Four strategies for rapid innovation during a crisis

The Covid-19 crisis has induced a sense of urgency for product innovations. As a vaccine or drug for the disease remains many months away, there is a surge in demand for ventilators, testing kits, protective equipment for medical staff and citizens, sanitising products, remote monitoring devices and other innovations that can prevent and manage the spread of the pandemic.

The regulatory approval process for these innovations has been expedited and several sources of funding have opened up. For innovators who can achieve technological breakthrough and launch a quality product in a compressed timeframe, there is a great opportunity to save lives and achieve commercial success.

However, what are the unique challenges you might face as you are race against time to innovate? How can you overcome them and increase your chance of success? We suggest four strategies for rapid innovation in times of crisis.

Adapt to emerging protocols and guidelines

Innovating in a crisis situation requires you to continuously assimilate new information and adapt to the emergent situation. As the crisis unfolds and frontline organisations develop a better understanding of the situation, new information emerges from the field on a continual basis. This information can be in the form of unmet needs in the field or new protocols and guidelines. Such new information can have important implications for your choice of technology and design of products.

For example, the apex medical body monitoring the spread of the virus in India initially relied on the time-taking but decisive RT-PCR test to detect the infection. But, given the inevitable spread of the virus, it approved the rapid antibody test that has a lower reliability rating. The

new guideline has paved the way for innovators to develop testing kits based on antibodies in the blood stream and not restrict themselves to the RT-PCR method. Similarly, innovators who are developing devices that enable ventilators to be shared need to stay abreast of expert opinions on the matter and tailor the design to support ventilator-sharing protocols. As one innovator put it “Information has been coming in thick and fast. We need to stay on top of it”. In essence, you are dealing with rapidly shifting guideposts. In order to succeed, you need to stay plugged into various channels and rapidly incorporate the emerging information into your solution.

Tap into free-flowing knowledge to augment capabilities

Building a product requires a number of different capabilities. You may have some of the capabilities but might be missing other complementary capabilities necessary to develop a complete product. Under normal circumstances, you would build or acquire these capabilities over an extended R&D cycle. However, in a crisis situation, you need to develop these complementary capabilities in a compressed timeframe. You can surmount this challenge by leaning heavily on the collective sense of purpose and social responsibility that is ubiquitous in the ecosystem in this time of crisis.

Organisations in both the public and private sectors are united in the war against the pandemic and are more willing than ever before to share knowledge, inputs and other resources. For example, a biomedical device company with expertise in sensor-based technologies has embarked on finding a low-cost solution for automated control of mechanical ventilation that minimises caregiver intervention. While the company has expertise in automation technology, ventilator is a new application area. The company has relied heavily on the product designs open sourced by leading medical technology companies such as Medtronic. It has also leveraged a supportive global online community of engineers, designers and healthcare professionals to overcome hurdles along the way. As knowledge sharing and cooperation temporarily mute the forces of secrecy and competition, you need to augment capabilities by tapping into the freely available pool of knowledge.

Employ creative methods to test and certify products

The pressure to deliver a product quickly should not lead you to compromise on its quality. Typically, pharmaceutical/chemical products and medical equipment undergo extensive testing for safety and reliability. They also go through a rigorous certification process. However, the present situation poses a challenge to testing and certification because of the nascent nature of the problem and paucity of time. Take the example of an air sterilisation company that is leveraging its UV-C based technology for sanitising surfaces. In order to establish that the solution is effective on surfaces infected by the coronavirus, the company needs access to the virus strains. They have been trying to source the samples from labs that are testing for Covid-19 but without luck.

Such challenges create a dilemma with regard to product readiness and deployment. If you delay product introduction waiting to simulate perfect testing conditions, it can result in lost lives. At the same time, if you prematurely introduce the product, it can compromise public health. Given the imperfect testing conditions, one of the workarounds you can employ is to demonstrate efficacy by testing on comparable targets. For instance, the disinfectant company mentioned above is trying to establish the efficacy of its product by testing it on other viruses such as the Influenza virus. This highlights that you need to adopt unorthodox testing and certification approaches to bring out a product quickly without compromising on quality.

Emphasise scale early in the design process

In a typical innovation cycle, you first build a prototype to establish the feasibility of the solution. This is followed by an effort to optimise the design for cost and mass production. The transition from lab scale to industrial scale is an important milestone in product development. In a crisis situation, you do not have the luxury of building a prototype that can be subsequently improved for scale. You need to design products for scale right from the get-go. This means, you have to focus on functionality, ease of manufacturing and cost considerations simultaneously. You should make design choices and tradeoffs that move you towards building products that are “manufacturing ready”.

For example, the company working on automated control for ventilators has chosen PLC over an embedded system to reduce development time and simplify the manufacturing process even though the choice has a higher cost implication.

Similarly, a company designing a disinfectant chamber is consciously choosing off-the-shelf components so there would be no input-related bottlenecks while scaling up. Further, as you are developing the product, you need to work with manufacturing partners who can provide timely and valuable inputs to design a product that is ready for mass production. In sum, validation of functionality and production readiness have to move in lockstep.

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