



# COVID-19 Meets Big Tech

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*COVID-19 has created challenges and opportunities for the technology sector, and companies are grappling with how to address them. The effects of the pandemic do not fit into a single category.*

**C**omputer's Editor in Chief Jeffrey Voas asked me to do a quick analysis on how COVID-19 was impacting big tech. Here are my findings as of 7 May 2020.

To begin, COVID-19 has had significant effects on big tech (Table 1). Some organizations, such as Alphabet, Facebook, and Twitter, saw contradictory trends. Their attractiveness increased as they became mainstream channels for receiving information about the pandemic, communicating, and shopping online. However, they somehow weren't able to monetize the surge in their platforms' usage.<sup>1</sup>

in-person retail businesses that were closed due to the pandemic. Similarly, in 2020 Q1, Netflix added 15.77 million paid international subscribers compared to an earlier forecast of 7.2 million.<sup>4</sup>

The use of platforms such as Facebook, Google, and Twitter dramatically increased due to COVID-19-related information. For instance, in April 2020, the usage of Facebook's messaging services was up by 50% (and video messaging was up by more than 100%) compared to the precrisis level.<sup>5</sup>

The use of videoconferencing platforms for work-related and social activities skyrocketed, leading to intense competition in the sector. The popularity of Zoom videoconferencing triggered a response from tech giants, such

## COVID-19-LED SURGE IN DEMANDS

COVID-19-led lockdowns and remote working have increased demands for a range of big tech's offerings. In the first quarter (Q) of 2020, Apple's revenue associated with services, such as iCloud storage, music subscriptions, and AppleCare warranties, and of products, such as wearables and accessories, increased.<sup>2</sup> Likewise, Amazon's Prime subscription revenue was up 28% in 2020 Q1 compared to 2019 Q1.<sup>3</sup> It attracted customers from



**TABLE 1.** The opportunities, challenges, and performance of big tech companies.

Company	Opportunities	Challenges	Usage-related performance	Financial/stock performance
Amazon	Closure of in-person retail counterparts	Higher operating costs related to employee health and safety	March 2020: 2.54 billion website visitors, 65% higher than in March 2019 <sup>15</sup>	2020 Q2: spending of US\$4 billion <sup>13</sup>
Apple	Diversified revenue stream	Stores closed	2020 Q1: double-digit increase in paid accounts in digital content stores <sup>9</sup>	2020 Q1: services revenue up 17% compared to 2019 Q1 <sup>9</sup>
Alphabet	Diversified: strong cushion against shocks associated with reduced ads <sup>17</sup>	Reduced advertising	March 2020: search for information up more than six times than in the Super Bowl <sup>1</sup>	YouTube's 2020 ad revenue estimate: US\$9.33 billion (down from US\$15.1 billion in 2019) <sup>10</sup>
Facebook	Major source of news for many users	Advertisers reducing paid content <sup>5</sup>	Use of messaging services up <sup>5</sup>	2020 ad revenue: down US\$15.7 billion <sup>11</sup>
Netflix	Growing demand worldwide due to lockdown	Production halted <sup>12</sup>	Increase in paid subscribers	2020 Q1: stock price up 14%
Twitter	An information and engagement platform <sup>18</sup>	Channel to spread misinformation <sup>19</sup>	Number of daily users: 166 million, 24% higher than a year earlier <sup>17</sup>	11–30 March 2020: sales down 27% compared to a year earlier <sup>17</sup>
Zoom Video Communications	Ease of use, free 40-min conference calls <sup>20</sup>	Security/privacy features faced scrutiny; target of many investigations and lawsuits	First three weeks of April: number of users up from 200 million to 300 million <sup>21</sup>	Stock price down 28% during last week of March and first week of April 2020 <sup>22</sup>

as Facebook and Alphabet. In April, Facebook announced the launch of its group video chat feature, Messenger Rooms.<sup>6</sup> Alphabet said it would make its Meet videoconferencing service for businesses free. These announcements negatively affected Zoom's stock price.<sup>7</sup> The market for virtual social communication with visual capabilities and multiple participants exploded.

### WEAKENED PRODUCTION LINKAGES

COVID-19 severely disrupted the forward linkages (with downstream firms/customers) and backward linkages (with upstream suppliers) of some firms. This is a supply chain interruption, not only for big tech but many

other economy sectors (for example, food and agriculture). In 2020 Q1, almost all Apple stores worldwide were forced to close down,<sup>8</sup> which contributed to the decline in demands for devices.<sup>9</sup> Other organizations faced the risk of pandemic-led foreign exchange rate shifts. For instance, despite an increase in subscriptions, Netflix's revenue in dollar terms from markets, such as Brazil, was negatively affected due to a strengthened U.S. dollar.<sup>4</sup>

Due to economic uncertainties, some brands are now relying more on organic content instead of online paid content.<sup>5</sup> For example, this has been detrimental to Google, which receives 40% of its revenue from categories heavily affected by the pandemic, such

as in-person retail, restaurants, travel, automotive, and small businesses.<sup>10</sup> Likewise, Facebook's 2020 advertisement revenue is expected to be reduced by 19% from a previous forecast.<sup>11</sup> Supply linkages were also affected. Netflix's production activities worldwide severely slowed down.<sup>12</sup>

### REDUCED USER MONETIZATION AND INCREASED COST

An upshot of weakened demand is a decrease in the monetization of services. For instance, from December 2019 to mid-March 2020, Facebook's cost per click, the amount an advertiser pays for a click on an ad, decreased from US\$0.64 to US\$0.32 in North America

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and from US\$0.43 to US\$0.20 in Western Europe.<sup>5</sup>

COVID-19 has also increased the costs of doing business. For instance, in 2020 Q2, Amazon plans to spend its operating profit of US\$4 billion to respond to COVID-19.<sup>13</sup> That includes hundreds of millions of dollars on COVID-19 medical tests for workers and maintenance dollars for the delivery systems. Likewise, Netflix created a US\$150 million fund to support the production community that is currently not working.<sup>14</sup>

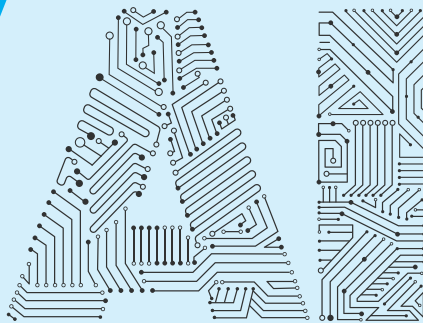
In summary, I see various effects of COVID-19 on big tech that clearly cannot be lumped together as a single category. The pandemic has led to a heavy cut in discretionary expenditure (for example, ads), which has hit businesses such as Twitter and Facebook severely. Firms with more diversified offerings maintained a stronger cushion against losses. Firms that were able to augment their offerings to meet the special business and consumer demands created by the COVID-19-led lockdown performed better. However, having said that, at the time of this writing, even with more than 30 million Americans out of work and an unemployment rate of 14.7%, the NASDAQ is up 1.5% for the calendar year. Can big tech weather this storm better than other sectors of the economy? That's to be determined. ■

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## AI'S 10 TO WATCH

### CALL FOR NOMINATIONS

IEEE Intelligent Systems



*IEEE Intelligent Systems* solicits nominations for its "Artificial Intelligence's 10 to Watch" in 2020. Those selected will appear in a special section of the magazine.

The 2020 nominees will be those who received their PhDs in the year 2014 or later and have already made significant contributions to one or more areas of AI.

A selection committee, chaired by a member of the *IEEE Intelligent Systems* Editorial Board, consists of prominent researchers from different subfields of AI and different geographic regions of the world.

Nominations from all areas AI are welcome.

For a list of past winners, and examples of the up-and-coming researchers we're looking for, please see 2018 winners here: [bit.ly/2TvG22y](http://bit.ly/2TvG22y)

#### Nominations should include the following:

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2. Two reference letters
3. Statement summarizing the candidate's achievements in AI (200 words maximum)

Nomination deadline: **10 July 2020**

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