both R&D and customer service as decision making shifts toward local markets
42. Chinese policy support provides subsidized investment capital and revenue streams to sustain startup valuation bubbles
43. Chinese national champions leverage cheap capital to finance technology acquisitions in Made in China 2025 domains
44. China commits to building 32 million e-vehicle charging stations to accelerate market maturity
45. Chinese PE firms shift from acquiring minority stakes to buying majority stakes in business
46. Companies increase open innovation initiatives and partnerships to spread R&D expenses

Macroeconomics

47. CAPEX budgets are reduced heavily in oil and gas, transportation, hospitality, and other highly impacted sectors
48. Regulation implementation timelines are pushed out by 6-18 months to reduce compliance pressure
49. Regulators and companies reduce effort to enforce patent and trademark compliance to reduce strain on SMEs
50. Western governments push to bring production home to reduce supply risk and support manufacturing employment
51. Government access to data and control over digital infrastructure increases due to pandemic management initiatives
52. The US-China trade deal fails due to China's inability to meet purchase committments and worsening relationships
53. China's unspoken "no-American" supplier policy in electronics and oil and gas shifts market share to European suppliers
54. Customers become more willing to share personal data when they see a tangible benefit
55. 5G deployment accelerates in China and Singapore as a central element of new infrastructure stimulus investment
56. Chinese manufacturers expand facilities in Eastern Europe to opportunistically enter European markets

Trend Impact & Breadth Clusters
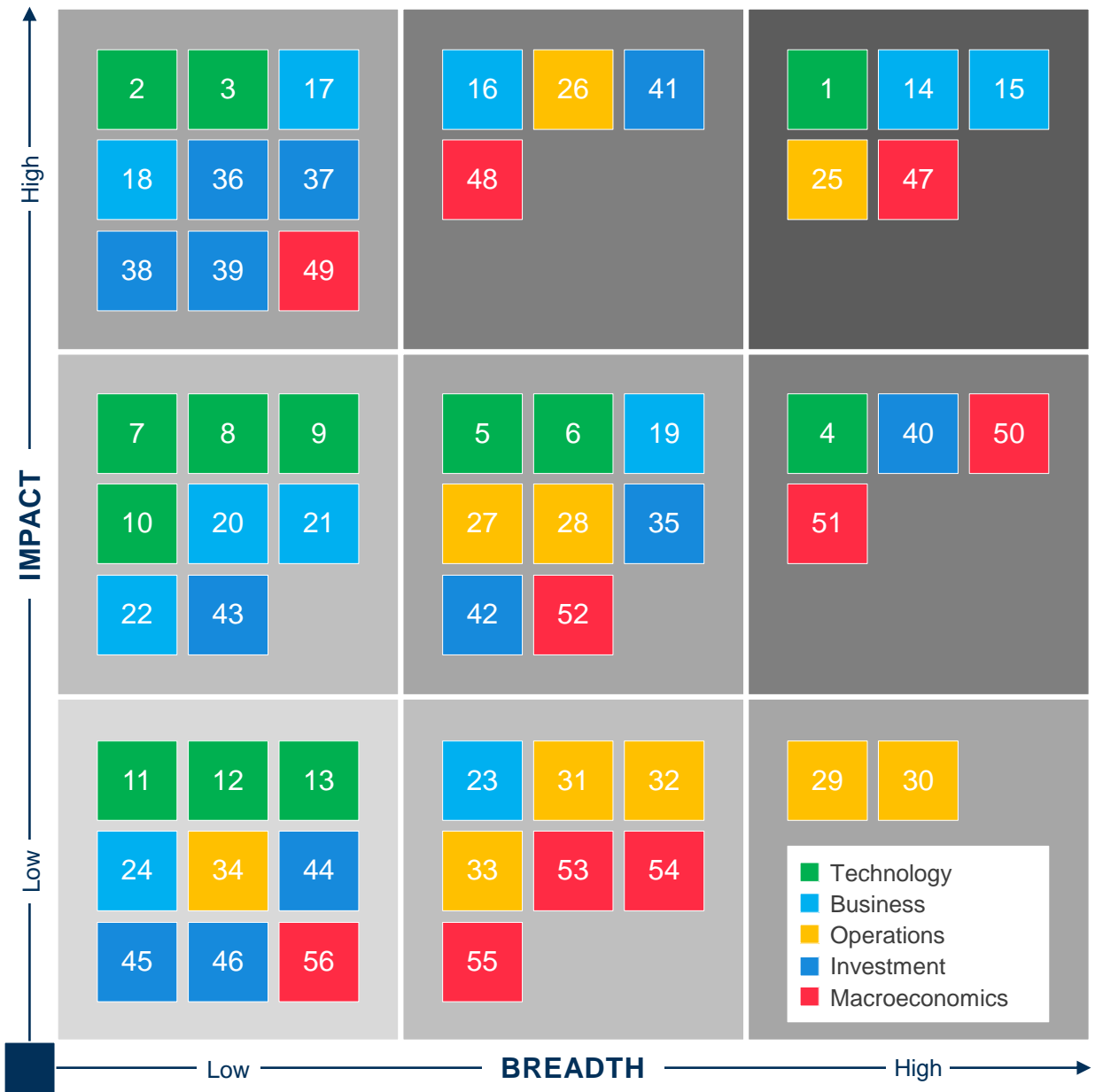
The impact score indicates the impact of the COVID-19 crisis on the trajectory of the trend, rather than the impact of the trend on individual companies, which is highly subjective. Breadth indicates the proportion of companies impacted by the trend. The authors of this research hope that prioritization of mid-long term trends will support improved focus and decision-making as companies shift from crisis management back to planning to sustain growth and profitability in increasingly competitive post-recession markets.

Trend Timing & Duration

				20-Q2	20-Q3	20-Q4	21-Q1	21-Q2	21-Q3	21-Q4	2020~

Technology Adoption Trends

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#	Most commonly cited mid-term trends impacted by COVID-19	Impact	Breadth	Timing	Duration
1	SaaS and PaaS based dashboards provides real-time visibility into the availability and status of materials, goods, people, and assets	●	■	Q2	»»
2	Internal collaboration tools for sharing solutions to problems and best practices across teams globally in real time	●	◧	Q2	»»
3	Cities accelerate development of "Smart City Platforms" to coordinate activities and track population health and behavior	●	◧	Q2	»
4	Remote asset monitoring and track & trace systems are deployed to fill data gaps in critical systems	◒	■	Q2	»»
5	Robotic process automation (RPA) is used to automate standardized, labor intensive activities	◒	◧	Q3	»»
6	Mobile technology and AR headsets enable remote collaboration during operations and maintenance activities	◒	◧	Q3	»»
7	AGVs and drones are adopted to reduce reliance on people for warehousing and last-mile logistics	◒	◧	Q4	»»
8	Mobile technology and AR headsets enable workers to perform new tasks without training	◒	◧	Q3	»»
9	Machine learning is used to automate scenario analyses and modify supply chain flows	◒	◧	Q4	»»
10	Wearables are adopted to track worker location and health status	◒	◧	Q3	»»
11	Digital twins are used to run scenario analyses on supply chain interactions to assess sourcing options, risks and trade-offs	◑	◧	21	»»
12	Additive manufacturing is used to print spare parts or critical components that are stuck in the supply chain	◒	◧	Q2	»»
13	WhatsApp and WeChat are used by operational teams for real-time communication despite being unsanctioned tools	◒	◧	Q2	»»

"Investment is being accelerated in everything that supports remote work. Meanwhile, investments that do not support near-term business requirements are being slowed down."

"Both our internal teams and our customers are finally recognizing the value of data. There is strong demand to improve data access and visualization."

"Pure software solutions such as SaaS dashboards and RPA are being adopted quickly. Solutions that require new hardware installation are more likely to be deployed in the second half of 2020."

"Short term emphasis is on remote operations to keep our business running but in the long term we will invest significantly in technology to make our operations 'anti-fragile' such as supply chain digital twins."

Business Transformation Trends

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	Most commonly cited mid-term trends impacted by COVID-19	Impact	Breadth	Timing	Duration
14	Industrial GTM mix shifts towards inside sales with increased use of video-conferences to minimize travel	●	■	Q2	»»
15	Major conferences move online and use private rooms and AR to simulate face-to-face communication	●	■	Q2	»»
16	Smaller technology providers reduce prices significantly to generate cash floor and develop new customers	●	◧	Q2	»»
17	IoT vendors provide free upgrades and services to customers to generate goodwill and test new offerings	●	◧	Q2	»»
18	A wide variety of companies pivot to building PPE and applications to manage the COVID-19 crisis	●	◧	Q2	»»
19	Rapid growth in B2B e-commerce and automated / semi-automated procurement processes	◑	◧	Q3	»»
20	OEMs add subscription offerings to create reoccurring revenue on top of CAPEX revenue models	◑	◧	Q3	»»
21	Investment in demand forecasting algorithms to adjust supply to non-cyclical demand shocks	◑	◧	21	»»
22	Big Tech market leaders invest heavily in M&A to expand into new markets	◐	◧	Q2	»»
23	Software providers move from licenses to subscription models to stabilize cash flow	◐	◧	Q3	»»
24	Infrastructure sharing with competitors among utilities to delay new investments	○	◧	Q4	»»

"With remote collaboration tools we can have twice as many sales meetings per day and reduce travel costs. Face to face meetings are still necessary to build relationships but we expect the shift towards remote sales to be permanent."

"Many young companies are aggressively pricing solutions to grow market share. Customers are more willing now to consider new suppliers due to pressure to reduce costs."

"Pivoting to build products related to COVID-19 provided short-term cashflow for our business but we are aware that this shift could distract us from our core business and customers in the medium term."

"We had already shifted our revenue model from license to SaaS subscription in 2019. This model has enabled us to sustain regular cashflow at a time when new orders are being delayed."

"Many companies are exploring B2B e-commerce solutions. The main challenge is the decision process, too many signatures are needed. We are focused on automating cyclical or inventory-based purchases."

Operational Transformation Trends

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Most commonly cited mid-term trends impacted by COVID-19

#	Trend	Impact	Breadth	Timing	Duration
25	Companies develop processes and etiquette that cement virtual communication as the default and business travel as the exception	●	■	Q2	»»
26	Technology roadmaps for small and non-critical projects are delayed due to travel restrictions and budget freezes	●	◧	Q2	»»
27	Companies reduce focus on just-in-time (JIT) supply chains in favor of increased regional resilience	◒	◧	Q4	»»
28	Multi-sourcing strategies gain traction to reduce supply risk by activating suppliers in multiple countries	◒	◧	Q4	»»
29	Manufacturers adopt cloud-based software for non-critical systems to take advantage of flexibility and remote access	◒	■	Q3	»»
30	Supply chain visibility and automation shifts from an operational to a strategic topic related to operational continuity	◒	■	Q4	»»
31	Accelerated growth of e-commerce necessitates restructuring of supply chains and distribution models	◒	◧	Q4	»»
32	Pricing preference shifts from fixed pricing to as-a-service pricing as companies seek to reduce outbound cash flows	◒	◧	Q4	»»
33	Security issues multiply due to rapid adoption of unsecure edge devices for monitoring and control	◒	◧	Q3	»»
34	Organizational restructuring increases centralization of standardized functions and localization of execution functions	◒	◧	21	»»

"We are assessing options to move from CAPEX to OPEX pricing options in order to reduce near-term outbound cashflow. Many suppliers are willing to explore options as demand disappears."

"On March 23, 3GPP announced that the all-important release 16 for 5G will be delayed by 3 months, and release 17 will also be delayed. Release 16 is very important for time-sensitive networking."

"Companies are re-thinking some of the single-supplier and single country of origin strategies that helped them to cut costs when things were stable but in the long term, cost pressure will drive strategy."

"Cloud adoption was already an active debate. We are now approving more cloud solutions on a case-by-case basis, typically for siloed systems or one-way data flows with a low cybersecurity risk."

"Shippers are rushing to improve data dashboarding. Transporters already have visibility but now shippers are much keener to know where their goods are due to supply chain bottlenecks."

"Investment in cybersecurity is remains weak. People do not understand regulations and the actual numbers of breaches is much higher than the number reported by companies to the media."

Investment Trends

Most commonly cited mid-term trends impacted by COVID-19

		Impact	Breadth	Timing	Duration
35	Companies with liquidity to invest in innovation gain market share from competitors that retrench	●	◧	21	»»
36	Startup location becomes less importance as accelerators and incubators develop virtual business models	●	◧	Q3	»»
37	Technical skill shortages are reduced for companies with the ability to hire as talent becomes available	●	◧	Q3	»»
38	Multinational companies divest from businesses in China where they are uncompetitive and refocus on strengths	●	◧	Q4	»»
39	Venture investment slows due to tight capital markets and difficulty evaluating founders due to social distancing	●	◧	Q2	»»
40	China plans $7.1 trillion in infrastructure investments in 7 areas: 5G, IIoT, AI, data centers, utilities, e-vehicle charging stations and metro/rail	◑	◧	Q2	»»
41	"Local for local" strategies gain traction in both R&D and customer service as decision making shifts toward local markets	◑	◧	21	»»
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"The next two years will be a critical time in our industry. We expect the digital divide to widen between companies that sustain digital innovation investment and those that retreat to their traditional business."

"Sought after tech talent will become available as people lose their existing jobs due to COVID-19. As the supply-demand balance shifts, companies with liquidity will be able to accumulate top talent."

"Chinese government investment in new infrastructure will accelerate to stimulate demand. There are 1.2 million e-vehicle charging stations in China today, of which 50% are not working. The government plans to build allocate 1 trillion RMB to build 63 million stations. It may not be efficient but it will work."

"It is interesting how local companies reacted to the crisis versus MNCs. Chinese firms are more accustomed to hardship. The conversations we had with MNCs were all related to surviving the crisis. Local firms were talking about strategic initiatives and positioning over the next five years. Many MNCs will lose market share to local competitors."

Macroeconomic Trends

	Most commonly cited mid-term trends impacted by COVID-19	Impact	Breadth	Timing	Duration
47	CAPEX budgets are reduced heavily in oil and gas, transportation, hospitality, and other highly impacted sectors	●	■	Q2	»»
48	Regulation implementation timelines are pushed out by 6-18 months to reduce compliance pressure	●	◧	Q2	»»
49	Regulators and companies reduce effort to enforce patent and trademark compliance to reduce strain on SMEs	●	◧	Q2	»
50	Western governments push to bring production home to reduce supply risk and support manufacturing employment	◒	■	Q2	»»
51	Government access to data and control over digital infrastructure increases due to pandemic management initiatives	◒	■	Q2	»»
52	The US-China trade deal fails due to China's inability to meet purchase commitments and worsening relationships	◒	◧	Q4	»»
53	China's unspoken "no-American" supplier policy in electronics and oil and gas shifts market share to European suppliers	◒	◧	Q2	»
54	Customers become more willing to share personal data when they see a tangible benefit	◒	◧	Q3	»»
55	5G deployment accelerates in China and Singapore as a central element of new infrastructure stimulus investment	◒	◧	Q3	»»
56	Chinese manufacturers expand facilities in Eastern Europe to opportunistically enter European markets	◒	◧	Q2	»»

"Regulation timelines are being pushed out around the world. Medical device regulation in EU was pushed out by 12 months, and consumer IoT regulation was pushed by 3-6 months. Meetings are being postponed due to industry pressure to avoid further headwinds."

"We are planning for the collapse of the trade deal in Q3 or Q4. China committed to buying $20 billion of US goods monthly but demand in China is down, the ability of the US to export is weak, political relationships have never been worse, and Trump's election platform is "beat Biden to beat China.""

"Part of the success in containing the virus in Asia is due to universal contact tracing. US and EU privacy laws limit the effectiveness similar solutions. This crisis could result in a rethinking of privacy on both the regulatory level and by individuals. Will people exit this crisis more or less willing provide data?"

"Chinese companies are accelerating development of supply chains in Eastern Europe. They are using the crisis as an opportunity to enter the European market while local competitors are weak."

"Major companies such as Exxon have reduced their CAPEX plan for 2020 by 30% or more already."

IoT ONE

IoT ONE is a research and advisory firm focused on industrial digitalization. We help companies understand how the Internet of Things will impact their business performance and we work with them to realize opportunities and manage threats.

Our business has three pillars: research, enable, and grow. Our research capabilities provide data to guide effective planning and decision making. We then enable our clients to execute their strategies by upskilling internal teams and building external ecosystems. Finally, we provide strategic advisory and innovation services to help our clients grow revenue with digitalized solutions and business models.

UNDERSTAND → ACT

01 RESEARCH

Do you have the information you need to plan and execute a winning IoT strategy?

Knowledge is power.

We provide the bottom up information you need to successfully transform your products and operations.

- Market & Trend Analysis
- Benchmarking Analysis
- Company Scouting

02 ENABLE

Is your current organization able to execute your digital strategy?

Change is accelerating.

We help companies upskill management, design innovation teams, and establish ecosystems.

- Management Upskilling
- Innovation Team Development
- External Ecosystem Development

03 GROW

Can you ideate, build, and deploy digital solutions rapidly and cost-efficiently?

Speed wins.

We develop and implement strategies to grow revenue through product and business model innovation.

- Digital Value Diagnostic
- Core Business Transformation
- New Business Innovation

We are always open to discussing our research and exchanging insights into how digital technologies can support business growth and operational efficiency. To schedule a discussion of this report with one of our analysts, please contact your regional representative.

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