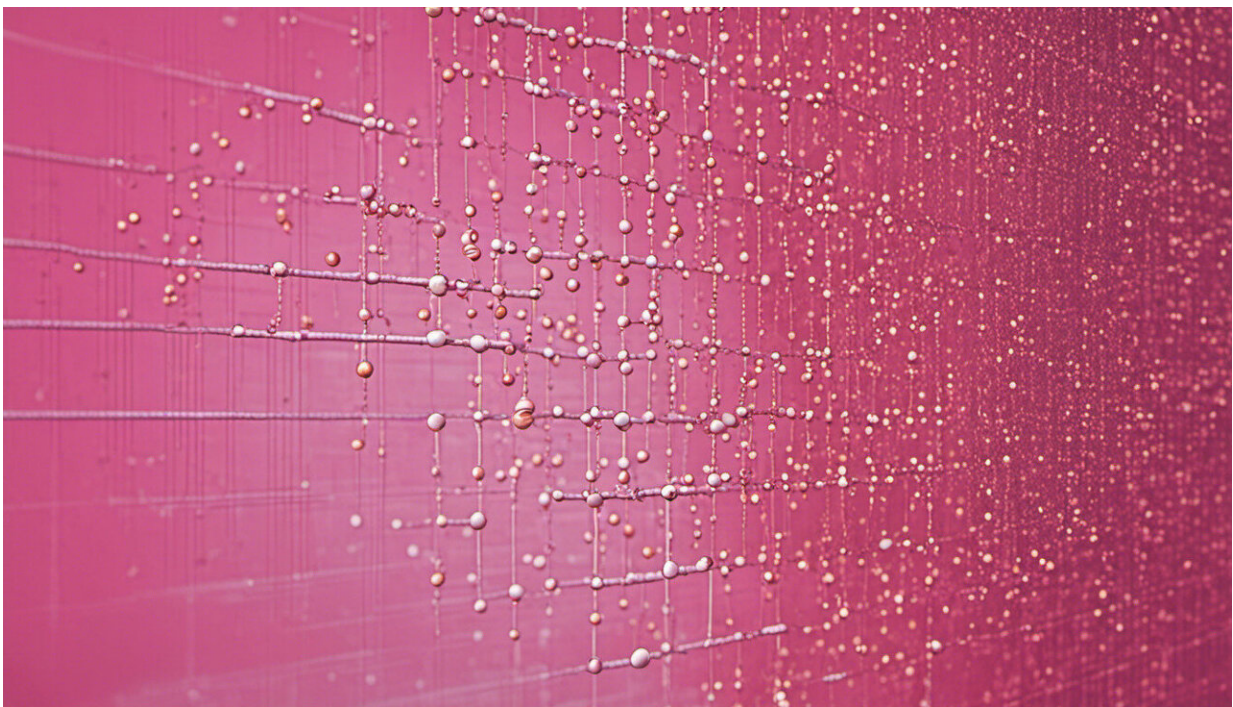


Digital technologies will help build resilient communities after the coronavirus pandemic

September 29 2020, by Yolande E. Chan, Arman Sadreddin, Suchit Ahuja



Credit: AI-generated image ([disclaimer](#))

Amid the [horrific public health and economic fallout from a fast-moving pandemic](#), a more positive phenomenon is playing out: COVID-19 has provided opportunities to businesses, universities and communities to become hothouses of innovation.

Around the world, [digital technologies](#) are driving high-impact interventions. Community and public health leaders are handling time-sensitive tasks and meeting pressing needs with technologies that are affordable and inclusive, and don't require much technical knowledge.

Our research reveals the outsized impact of inexpensive, [readily available digital technologies](#). In the midst of a maelstrom, these technologies—among them [social media](#), [mobile apps](#), analytics and [cloud computing](#)—help communities cope with the pandemic and learn crucial lessons.

To gage how this potential is playing out, our research team looked at how communities incorporate readily available digital technologies in their responses to disasters.

Community potential

As a starting point, we used a model of crisis management developed in 1988 by [organizational theorist Ian Mitroff](#). The model has five phases:

- signal detection to identify warning signs
- probing and prevention to actively search and reduce risk factors
- damage containment to limit its spread
- recovery to normal operations
- learning to glean actionable insights to apply to the next incident

Although this model was developed for organizations dealing with crises, it is applicable to communities under duress and has been used to [analyze organizational responses to the current pandemic](#).

Our research showed that readily available digital technologies can be deployed effectively during each phase of a crisis.

Phase 1: Signal detection

Being able to identify potential threats from rivers of data is no easy task. Readily available digital technologies such as social media and mobile apps are useful for signal detection. They offer connectivity any time and anywhere, and allow for rapid sharing and transmission of information.

New Zealand, for example, has been exploring an [early warning system for landslides](#) based on both internet-of-things sensors and digital transmission through social media channels such as Twitter.

Phase 2: Prevention and preparation

Readily available digital technologies such as cloud computing and analytics enable remote and decentralized activities to support training and simulations that heighten community preparedness. The federal government, for example, has developed [the COVID Alert app for mobile devices](#) that will tell users whether they have been near someone who has tested positive for COVID-19 during the previous two weeks.

Phase 3: Containment

Although crises cannot always be averted, they can be contained. Big data analytics can isolate hot spots and "[superspreaders](#)," limiting exposure of larger populations to the virus. Taiwan implemented [active surveillance and screening systems](#) to quickly react to COVID-19 cases and implement measures to control its spread.

Phase 4: Recovery

Social capital, personal and community networks and shared post-crisis

communication are essential factors for the recovery process. Readily available digital technologies can help a community get back on its feet by enabling people to share experiences and resource information.

For example, residents of Fort McMurray, Alta., have experienced the pandemic, [flooding](#) and [the threat of wildfires](#). As part of the response, the [provincial government](#) offers northern Alberta residents [virtual addiction treatment support via Zoom videoconferencing](#).

During recovery, it is also important to foster equity to avoid a privileged set of community members receiving preferential services. To address this need, [anti-hoarding apps](#) for personal protective equipment and apps that promote [volunteerism](#) can prove useful.

Phase 5: Learning

It is usually difficult for communities to gather knowledge on recovery and renewal from multiple sources. Readily available digital technologies can be used to provide local and remote computing power, enable information retrieval and analysis and disseminate emergent knowledge. The [global learning platform launched by UNICEF and Microsoft](#) helps youth affected by COVID-19.

More than 1.57 billion students have been affected by the nationwide closure of schools due to COVID19.

This is what UNICEF and [@Microsoft](#) are doing to keep children learning online.<https://t.co/GP10jH4DOP>

— UNICEF (@UNICEF) [April 20, 2020](#)

A sixth phase

Our research suggests a sixth phase of crisis management: community resilience, which is the sustained ability of communities to withstand, adapt to and recover from adversity. Communities must [develop the capacity to absorb the impact of pandemics](#) and other disasters.

When face-to-face interactions are limited—like in a pandemic—readily available digital technologies can enable community participation through social media groups, virtual meeting software and cloud- and mobile-driven engagement and decision-making platforms.

Technologies that provide transparent information services such as analytics-based dashboards and real-time updates can create a sense of equity and caring. Apps and portals can connect vulnerable populations to critical care, resources and infrastructure services.

For example, the government of Karnataka, India, partnered with local vendors and hyper-local food delivery services for [home delivery of groceries and other essential materials for households quarantined because of the COVID-19 pandemic](#).

Readily available digital technologies help remote communities develop a sense of belonging, sharing and self-efficacy while incrementally building shared knowledge over multiple crises.

Moving forward

The [2003 SARS epidemic](#) taught us valuable lessons about the use of technology during a pandemic. At the time, readily available digital technologies were largely overlooked, because bigger and more expensive solutions were the focus.

In responding to the present circumstances, it is time we explore the benefit of common technologies. The [federal government's recent](#)

[announcement of funding](#) to support the use of digital solutions in community responses to COVID-19 is a promising step.

[Investing in resilient infrastructure](#) is also important, since communities depend on public digital infrastructure for access to the internet and other telecommunication networks. This infrastructure must be affordable, sustainable and inclusive.

But we should not lose sight of the need to support communities in developing their own resiliency—to help them envision their own solutions using readily available digital technologies.

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