

INNOVATION

Navigating opportunities for innovation and entrepreneurship under COVID-19

by Jason Li-Ying and Phillip Nell



While the global pandemic may cause a market contraction, it also presents new opportunities.

The outbreak and rapid spread of COVID-19 has disrupted lives, communities, and economies worldwide, **with more than 6.7 million people testing positive and a death toll of nearly 400,000 globally**. While COVID-19 prevails, its impact on businesses keeps increasing.

Many businesses, from brick and mortar grocery stores to global corporations, were hit hard by the pandemic, and some have already been forced into insolvency. The reality is harsh: customers stopped or postponed purchases or purchased less than before. In other cases, the supply chain simply collapsed, and it has been extremely difficult to source alternative suppliers. No demand, no supply—a huge challenge for businesses worldwide. That is why many countries in the world, including the US, China, and many European countries, are keen to reopen their economies and get the engine of business gradually running again.

However, we should see a bright side: **as organizational theorist James G. March has long pointed out**, crisis is one of the fundamental motivations for innovation. Under a crisis like COVID-19, a firm's survival and success are no longer a matter of improving its effectiveness and efficiency; instead, survival rests on the firm's ability to define strategies and develop capabilities to navigate new opportunities to innovate. Perhaps the only way of escaping or minimizing the negative impact of COVID-19 on our businesses is to **pursue innovation and entrepreneurship**.

Business leaders are frequently inspired by **anecdotal cases in the media** about how role models of innovative firms have managed to grasp new market opportunities, combined with old or new technologies. Yet nowhere is there a comprehensive framework that can guide business leaders to navigate opportunities for innovation and entrepreneurship, develop relevant capabilities, and deploy tactics to take advantage of a situation like the COVID-19 pandemic. As a result, they often are driven only by short-sighted emerging opportunities.

In this short piece, we suggest a framework that includes four possible scenarios in which companies can explore opportunities for innovation and entrepreneurship. While examples are given for each scenario, a company can pursue multiple paths. We also make

suggestions regarding the development of capabilities and tactics relevant to each scenario.

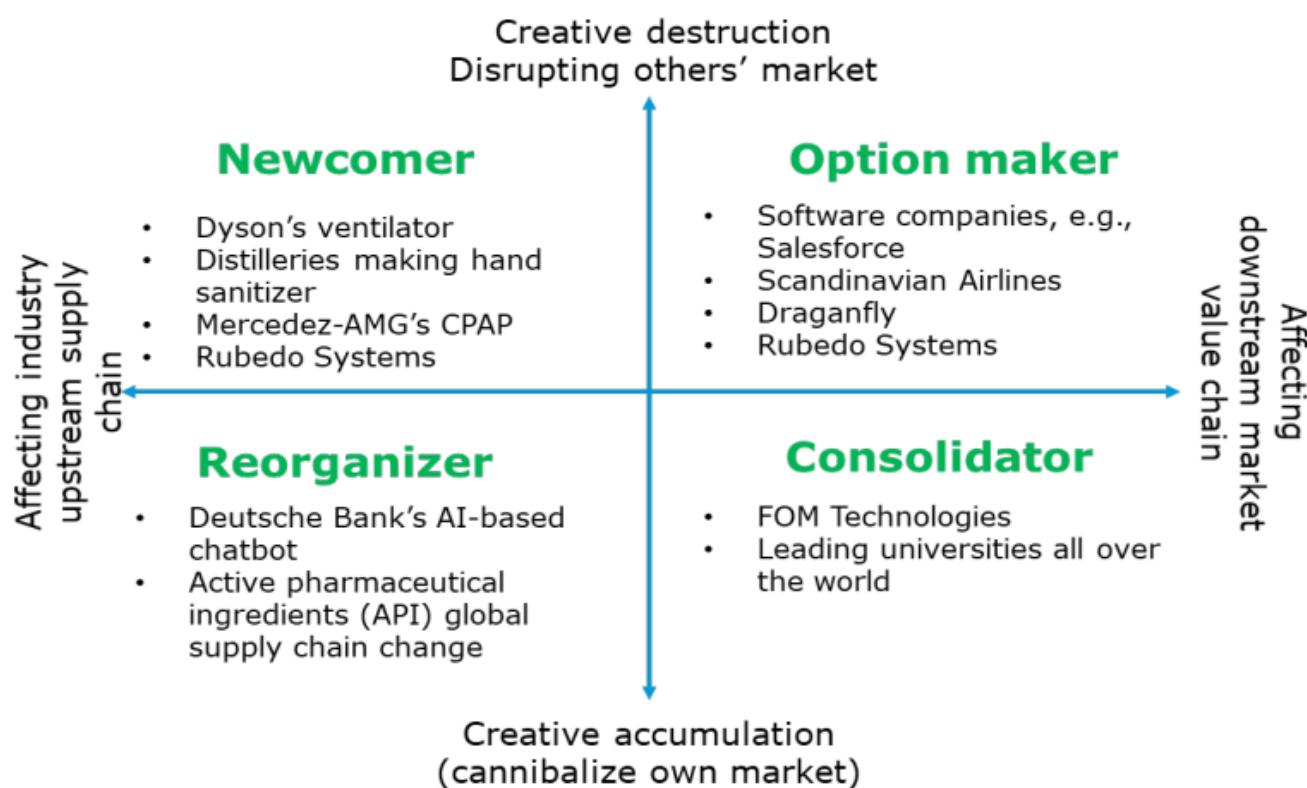
Innovation and Entrepreneurship During Crisis

To understand the impact of COVID-19 on businesses, we need to observe two dimensions. The first concerns how COVID-19 affect the businesses' value chains. For some businesses, the impact is substantial on the downstream value chain because customers stopped buying, bought less, or changed to alternative channels of purchase (e.g., from offline to completely online). In some cases, completely new customer needs emerged under COVID-19. For other businesses, the upstream supply chain was disrupted due to lockdown, political conflicts among hostile nations, or closed borders. No supply, no production, no business, even though there is still demand. It is also possible that an industry has been affected on both of sides: for example, the airline industry has received double impact due to the global shortage of oil supply and the diminished consumer demand for air travel.

The second dimension relates to a concept developed in the 1930s by Austrian economist Schumpeter. Schumpeter's fundamental mechanisms of innovation and entrepreneurship **have proved a powerful framework** for explaining how start-ups and established firms innovate in a dynamic fashion. On the one hand, experienced and creative individuals take risks to initiate new solutions enabled by new technologies, which often disrupt the existing market. This is called creative destruction. On the other hand, established firms continuously invest in technologies that can consolidate their industries and build barriers to new market entry. Innovations generated by large firms in that way are the result of accumulation of technological and market knowledge. This is called creative accumulation. Sometimes creative accumulation made by incumbents may even cannibalize their own market, but it is one of the means of achieving long-term growth. Therefore, some large companies systematically use corporate entrepreneurship to break apart from their existing core business. Creative destruction and creative accumulation are the two fundamental mechanisms by which firms can innovate.

By combining these two dimensions, a unique opportunity landscape for innovation and entrepreneurship under COVID-19 can be vividly visualized in *Fig. 1*. In the following, we describe four types of opportunities and show how some businesses take advantage of these opportunities.

Figure 1: Opportunity landscape for innovation and entrepreneurship under COVID-19



Consolidator: In the bottom-right corner are cases where a disrupted downstream value chain triggers creative accumulation. We call this the “consolidator” quadrant. For many companies, including public educational institutes, the impact of COVID-19 is evident, but has not immediately affected their cash flow. The best strategy for these companies is to invest in R&D to consolidate the technological foundation for product and service innovation in the long run. For instance, FOM Technologies, a small Danish company selling unique lab machinery for slot die coating of functional materials (e.g., solar cells), usually has contracts with a long lead time between the customer’s initial order and final delivery, due to the nature of this type of scientific equipment. Thus, the company has not lost customers due to COVID-19. Instead, they have more requests with higher demands

for functionality and machinery performance from their customers. The company's R&D staff has spent more time and effort developing new products and the firm is seeking additional investment from the IPO market. Similarly, many leading universities in the world have moved education online during the current semester, while investing in staff and technologies to prepare for online learning at an even larger scale, with courses and programs to be taught online in a long run. The digitalization process of higher education has never been so rapid as during the outbreak of COVID-19. In this regard, the US and many European countries have allocated a significant amount of public funding to support.

Option maker: The top-right corner contains opportunities featuring creative destruction as a response to value change due to downstream disruption. We call this quadrant "option maker."

Under COVID-19, many firms have noticed that downstream customer needs are on pause or totally changed. Thus, they creatively make new options for customers. One type of option is to provide customers with new choices in the next months, so that a lock-in effect is created now. For instance, Scandinavian Airlines (SAS) compensates the travelers whose flights were cancelled due to COVID-19 with vouchers that can be used on any other flights on SAS in the next few months. Only after that period has passed and a traveler has not been able to use the voucher on a flight can it then be refunded. In other cases, like Salesforce, many software vendors are making their software license or tools and support free of charge for 90 days to attract new customers, providing them options to opt in or out of the service that they might have enjoyed during the long free trial period.

The other type of option making is to give the market new options to choose, as new customer needs have emerged. For instance, Rubedo Systems, a Lithuanian company, is developing a unique disinfection robot to combat COVID-19. The product concept is simple: combine the existing household vacuum cleaning robot with an automated disinfection module. The customer need for this product is evident: disinfection robots will replace human beings to assume risky disinfection jobs in areas where the coronavirus prevails. This presents a new option to hospitals, hotels, and many other public spaces around the world. Another interesting case is Draganfly, an Australian-based professional drone company, which has added new sensors to develop a new drone that

will detect people with COVID-19 symptoms in public spaces and trace their identities. This gives health authorities in many countries new options for the tracing and surveillance of COVID-19 cases.

Newcomer: Moving to the top-left corner, we find several cases where “newcomers” enter an existing market in which the upstream supply has been troubled. Newcomers operate in other industries, but due to COVID-19 they enter one of the markets whose upstream supply chain is in trouble. For instance, Dyson, the market leader of high-end vacuum cleaners, spent around £20 million and within a short period developed medical ventilators for hospitals (although in late April the UK government said the Dyson ventilators are no longer required). Similarly, Mercedes-AMG has been developing new CPAP (Continuous Positive Airway Pressure) machines for COVID-19 patients, based on the company’s advanced technologies in air flow control; **it took just under 100 hours**, from the initial meeting to the production of its first device. Around the world, many liquor distilleries have quickly turned their manufacturing capacity to producing hand sanitizer. The newcomers have usually rapidly applied their familiar technologies to new applications, badly needed by the market influenced by COVID-19.

Reorganizer: Finally, the bottom-left corner contains cases where innovation opportunities are captured by creative accumulation in those industries with a troubled supply chain. We call this “reorganizer.” For those whose upstream global supply chain has been disrupted, a reactive response is to source domestically and through insourcing, which might create opportunities for local “newcomers” on the one hand and speed up the adoption of new operational technologies on the other. The locus of innovation for reorganizers is primarily in the field of process innovation. For instance, for many global brands, customer service hotlines are outsourced to countries where such services are cheaper. With the lockdown of COVID-19, it is expected that not as many competent employees are available to work. Thus, automated chatbots based on artificial intelligence (AI) have become an arena for innovation. Deutsche Bank Corporate Bank Division decided to build a rule-based chatbot to help DB clients to navigate faster and more conveniently through the bank’s comprehensive information related to the COVID-19 pandemic.

Market Opportunities for Innovators Under COVID-19

Given these four strategies for innovation, **concrete market opportunities under COVID-19** are abundant along four actions that battle against a typical epidemic: testing, tracking and surveillance, isolation and quarantine, and treatment. *Table 1* summarizes the relevant strategies for each of these societal reactions to an epidemic.

Testing, testing, testing: The WHO has strongly recommended all nations to pay serious attention to infection testing at the early stages and during the ongoing process of an epidemic. Thus along the value chain of testing, from testing methods to testing device components, many new opportunities emerge. For instance, Technical University of Denmark (DTU), in collaboration with two local hospitals and a private company, is developing PlasmonDetect, a new molecular diagnostic technology for the rapid detection of SARS-CoV-2, while another group of researchers at DTU are working on a novel method to detect viral infection after only 6-12 hours and before the person feels ill, using a single drop of blood. One of the world's largest industrial pump companies, Grundfos, rapidly changed its manufacturing process to produce protective face shields and special boxes for testing devices. As these examples show, "option maker," "newcomer," and "consolidator" are all viable strategies for market opportunities regarding testing.

Tracking and surveillance: To slow the spread of the virus, one key approach is to prevent social gathering. In many countries, the lockdown policy has not been effective for complex social and cultural reasons, while in others they are already considering re-opening schools, restaurants, and factories. When social gathering becomes inevitable, effective methods to trace and track potentially infected people is crucial to the success of epidemic control. Thus, new solutions, such as drones, tracking apps, and surveillance robots, among others, will be opportunities for those who are already in the market to consolidate, for option makers to create new solutions, and for newcomers to fill the market gap.

Isolation and quarantine: When infected people are identified, they need to be isolated and quarantined. During a lockdown, the majority of the population is isolated in their own household. To ensure that quarantine and isolation are fully implemented, new service innovations that are human-centric are needed. Moreover, people under isolation need biological and psychological support to stay strong and motivated. Therefore, consolidators and option makers will find this area filled with opportunities, while existing service providers, such as banking, insurance, and public service, need to creatively reorganize their operations.

Treatment: Treatment includes a broad scope of activities to save lives, e.g., a ventilator and its controlling software, drugs proven effective to reduce COVID-19 symptoms, and vaccine development. In most cases, incumbents will consolidate their R&D in the relevant fields to push technologies into marketable applications at a faster pace than ever. We are seeing this in the pharmaceutical industry with respect to vaccine development, and among the ventilator manufacturers. There are also many opportunities for newcomers to disrupt the existing market. Nevertheless, when we look at the supply chain of active pharmaceutical ingredients (APIs), a global interdependence is the norm – **big nations are dependent on each other**. Thus, a proactive and strategic approach to reorganize supply chains to prepare for any interruption in a future global crisis is essential for many pharmaceutical companies in the world.

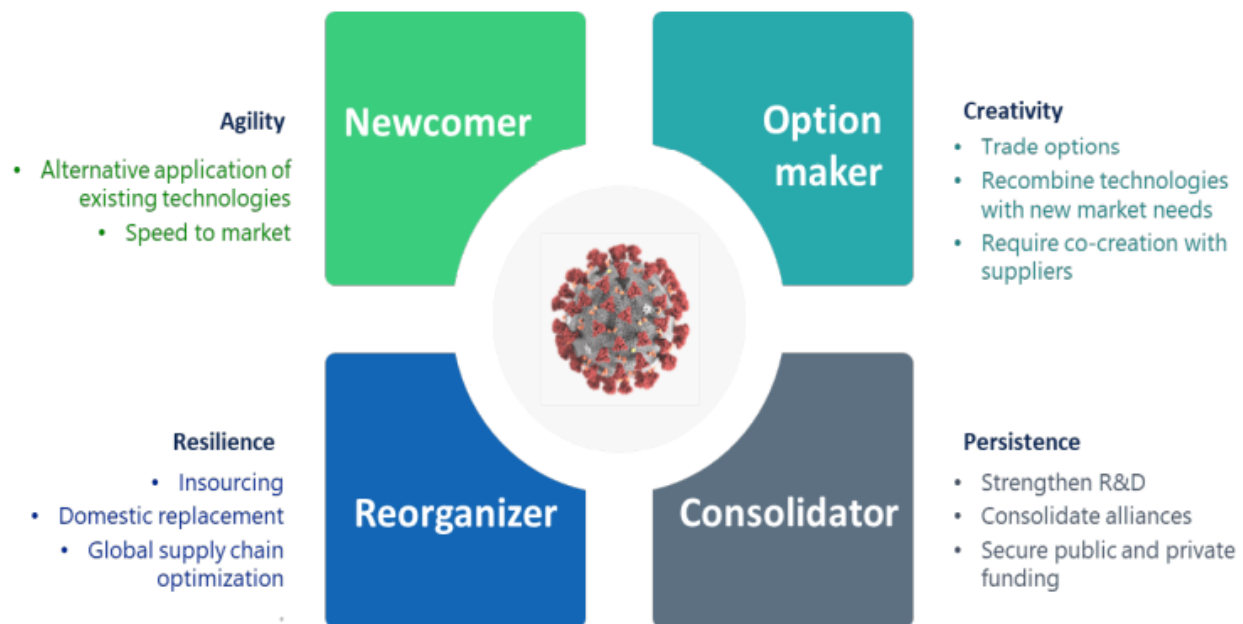
Table 1. Relevant market opportunities among four strategies along phases of epidemic

| Market Opportunity | Consolidator | Option Maker | Newcomer | Re-organizer |
|-------------------------|--------------|--------------|----------|--------------|
| Testing | ✓ | ✓ | ✓ | |
| Tracking & Surveillance | ✓ | ✓ | ✓ | |
| Isolation & Quarantine | ✓ | ✓ | | ✓ |
| Treatment | ✓ | | ✓ | ✓ |

Required Capabilities and Relevant Tactics

Having clear strategies to identify new market opportunities for innovation is one thing; building the right capabilities and deploying relevant tactics is another altogether. It can be even harder if a business decides to pursue multiple strategies at the same time. While a multi-front strategy is not unrealistic, companies must be aware that each strategy requires quite different sets of capabilities and tactics in order to be successful. We describe the capability required and tactics to be deployed for each type of strategic opportunity in *Fig. 2*. Managers should pay attention to combining these capabilities and tactics when innovating in several opportunity spaces.

Figure 2: Capabilities and tactics required for each strategy for new opportunities



For option makers, customer-centric creativity is the key to making the right innovations. The business must bring creativity to offering new options and solving new problems to take advantage of changed customer needs and behavior, whether it is less frequent usage or completely new needs. In this respect, the traditional “new product development” logic is doomed to fail. People don’t need more new products. They need new solutions to solve their problems with a service logic, in which transactions are created to exchange opportunities to perform a job, instead of exchanging tangible products. One efficient tactic is to recombine existing technologies to solve a new problem (e.g., the Draganfly’s

COVID-19 surveillance drone is a recombination of several existing sensing technologies). However, be aware that pursuing a rapid recombinational tactic to create new solutions usually requires co-creation with suppliers and customers.

For newcomers, agility is the key. To enter a market that is new to your business by offering your familiar technologies, **you will need to master techniques in technical alternative application**. Companies like Dyson, Mercedes-AMG, and Grundfos were able to enter some troubled markets by applying their core technologies to new applications effectively. Sometimes the functionalities of certain technologies need to be reversed to make sense in the target market (for instance, air inflow vs. air outflow, de-humidification vs. humidification, material purification vs. material mixing). Besides developing alternative applications of existing technologies, speed to market is also very important. Companies must take advantage of their existing sales channels and proactively seek tender opportunities in public procurement.

For consolidators, the epidemic provides opportunities to reinvest and restructure, which needs persistence. The most important investment priorities, now more than ever, are R&D and strategic alliances for future innovation, because the demand for consolidator businesses' products during or after the epidemic will rebound, with even higher demand for new features and value for money. An important tactic for consolidators is to proactively map and seek opportunities from public and private funding in collaboration with strategic partners.

For reorganizers, resilience is the key capability. Businesses must quickly build a portfolio of domestic and global suppliers and create back-up suppliers based on predefined criteria that specify the circumstances under which alternative suppliers will be used and what their available capacity and price quotations are. Resilience can also be achieved by deploying scenario planning, a technique that has been widely used in predicting industrial and societal change in emerging industries (e.g., renewable energies) and for public policy making. Small and medium-sized businesses can quickly conduct project-level scenario planning to reduce uncertainty. Another tactic to enhance resilience is to adopt and upgrade new technologies for operations (e.g., CAD, autonomous manufacturing, AI-based customer services, etc.) and create adaptive capabilities within your company.

And finally, a crucial capability needed to execute any of these tactics, although not shown in Fig. 2, is the ability to **collaborate**. Often a single business cannot afford to tackle many opportunities single-handed. When you focus on one strategy, you are very likely to depend on the knowledge base or market channels of others. When consolidators, reorganizers, newcomers, and option makers team up, their business potential will probably be more pronounced than a single business acting alone. That is why most of the examples used in this article involve collaborative approaches with various types of partners. To this end, open innovation must be considered an effective tactic.

Concluding Remarks

To date, the COVID-19 pandemic is a curse to humanity, but ultimately it could well be a blessing to society for its dramatic imprint, both on our attitude toward sustainable development and on economic activities that industry must continue and change. Companies and the public authorities should work together to foster innovation and entrepreneurship, not only to battle against the virus, but also to create new and sustainable ways of living. Based on their business context, companies need to strategically navigate the opportunity landscape and assess risks and benefits of each scenario. Fortunately, we do possess a lot of knowledge about innovating in a crisis, and can apply these strategies, capabilities, and tactics in this new world.

► References



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