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Healthy Buildings

Beyond COVID-19: Digital Technology is the key to future healthy buildings

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COVID-19 has forced us to reassess every aspect of human behavior, from how we greet our friends, family and colleagues, all the way to how much space we allow one another in the supermarket line. The pandemic also forced many of us to think for the first time about the health of the indoor spaces where we spend the bulk of our time, and which serve as the main arenas for viral transmission: our buildings.

As the world grew wise to the nature of COVID-19 transmission via airborne droplets, many building owners reviewed the safety and effectiveness of their HVAC technologies, the systems that treat and condition the air inside their properties. In hindsight, this was a good place to start. When it comes to lowering the risk of COVID-19 in the places where people live, work, learn and play, cutting-edge HVAC systems that ventilate, filter, disinfect and isolate airborne-transmitted pathogens are part of the solution. They will also be crucial to boosting confidence as the world gradually gets back to work.

But HVAC systems are the low-hanging fruit when it comes to infection control, and merely the table stakes in creating and operating a healthy building – a philosophy and investment strategy that targets improved outcomes for people, places and planet. HVAC systems alone are not the silver bullet for infection control, and infection control is just one part of a healthy building strategy. We're also only just starting to tap the potential of technology for healthy building by leveraging digital transformation platforms that use artificial intelligence (AI) to optimize assets' performance, enhance occupant experiences and meet sustainability goals.

You might be surprised to hear that you can diagnose and treat the health of buildings, just like doctors do with humans. And a building physician, if such a job existed, would send the world's buildings away with strict orders to pursue a healthier lifestyle. Like a patient whose sole focus is on eating enough food, business and society have traditionally fixated on maintaining a steady room temperature while ignoring a host of other factors that can impact health. These include, in no particular order: ventilation, air quality, moisture levels, dust, germs, water quality, sanitation, noise, carbon footprint and lighting levels.

Today's business owners are not only responsible for what's inside of their four walls. They also have to ensure that they are being good neighbors, community members and global citizens. This is why a building's health checkup shouldn't be a cursory

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temperature check, but a thorough medical exam that, for example, assesses the efficiency of a restaurant's smart meter during peak hours, ensures supplies of face masks and hand sanitizer at a company's COVID-19 kiosk, and measures noise and lighting levels in a hospital's cafeteria.

The long list of items on the healthy building agenda might seem daunting, but companies can start by addressing the two broader secular trends that are driving investments in buildings today: clean air and energy efficiency. Businesses can now enhance their clean air strategy with sensors and devices that collect data from both inside and outside of the building, and push that data to the cloud for application analytics and AI-based control.

There's a bonus: These digital backbones can enable simultaneous reduction of power consumption and greenhouse gas emissions of buildings, meaning that healthy buildings and employee wellness does not have to come at the expense of a business's profits, or its sustainability and carbon reduction goals. This further illustrates that operating a holistic healthy building is not a zero-sum game that pits places, people and planet against one another; neither is it a death match between purpose and profit. It's a classic "and" proposition, rather than an "or" proposition.

Here's a quick primer on how healthy buildings moved up the agenda. For businesses, the social contract used to be fairly simple. Milton Friedman, one of the founding fathers of late

20th-century capitalism, famously said in 1962 that business only had one social responsibility: to increase profits in open and free competition without deception or fraud. Business more or less operated accordingly until the concept of corporate social responsibility (CSR) emerged in the early 21st century, which catapulted companies' ethical and legal responsibilities up the agenda. This trend culminated in a watershed moment in 2019 when the Business Roundtable declared that corporations exist to serve not just their shareholders, but a whole cast of stakeholders: employees, customers, suppliers and communities.

Several companies were already changing tack well before this new manifesto, encouraged by stricter regulations relating to the reporting of energy use and greenhouse gas emissions. Many took their first step on the path to increased energy efficiency and lower emissions by focusing on operating "smart" buildings. These smart buildings harnessed digital technology, including sensors and software, to optimize their building's core systems such as lighting, power meters, water meters, pumps, heating systems, fire alarms and chiller plants. Those array of sensors generated enormous amounts of data from buildings' electrical and mechanical hardware, while AI-enhanced software churned out insights from this data. Those insights allowed businesses to enhance productivity, boost energy efficiency and lower greenhouse gas emissions.

The world's smart building pioneers may not have known it at the time, but they were laying the foundations for their healthy building futures, and battle-hardening their buildings against pandemics such as COVID-19. Businesses that had already invested in data and analytics were better equipped to weather the pandemic when it hit, mainly because they were already thinking about the safety and well-being of their employees and spaces. Sure, they may not have anticipated the full scale of the impact of COVID-19, but a holistic approach to stakeholder health through leveraging data was already hardwired into their everyday operations. For example, they might have already deployed IEQ sensors to monitor the levels of volatile organic compounds and particulate matter in the air or dashboards in the lobbies of their buildings to display the building's air quality.

Businesses that are building for the COVID-19 era and beyond can learn from these early smart building adopters. The health and safety of all who enter a workplace should be businesses' No. 1 priority. But companies should not consider their work done after implementing clean air solutions that mitigate the threat of pathogens. There is no doubt that proper ventilation and high-efficiency HVAC filtration can filter and flush pollutants

and contaminants, including virus-carrying particles. However, operating a smart, healthy building means implementing a broader focus on healthy people, healthy places and a healthy planet.

For example, hospitals could adopt frictionless access, thermal temperature screening and contact tracing with real-time alerts to protect patients and visitors. Commercial office buildings could leverage intelligent video monitoring for mask detection and social distance monitoring, then send employees reminders to improve their behaviors to better manage compliance. Restaurants and shops could leverage remote diagnostics that alert to mold spores or mildew on common fomites, allowing surfaces to be thoroughly disinfected.

Right now, businesses may regard these complementary systems as COVID-19-hardening measures, but they're actually future-proofing their buildings against a range of risks. That's because these cutting-edge technologies together form a digital backbone that can not only deliver a healthier building and higher productivity rates, but also enable businesses to achieve their financial and ESG objectives.

Companies should remember that their healthy building journey never ends; it is a constantly evolving philosophy and investment strategy. But it is never too late to start, and businesses can expect swift, tangible benefits. Many companies will be retrofitting rather than building from scratch, so many of these backbones can be delivered in a matter of weeks or months, rather than several years. And many businesses will feel the benefits of their new digital platforms from day one.

There will be benefits for people, places and the planet over the short, medium and long term. Businesses that build out digital backbones that minimize infection risk will boost their resilience against COVID-19 and other respiratory diseases. A healthy, engaged and productive workforce generally requires fewer sick days, resulting in lower healthcare costs. Companies can also expect a bump in asset productivity as they realize new operational efficiencies, thanks to their buildings' digital platforms.

Operating a smart, healthy building is key to a company achieving its ESG goals. The world's largest funds are advancing investment strategies with increased exposure to positive ESG results, and avoiding companies and sectors associated with risks. It can be expected, therefore, that companies that invest in healthy buildings will see a positive impact on their market value in addition to other critical measures such as employee engagement and retention.

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