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Impact of COVID-19 on Technology Sector

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This paper sheds some light on the effect of COVID-19 pandemic on the technology sector as well as the role of technology itself on the world's effort to fight COVID-19, as well as its impacts.

Impact of COVID-19 on technology industries

Early, at the beginning of COVID-19, many speculated that the technology startup ecosystem would dry up or be crushed. On April 1st, [New York Times](#) reported that a Tick boom had begun in the United States, raising great concerns about outbreak of various tick-borne diseases there.

At that time no one had a clue how the pandemic would progress or what its impact on different industries, including technology industry, would be. Today, although it is too early to establish solid conclusions, there are several facts that we can highlight comfortably in the following bottom line:

It is well known now that not all industries have been affected equally, some have benefited from the pandemic or even thrive while others are facing various levels of challenges.

According to [Forbes](#), some of the industries thriving under COVID-19 includes: e-commerce, public cloud, cybersecurity, gaming, software as a service (SaaS), video conferencing, and collaborative software.

While industries like physical retail, travel, hospitality, restaurants, real estate, legacy software, IT services, transportation and on-premise enterprise IT are struggling and facing hard times.

Giants like HP was not an exception from layoffs, cutting jobs and downsizing operations particularly those related to drastically affected industries.

To sum up, those technology industries mainly relying on physical retail, travel, real estate or transportation were among the unlucky industries during COVID-19. Since spending has shifted from new initiatives to efficiency, those industries are required to find alternative models of doing business or expanding their customer base to those that might be in need for their products and services.

In addition, the style of operation for many startups has been changed for the foreseeable future, according to [TechCrunch](#); 84% of 328 surveyed startups said they had closed their office during the COVID-19 pandemic, Crucially, a clear majority of respondents (66%) said the need to return to the office was not “business critical”.

Interestingly 81% of startups said that they prefer a hybrid working model in future (remote and in office), 11% prefer full time remote while only 8% want to return to normal office life.

Using TechCrunch statistics, it is easy to anticipate that the work style future for tech startups to be something that has never been like before COVID-19 in various degrees of mixing between remote and conventional work styles.

The Role of Technology in Pandemics

Imagine this pandemic without internet or without web and other information exchange infrastructure, how could the WHO publish its live dashboard for the pandemic progress? How could the researchers retrieve data quick enough to build models to predict progress in various countries or use patient data to kick off clinical trials on possible treatment and preventive measures?

The Internet is not only helping the world to track progress of this global war against COVID-19 while staying at home; working, learning, playing games with peers across the world or watching movies.

But this is only the ice-berg as technology did more during this pandemic even more than what it did during any previous international crisis as far as we know. The digital army of the world has been supporting the fight against COVID-19 pandemic through:

- Internet
- Mobile devices
- Big data
- Machine learning
- Supercomputers

Countries have been mitigating this pandemic using different strategies. While some used the containment strategy to limit the number of new infections; where it has mostly been demonstrated in far Asia, particularly in Japan, South Korea and Singapore, others put their strong health system to help people recover faster, most obviously seen in Germany, and others put all their efforts behind discovering a vaccine or treatment like what has been shown lately by the USA.

Following are three examples that show how technology has been geared to help fighting this pandemic:

A New Use for Mobile Devices

Singapore has a success story in containing the virus. At the time of writing this article, there was just 732 infected cases there despite the fact that the country is very close to the source of the pandemic (China) and it is wide open for visitors from all over the world.

There are many factors that led to this success, including a smartphone application (Trace Together) that uses Bluetooth to track the user's proximity to other people all the time. So, in case of diagnosing a positive case, the government can send a notification to all users who happened to come close to this positive user in the last 14 days, whether in office, in market, in family gathering or anywhere else. This not only helps the potential persons seek medical advice but also helps minimize the spread of infection of asymptomatic cases during the incubation period.

In addition, the government used WhatsApp as a channel to send daily updates to citizens about the number of cases, suspected locations of outbreaks and other pieces of advice, so awareness is moving from mass media to peer communication.

The big data surveillance

China mounted surveillance cameras at the front doors of the quarantined suspects, these cameras were connected to artificial intelligence (AI) systems to warn officials whenever any of those suspects attempted to leave the doorstep.

In South Korea, the government used records such as credit card transactions, phone location data and closed-circuit television (CCTV) videos to create a chronological map to find those who were in

contact with confirmed cases, similarly to what the Singaporean government did but using current collected data without a new smartphone application.

In India, the government used airlines and trains reservation data to make sure suspect cases were not travelling.

Finally, the US government held discussions with Facebook and Google to understand the possibility to use location data of American users for similar purposes.

Social Media

Google used its location aware applications that collect location information of its users, day and night, to tell you whether the population of a certain district are following up the social distance protocol or not. Then, they release this in a detailed report covering countries and districts to help officials evaluate the effectiveness of their awareness programs.

Similarly, Facebook shares location information with officials to help their researchers evaluate the possibility of pandemic outbreaks in certain regions besides evaluating the effectiveness of the social distance measures as well as the proximity information with known infected places or persons.

The Alliance of Supercomputers

As part of the initiative of the White House, Department of Energy and others to launch a consortium to enable researchers to access unprecedented supercomputer power, IBM announced that it would help coordinate an effort to provide over 330 petaflops of computing power to scientists researching COVID-19.

IBM anticipated that the capacity would be used to develop algorithms that assess how COVID-19 was progressing and model potential therapies in pursuit of a possible vaccine.

“These high-performance computing systems allow researchers to run very large numbers of calculations in epidemiology, bioinformatics, and molecular modeling. These experiments would take years to complete if worked by hand, or months if handled on slower, traditional computing platforms,” wrote [IBM](#) Research director Dario Gil in a blog post.

Concerns

The government of Singapore had to violate some privacy policies and laws like Health Insurance Portability and Accountability Act (HIPAA), where HIPAA in particular has shared people's health information between hospitals, the government and third parties.

Although data is encrypted and only available to COVID-19 task force teams, this raises concerns on what extent governments may go far when they BELIEVE it is for the good of people. If most people agree today, what would the case be in future when a government BELIEVES it is for the good of people (to track them), where China is a good model for this.

Now health data of hundreds of thousands of people are being exchanged freely between labs around the world to build prediction models, find a treatment or establish a common understanding of the best applicable measures.

The question that is likely to occupy the digital world public and private discussions after this epidemic is over, is how to make sure that there are principles that must never be violated under pretexts that a government BELIEVES it is for the good of the people.

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