

# CHAPTER 1

## Lasting Business Impacts and Resource Sourcing After a Global Pandemic

*Occurrences can be unpredictable. If we have to endure a cascade of rumpling coincidences, it's fate that dictates our lives, taking over the common procedure of "timing," and, thus, sealing the bondage of our free choice. Once our choice is kidnapped and strangled to the core, fate checkmates our destiny.*

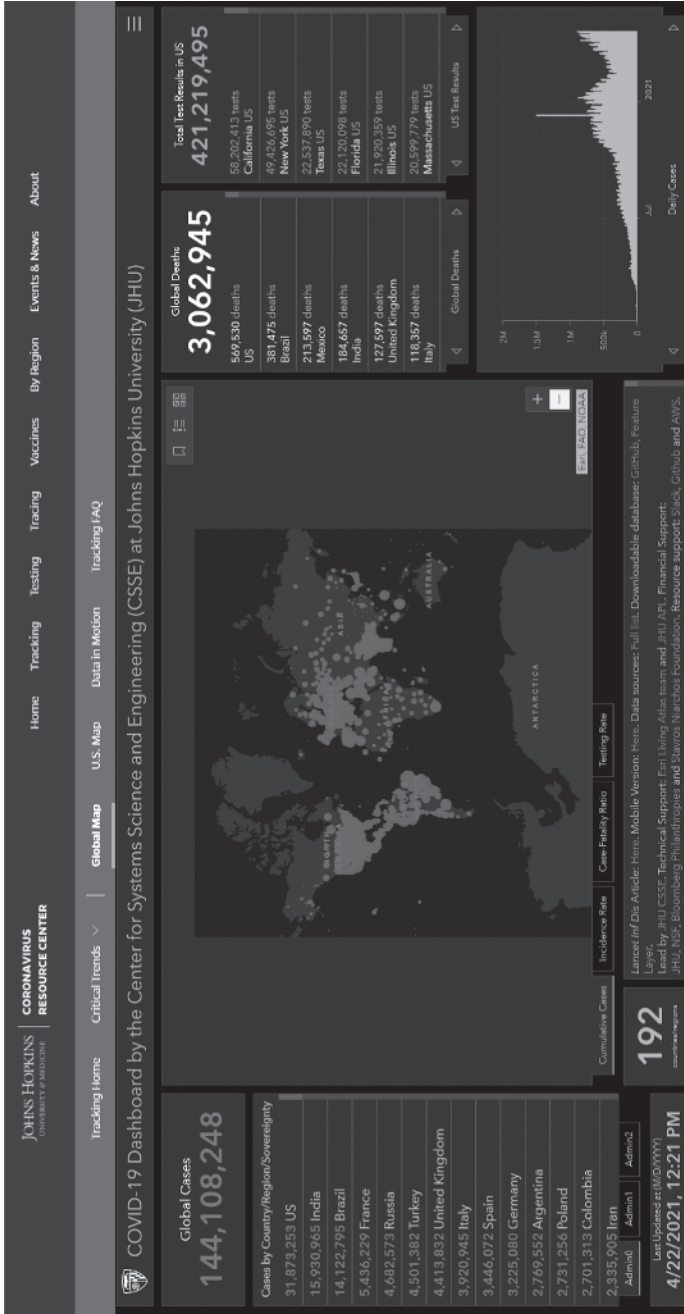
—ERIK PEVERNAGIE<sup>1</sup>

### Introduction

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As I start writing this text, there have been 144,108,248 Covid-19 cases globally with 31,873,253 in the United States and 3,062,945 deaths globally and 569,530 in the United States, respectively (see Exhibit 1.1).<sup>2</sup> I am relatively sure, as many public health professionals have discussed in the past several months, that there are far more cases and deaths globally as a result of various factors including improper counting, deaths occurring outside of hospitals, fatalities due to untreated fatal diseases such as cancer going undertreated during the height of the pandemic, and suicides. The global pandemic of 2020–2021 will go down in history as the most devastating impact on human life in our generation. The pandemic will have lasting effects on trade, commerce, travel, human behavior in business operations, and how employees work around the globe going forward.

Combine the likelihood that a fair percentage of the United States and global population will *not* opt to receive a Covid-19 vaccine with likely future variants that develop that make current vaccines less effective, this pandemic



**Exhibit 1.1** The Johns Hopkins University of Medicine Coronavirus Resource Center

Source: The Johns Hopkins University of Medicine Coronavirus Resource Center.

is *long from over*. CNN recently reported that 40 percent of U.S. Marines have opted to not receive the Covid-19 vaccine.<sup>3</sup> The pharmaceutical maker Pfizer, which makes one of the Covid-19 vaccines, recently announced that for people to stay protected, they will likely need another dose within 12 months of their first pair of doses.<sup>4</sup>

From a historical perspective, smallpox remains the only human disease to be globally eradicated after killing 300 million people alone in the twentieth century.<sup>5</sup> It took 184 years from the first-ever vaccine in 1796 to its eradication in 1980.<sup>6</sup> Polio was almost previously eradicated except in Pakistan and Afghanistan *until* Covid-19 hit globally, which set back progress in 2020.<sup>7</sup> However, cases are now on the rise and expected to climb even further in the coming months.<sup>8</sup> “So far this year officials have tallied more than 200 cases of wild polio and nearly 600 cases of the vaccine-derived form of the disease.”<sup>9</sup> Most of the vaccine-derived strains of polio are in Afghanistan and Pakistan, but now these rogue strains of polio are also turning up across much of sub-Saharan Africa, Yemen, Malaysia, and the Philippines.<sup>10</sup>

The combination of individuals opting out of the initial vaccine and those who don’t take or have access to recurring booster shots with likely variants of the virus make for a longer-term cyclical Covid-19 transmissible virus. Combine this with the anticipated return of the annual flu virus in the fall and we have all the makings for cyclical resurgence and fear. Thus, the world will be dealing with a Covid-strained virus for years to come and, simply put, businesses, organizations, and universities need to adjust their operating environments including technology strategy to properly adapt and prepare for waves of reoccurrences. From a technology perspective, that includes more cloud-based solutions accessible via mobile devices. The traditional desktop computer will die a slow death as a result of Covid-19 as more organizations’ employees leverage all mobile solutions including laptops, tablets, and smartphones.

India experienced a really bad second wave of Covid-19 in April 2021. According to CNN.com, “healthcare and other essential services across India are close to collapse as a second coronavirus wave that started in mid-March tears through the country.”<sup>11</sup> The article goes on to report that hospitals are running out of oxygen, beds are running low, and testing is nearly impossible to get.<sup>12</sup>

## **Impacts from Covid-19 on Businesses and Organizations**

According to the consulting company McKinsey & Company, it could take various sectors more than five years to recover to 2019 level contributions to GDP.<sup>13</sup> Specifically, the worst projected sectors globally that have the longest

recovery period (up to 2025 and beyond) include arts; entertainment; recreation; hotels and food services; educational services; transportation and warehousing; manufacturing; and mining, oil, and gas extraction.<sup>14</sup> McKinsey goes on to suggest that economic impacts across the globe could take one of three paths:

1. A quick recovery during which lower fatalities occur in younger people and working adults.
2. A global slowdown that assumes most countries are not able to control the spread of the virus, especially in heavily populated areas, affecting small- to medium-sized companies more acutely.
3. A pandemic and recession arise, assuming that the virus is not seasonal.<sup>15</sup>

During the early peak of the pandemic in 2020, there were 20,500,000 people who lost their jobs in the United States alone (14.7 percent) between February and April.<sup>16</sup> The 10 most impacted sectors of the United States job markets included the following areas:

1. Hotels lost 42.7 percent of jobs.
2. Sports and performing arts lost 45.4 percent of jobs.
3. Furniture and home furnishing stores lost 46.3 percent of jobs.
4. Restaurants and bars lost 48.1 percent of jobs.
5. Motion picture and sound recording lost 48.3 percent of jobs.
6. Dentist offices lost 53.3 percent of jobs.
7. Laundry and professional services (pet, parking, dating, etc.) lost 53.5 percent of jobs.
8. Clothing and accessory stores lost 58.9 percent of jobs.
9. Amusement parks and casinos lost 59.9 percent of jobs.
10. Scenic transportation lost 62.1 percent of jobs.<sup>17</sup>

## Impacts in Academia

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In academia, K–12 and higher education included, both had significant impacts as a result of Covid-19 during the 2020 academic year. According to the University of Southern California Dornsife Center for Economic and Social Research (CESR), “only about two-thirds of households with income less than \$25,000/year had computers and Internet access for children’s remote learning, compared to 91 percent of families with household incomes of \$75,000–\$149,000.”<sup>18</sup> In addition, “students receiving critical services, like

free or reduced-priced meals” and other education services dropped dramatically once schools started closing their doors by April 2020.<sup>19</sup> By October 2020, approximately 68 percent of K–12 children in the United States were either learning fully or partially remote.<sup>20</sup> In addition, nearly 40 percent of parents indicated that their children needed tutoring and indicated that their schools were not providing those services.<sup>21</sup> Parents were also polled with regard to the overall quality of their children’s education during 2020. Parents of remote learners graded it as “less engaging, and of lower quality across all content areas.”<sup>22</sup> Parents of in-classroom learning or hybrid in-class/remote learning indicated no change or a small decrease of concerns compared to fully remote learning.<sup>23</sup> Unions representing K–12 teachers across the country fought to have teachers return to in-classroom instruction. Parents looking for alternatives sought private-school education where they offered in-person learning.

According to the *New York Times*, “online schools are here to stay, even after the pandemic.”<sup>24</sup> Bloomington, Minnesota, Public Schools “has decided to keep running online school even after the pandemic” due to preferences by families.<sup>25</sup> Other school districts in some states are doing the opposite. In March of 2021, Governor Phil Murphy of New Jersey indicated that there should be “no remote learning option for children in New Jersey” in the fall semester.<sup>26</sup> New York State’s Department of Education recently announced that it’s canceling snow days.<sup>27</sup> Some parents are simply not happy. “This is preposterous. These people are joyless bureaucrats. And you can quote me on that!”<sup>28</sup> said one New York parent of four.

Higher education was also greatly impacted during the 2020 academic year, both financially and with in-person learning. Georgetown University, where I teach in a graduate technology management program, went virtual for most of 2020 and through May of 2021. The transition to online learning tools like Canvas and Zoom had mixed results of a transition. Those professors who had previously taught in either all online or hybrid-online courses were better prepared than those who had traditionally taught in-person courses for the majority of their careers. Courses needed to be migrated from in-person to online formats, specifically on Canvas. An aggressive training program was conducted to assist faculty with the transition to online learning.

Colleges and universities around the world had big impacts to their operations and revenue in 2020 and into the first half of 2021. In many instances, parents reevaluated whether their children would attend university programs for cost and safety purposes. Universities across the globe lost millions in revenue from a variety of sources including:

- Tuition from international students
- Room and board fees

- Parking fees
- Food and catering fees

Many universities compensated parents by offering them a reduced tuition fee for remote-learning options. According to the Understanding America Survey, a U.S. nationally represented study of American parents on the impacts of Covid-19, the following core conclusions were identified:

- The overall impact on parents planning to send their children to university in the fall of 2020 fell by 2 percent.
- Another 3 percent of parents indicated that they had changed where their children would go to university in the fall as a result of Covid-19.
- The impacts to two-year community school and graduate programs had the largest impact with 20 percent of two-year programs and 8 percent of graduate programs' students indicated they would take fewer classes.
- There were sizable gaps in impact by race, class, and institution type. White respondents (3 percent) and upper-middle-income respondents making between \$75,000 and \$149,000 per year (5 percent) stated plans to take fewer classes compared to Asian (29 percent), Hispanic (24 percent), and low-income households making less than \$25,000 annually (18 percent).
- Hispanic (27 percent) and low-income respondents (27 percent) were much more likely to say that Covid-19 affected a household member's reenrollment decisions, most commonly impacted by financial difficulties.<sup>29</sup>

Clemson University in South Carolina recently announced that it was freezing undergraduate tuition for the 2021–2022 academic year.<sup>30</sup> The board of trustees “cited the financial and emotional stress of the coronavirus pandemic on many students and the families” as the primary reason for not increasing tuition.<sup>31</sup> I believe many universities will follow suit because the impact to students and parents throughout the pandemic has been significant. I personally know many families who are pulling their kids out of high-cost universities and sending them to local community colleges for the first two years of their higher education experience as a result of complications (financial and housing) related to global pandemic. The cost savings is massive and the students don't need housing or food plans, saving parents considerable money. Once they complete two years, they plan to re-engage with their four-year school of choice. I also believe universities will start adjusting their tuition pricing for hybrid-online and all-online programs. I'm confident that smaller admission pools will drive universities to offer more affordable solutions for students that are accepted to hybrid or fully remote programs.

I asked some colleagues at several colleges and universities around the globe a few questions regarding the impacts of the global pandemic on their universities. Their answers are listed below.

**Higher Education Question:** *What revenue impacts occurred in your university during the height of the pandemic in 2020?*

### **University of Texas, San Antonio**

*We experienced a 10% budget reduction in the first year of the pandemic, which required a reduction in force in open positions while investments in remote tools increased as did adoption of the tools which really drove the value proposition positively.*

—KENDRA C. KETCHUM,  
Vice President for Information Management and Technology,  
The University of Texas at San Antonio

### **Collegis Education**

*This is highly dependent on the school and their funding sources. Some schools discount tuition heavily and make up for that in residential revenue, which was disrupted by COVID. These institutions suffered. However, schools that had expensive athletic programs saw savings from canceled events and functions, which helped the bottom line. Most tuition-funded schools had some revenue volatility, some up and some down.*

—DR. JASON NAIRN,  
VP of IT and Security at Collegis Education

### **University of Akureyri, Iceland**

*At the peak in 2020, revenue increased by 1–10%.*

—HOLMAR ERLU SVANSSON,  
Managing Director, University of Akureyri, Iceland

**Higher Education Question:** *Has revenue recovered to pre-Covid levels? If yes, when?*

### **University of Texas, San Antonio**

*We never really gained the 10% back but our enrollments have increased, thus increasing our funding.*

—KENDRA C. KETCHUM,  
Vice President for Information Management and Technology,  
The University of Texas at San Antonio

## Collegis Education

*In most cases no. Student enrollment numbers for Fall are still down, and we are not sure where or when the students will return. The job market is a good one for job seekers, and in those periods students will sometimes defer education for good paying jobs. Collegis and universities tend to see increases in revenue in recessive markets and decreases in bullish job markets.*

—**DR. JASON NAIRN**,  
VP of IT and Security at Collegis Education

## University of Akureyri, Iceland

*We didn't suffer a decrease in revenue during the pandemic in 2020. We got extra funding and we had to take on extra student applications that we had rejected.*

—**HOLMAR ERLU SVANSSON**,  
Managing Director, University of Akureyri, Iceland

**Higher Education Question:** *Did your faculty and students go to remote learning during the peak of the pandemic in 2020?*

## University of Texas, San Antonio

*Our leadership was meeting in early February to ensure we had plans in place. The beginning of March, we decided to move the IT division remote to ensure we had all kinks and issues solved prior to sending the entire workforce home during lockdown. This gave us almost two weeks to prepare and iron out issues with connectivity and the like. March 16, we went remote with all courses being moved to online and all workers being sent home. We have research labs and we had to ensure those were positioned to be staffed as well.*

—**KENDRA C. KETCHUM**,  
Vice President for Information Management and Technology,  
The University of Texas at San Antonio

## Collegis Education

*Yes, remote or hybrid were offered. We have one partner that really doubled down on on-campus learning during COVID but that meant a portion of the students were in the classroom and some students in other rooms or in their dorms. Other schools went either hybrid or full remote, closing their campus partially or fully.*

—**DR. JASON NAIRN**,  
VP of IT and Security at Collegis Education

**University of Akureyri, Iceland**

*Yes and no. Our program is what we call flexible learning so part of the student population is on site but others off site. Those on site went off site but it was more or less available.*

—**HOLMAR ERLU SVANSSON**,  
Managing Director, University of Akureyri, Iceland

**Higher Education Question:** *How many semesters did your students/faculty go to remote work?*

**University of Texas, San Antonio**

*Our campus went full remote in March of 2020 and remained that way until Fall 2021.*

—**KENDRA C. KETCHUM**,  
Vice President for Information Management and Technology,  
The University of Texas at San Antonio

**Collegis Education**

*Typically beginning sometime in the Spring of 2020 and going through Fall of 2021 in most cases. So, most schools had at least 5 terms affected – Spring 2020, Summer 2020, Fall 2020, Spring 2021, and Summer 2021. Fall 2021 may be affected in some locations due to the increasing infections among the non-vaccinated.*

—**DR. JASON NAIRN**,  
VP of IT and Security at Collegis Education

**Georgetown University**

*Five semesters, starting with the spring semester of 2020 and ending in the summer of 2021.*

—**GREGORY S. SMITH**,  
Adjunct Professor, Technology Management Graduate Program

**University of Akureyri, Iceland**

*Three semesters.*

—**HOLMAR ERLU SVANSSON**,  
Managing Director, University of Akureyri, Iceland

**Higher Education Question:** *What tools did your students and faculty use most during remote work?*

**University of Texas, San Antonio**

*Primary tools such as secure VPN for faculty and staff connecting remotely. For students, tools included Blackboard and Office365.*

—KENDRA C. KETCHUM,  
Vice President for Information Management and Technology,  
The University of Texas at San Antonio

**Collegis Education**

- *Zoom for teleconferencing*
- *Learning management systems (Blackboard, Canvas)*
- *Google Suite of products*
- *Microsoft Teams*

—DR. JASON NAIRN,  
VP of IT and Security at Collegis Education

**Georgetown University**

*Canvas LMS, Zoom for online meetings, Google Suite of products*

—GREGORY S. SMITH,  
Adjunct Professor, Technology Management Graduate Program

**University of Akureyri, Iceland**

*Microsoft Teams, Canvas, Blackboard, Zoom.*

—HOLMAR ERLU SVANSSON,  
Managing Director, University of Akureyri, Iceland

**Higher Education Question:** *Describe the students' satisfaction level with remote learning.*

**University of Texas, San Antonio**

*Our students reported a satisfaction with the remote tools and support, including our TechCafe services that we continued to provide remotely.*

—KENDRA C. KETCHUM,  
Vice President for Information Management and Technology,  
The University of Texas at San Antonio

### Collegis Education

*This is highly variable. I attended 3–4 SGA meetings during the COVID crisis and a lot of the feedback was positive. Students are aware of the circumstances. Their concerns were mostly around disruptions. They need these tools and systems to work consistently in order for them to be able to meet their deadlines and course requirements. They also need training and helps that can support them when they are working remotely and need help. Schools that have a good help infrastructure had happier students during the pandemic.*

—DR. JASON NAIRN,  
VP of IT and Security at Collegis Education

### Georgetown University

*Average but not as good as in-person instruction. Students often expressed to me (via Canvas, email, course feedback) that online learning was not as effective as in-person instruction. I ended up evolving my courses to include optional (but highly encouraged) weekly live lectures for key topics and chapters in support of each course. Students overwhelmingly responded to these real time lectures in a positive way. I intentionally did not record them to encourage participating in the live sessions, where they could interact with me and their graduate student colleagues.*

—GREGORY S. SMITH,  
Adjunct Professor, Technology Management Graduate Program

### University of Akureyri, Iceland

*High. Students miss the social events but learning as such has been fine as our programs are not in “accidental remote learning.” It is our strategy.*

—HOLMAR ERLU SVANSSON,  
Managing Director, University of Akureyri, Iceland

**Higher Education Question:** *Did your university offer a discount to students (undergraduate and graduate) during the 2020 calendar as a result of Covid-19 and the shift to online learning?*

### University of Texas, San Antonio

*We did not offer discounts, but refunds on services such as housing and meals were made. We also offered loaner laptops and Wi-Fi devices to students.*

—KENDRA C. KETCHUM,  
Vice President for Information Management and Technology,  
The University of Texas at San Antonio

### **Collegis Education**

*No, but there were direct payments for students from several COVID relief programs. These programs sent funds to schools and required that a portion (i.e. 50%) be paid directly to students. The rest was available to schools to use in support of programs and COVID-related changes, like technology enhancements.*

—DR. JASON NAIRN,  
VP of IT and Security at Collegis Education

### **Georgetown University**

*Yes. The university offered undergraduate students a 10 percent discount if they did not return to the university in person. In addition, students were offered a 20 percent discount for housing and dining fees as certain semesters were shortened.*

—GREGORY S. SMITH,  
Adjunct Professor, Technology Management Graduate Program

### **University of Akureyri, Iceland**

*No.*

—HOLMAR ERLU SVANSSON,  
Managing Director, University of Akureyri, Iceland

## **Unemployment Impacts in the United States and Around the Globe**

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Although the global pandemic will likely come to an end at one point as a result of herd immunity and a global vaccine push with likely annual booster shots, unemployment rates in the United States and globally will take years to recover to pre-Covid-19 levels. According to the World Economic Outlook released by the International Monetary Fund in October 2020, “the pandemic had and will continue to have especially severe effects on the most economically vulnerable,” specifically women and younger workers.<sup>32</sup> Recognizing that unemployment is typically measured by dividing the unemployed individuals by the total number of individuals in a particular country’s labor force, it can be a misleading number.<sup>33</sup> The primary reason is that if a person lost a full-time job and settled for a part-time job – they are still considered employed.

Thus, the published unemployment numbers include full unemployed individuals, but not *underemployed*, or those who accept part-time positions in the labor force. As a result, the *real* unemployment numbers for countries is typically higher than what is published by governments.

The International Monetary Fund leveraged the United Nation's (UN) International Labour Organization (ILO) and concluded that "the reduction in work hours in the second quarter of 2020 was equivalent to the loss of 495 million full-time jobs, "which added to the equivalent of 160 million full-time jobs lost in the first quarter" of 2020.<sup>33</sup> The UN's ILO goes on to predict the following impacts across the globe:

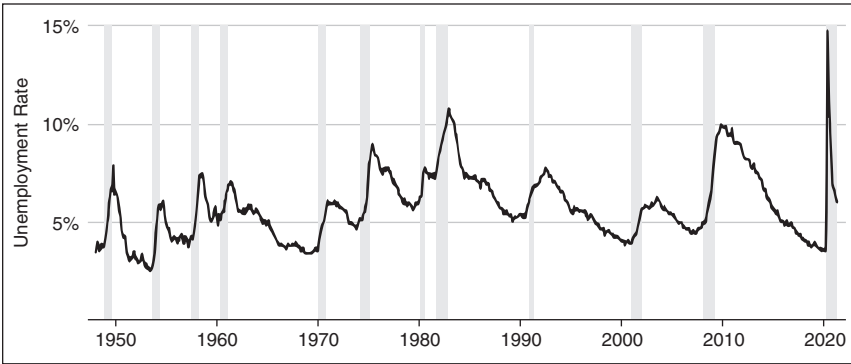
- Losses to continue into the third quarter of 2020 equal to 345 million full-time positions
  - 19.8 percent in the Americas
  - 12.4 percent in the Arab states
  - 11.6 percent in Europe and Central Asia
  - 11.5 percent in Africa
  - 10.7 percent in the Asia-Pacific region
- Losses are projected for the fourth quarter of 2020 to be 245 million full-time jobs<sup>34</sup>

How long it takes to recovery jobs lost worldwide is anyone's guess. Economists are struggling to determine by industry how long if ever certain job sectors will recover to pre-Covid-19 levels.

According to the United States Congressional Research Service (CRS), the impact from the recent 2020–2021 coronavirus pandemic on the U.S. job market was worse than compared to the end of the Great Recession in 2009.<sup>35</sup> The Congressional Research Service reported that unemployment increased from 5 percent in 2007 to 10 percent in October 2009 compared to the Covid-19 pandemic unemployment rate of 3.5 percent in February 2020, before peaking at 14.8 percent in April 2020 (see Exhibit 1.2).<sup>36</sup> The Congressional Research Service indicated that "the peak represents the quickest month-over-month increase in employment rates and the highest overall unemployment rate since the CRS data started being collected in 1948."<sup>37</sup>

The Congressional Research Service went on to indicate the following other impacts in the United States:

- During the first three months of the pandemic in 2020, unemployment was concentrated in sectors that provided "in-person services" such as leisure and hospitality, which experienced an unemployment rate of 39.3 percent in April 2020.



**Exhibit 1.2** Historical Unemployment Rate in the United States (1948–2021)

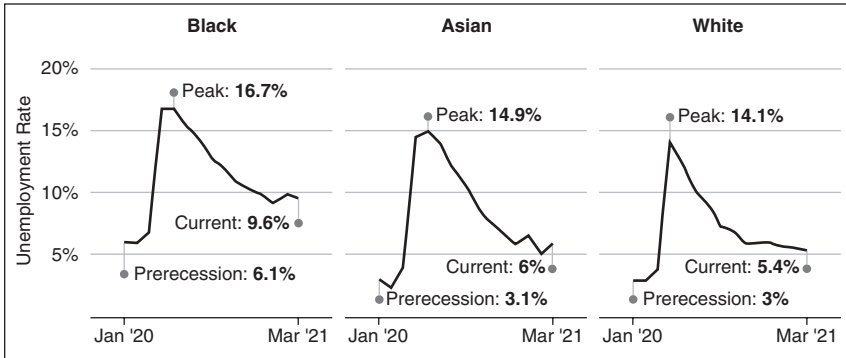
Note: Shaded regions indicate recessionary periods as identified by the National Bureau of Economic Research.

Source: U.S. Congressional Research Service, April 14, 2021.

- Part-time workers experienced an unemployment rate “almost twice that of their full-time counterparts” by April (24.5 percent compared to 12.9 percent)
- Workers without a college degree experienced 21.2 percent unemployment compared to 8.4 percent workers with a Bachelor’s degree or higher.
- Teenage women experienced an unemployment rate of 36.6 percent compared to 28.6 percent of teenage men.
- Women aged 25–54 years old experienced 13.7 percent unemployment compared to their counterpart males of the same age range of 12.1 percent.
- Unemployment rates by ethnicity from the peak of the pandemic in April to the end of 2020 was reported as 16.7 percent for Black, 14.1 percent for White, 18.9 percent for Hispanic workers.<sup>38</sup>

Unemployment rates recovered to lower levels by March 2021 but varied by racial group (see Exhibit 1.3) with Black unemployment at 9.6 percent, Asian unemployment at 6 percent, followed by White unemployment of 5.4 percent.<sup>39</sup>

The Hackett Group, a strategic consultancy and leading enterprise benchmarking firm to global companies, looked at impacts of the pandemic from a few different perspectives. In a recent study, the 2020 Covid-19 Poll, which included participation from 250 global companies, Hackett found that five times more *high impact* organizations cut their IT budgets as a result of impacts from the pandemic (see Exhibit 1.4).<sup>40</sup>

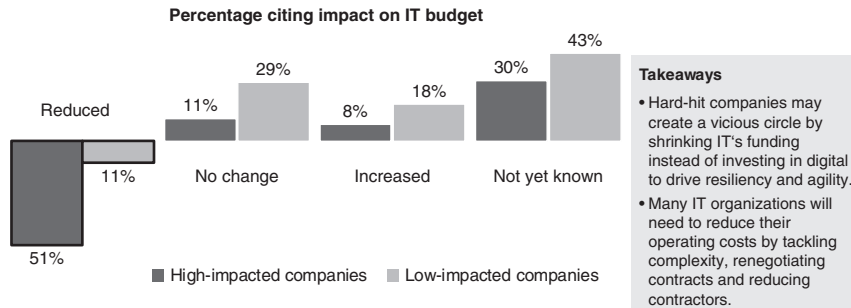


**Exhibit 1.3** Unemployment Rates by Racial Group in the United States (2020–2021)

Notes: Black and Asian workers experienced their peak unemployment rate in May 2020. White workers’ peak rate occurred in April 2020.

Source: U.S. Congressional Research Service, April 14, 2021.

5X more high-impact companies have cut IT’s budget compared to low-impact



**Exhibit 1.4** IT Budget Impacts from Covid-19

Source: COVID-19 Poll, The Hackett Group, 2020.

## Some Bright Spots During the Pandemic

Several companies in a variety of sectors did very well throughout the hardest hit portion of the Coronavirus pandemic between 2020 and 2021. With many indoor dining establishments closed due to state and local restrictions, food delivery services like Door Dash, Grub Hub, and Uber Eats, all gained a larger customer base during the pandemic.<sup>41</sup> I personally witnessed fast-food restaurants doing well with car lines consistently high

during meal times, especially for large chains like McDonalds, Chick-fil-A, Kentucky Fried Chicken/Yum brands, and others that operated through drive-through windows. Online retailers like Amazon and Walmart also did well during the pandemic as shoppers feared in-person store shopping during the height of the pandemic.<sup>42</sup> Technology and online meeting vendors like Citrix, Microsoft, Cisco, and Zoom did especially well as organizations flocked to tools for online meetings and remote access solutions for corporate staff.<sup>43</sup>

- Chipotle digital sales “jumped 134 percent as customers order ahead through ‘Chipotlanes’ which allow customers to pickup orders through drive through lanes.”<sup>44</sup> The company reported the following information: The chain opened 40 new locations in the recent quarter with more than 50 percent of the new locations offering drive-thru lanes to pick up digital orders.
- Digital sales accounted for over half of the companies total \$1.7 billion in revenue, a 24 percent increase compared to the same period a year ago.
- Chipotle reported that it closed only five stores during the quarter, bringing the total number of locations to 2,803.
- Chipotle anticipates opening about 200 new locations in 2021.<sup>45</sup>

Grocery stores and supermarkets did exceedingly well during the peak of the pandemic, with many large and small chains adapting their stores to delivery and pick-up aisle options for customers who didn’t want to enter their brick and mortar stores.<sup>46</sup> Hand sanitizer products and cleaning solutions like Clorox Wipes were hard to find commodities early into the Covid pandemic.<sup>47</sup> I vividly remember stores rationing the number of products allowed per customer during the early days of fear when recently stocked shelves would become bare within minutes of announcing the product. My wife to this day still maintains a cache of these products, as she’s anticipating recurring waves of Covid-19 as we enter the flu season in the fall.

Liquor, wine, and beer stores were an unlikely success to me, but it was validated recently when I spoke to a number of operators about their sales in the past year.<sup>48</sup> They explained their rationale quite clearly to me. When patrons can no longer go to restaurants and bars to drink, people buy products to consume at home. It’s just that simple. Also, these businesses were deemed “essential” due to the potential impact of a run on hospitals for people that abused alcohol in their daily lives. Hospitals didn’t want a run on their businesses due to alcohol shortages as their primary focus was managing Covid-19 patients.

Lastly, streaming services such as Hulu, Disney+, Netflix, HBO Go, and so forth experienced a significant surge in customers and use through the peak period of the pandemic.<sup>49</sup> Netflix alone added nearly 16 million new subscribers in the first quarter of 2020 and its growth numbers doubled what the company expected.<sup>50</sup> The 2020 first quarter was Netflix's "largest three-month jump" in the company's 13-year history.<sup>51</sup> As someone who doesn't like being cooped up in their home for over a year, Netflix and Hulu helped get me through this pandemic with some terrific programming options.

Technology companies did exceedingly well during the pandemic as organizations across the globe had to rapidly adapt to leveraging a variety of technologies (remote access, collaboration, online meetings, intranets, etc.) during the pandemic to keep knowledge workers staff productive while working remotely. Google's parent company, Alphabet, saw revenue jump 34 percent to \$55.3 billion in the first quarter of 2021.<sup>52</sup> Google also reported the following:

- The company made close to \$18 billion in profit.
- The company announced a \$50 billion stock buyback. Companies only do this when they think their shares are undervalued.
- Google's cloud revenue increased 46 percent year over year to \$4 billion.<sup>53</sup>

Companies that offer enterprise-class hosting Infrastructure as a Service (IaaS), such as Amazon, Microsoft, and Google, all benefited during the pandemic as organizations flocked to cloud services over on-premise solutions. Microsoft's revenue jumped 19 percent in the company's third quarter as "digital adoption accelerates."<sup>54</sup> Microsoft reported the following details surrounding the growth:

- Growth was primarily led by commercial cloud products, generating \$17.7 billion of the total revenue.
- Revenue from Azure rose 50 percent
- Microsoft's Intelligent Cloud segment (Azure, Windows Server, SQL Server, Visual Studio, GitHub, Enterprise Services) reported \$15.12 billion of the total revenue, up 23 percent.
- The active users of Microsoft Teams, the collaboration and online meeting tool, grew from 115 million in the prior quarter to 145 million in the most recent quarter.<sup>55</sup>

Transportation companies like FedEx and UPS did quite well during the pandemic as consumers shifted to home delivery purchase options versus

shopping in brick and mortar stores. Amazon.com was of course a large driver of shipped content via a variety of carriers. At the end of 2020, FedEx reported that it “more than doubled its profit in the latest quarter.”<sup>56</sup> FedEx reported that it earned \$1.23 billion in the second quarter, up from \$560 million a year ago in the same quarter.<sup>57</sup> The transportation carrier also expects earnings to increase well into 2021 as demand continues for shipped products.<sup>58</sup> The company reported that ground delivery services gained 38 percent in revenue, while air-express services saw a gain of 14 percent.<sup>59</sup>

United Parcel Service (UPS) reported in April 2021 that “daily volume jumped more than 14 percent in the first three months” of 2021 compared to the same period a year ago.<sup>60</sup> The company reported net income of \$4.79 billion, up almost 400 percent from the same period last year with total revenue reported at \$22.91 billion, a 27 percent increase.<sup>61</sup>

The telecommunications market benefited greatly from the increase in demand for cloud and more robust bandwidth from employees who were working from home. The medical field (general practitioners, specialists, and even surgeons) was impacted during the height of the pandemic as elective surgeries were postponed and hospital staff converged to support the large influx of Covid-19 patients. Hospitals across the globe lost billions in revenue. Some are now attempting to recoup their losses by charging patients for Covid-19 hospital services via lawsuits.

I spoke with a number of physicians across a wide path of specialties (general practitioners in family practice, specialists like endocrinologist, pain management, orthopedic, dermatologists) as well as physical therapists. All described impacts to their practices, including revenue decreases and how they had to scramble to provide telehealth services to patients. Telehealth options *within* medical practices around the globe increased rapidly in 2020, starting shortly after the height of the pandemic. Data centers and telecommunications vendors reaped hyper growth rewards to support these services.

One such specialist provided some valuable input into the impact to their practice and how technologies like telehealth have helped lesson the revenue blow during the pandemic and likely set them up for future success postpandemic.

**Medical Profession Survey Question:** *What impact did Covid-19 have on the medical profession during the peak of the pandemic in 2020?*

*Covid-19 has had a substantial effect on the medical community in both outpatient clinic and inpatient hospital settings. In the outpatient clinical setting, it caused an immediate pivot from in-person clinic visits to virtual telemedicine visits. This created substantial anxiety and confusion around*

*how to code and bill these visits, whether insurance would accept these claims, and how to manage these visits from a technological perspective. In the initial days, there was substantial confusion from physicians and patients about which communication software to use and how to implement it safely.*

*While patients became comfortable with many of the early adopted teleconferencing platforms, the software did not yet support the encryption required to be HIPPA compliant. This was eased by the U.S. government's relaxation of regulatory restrictions on telemedicine communications.*

*Our clinic saw a substantial initial reduction in patient encounters and corresponding overall revenue decline that began in March 2020 and continued until August of the same year. Clinic visits are now 50 percent virtual, and I predict that they will continue to remain at least 50 percent into the foreseeable future. This will only be tenable from a business perspective if insurance companies continue to reimburse for telemedicine visits at rates comparable to office visits.*

—DR. JOSE SOROS,  
MD, Pain Management Specialist, Point Performance

I asked my CxO panel some questions about revenue, remote work, use of consultants, staff productivity, and sourcing strategy before, during, and post pandemic. Following are their answers with additional input noted on certain questions:

**CxO Survey Question:** *What revenue impacts occurred in your organization during the height of the pandemic in 2020? List U.S. and global operations separately if applicable.*

### **U.S. Operations**

- 20 percent responded that revenue increased 8 percent in 2020 and 100 percent in 2021.
- 20 percent responded with *no change* in revenue during 2020.
- 20 percent did not respond with revenue data for confidentiality reasons.
- 20 percent responded that U.S. revenue decreased by 51 percent or more in 2020.
- 20 percent responded that U.S. revenue increased by 31–40 percent in 2020.

### **Global Operations**

- 20 percent responded that global revenue decreased by 51 percent or more in 2020.

**CxO Survey Question:** *Have you recovered revenue to pre-Covid-19 levels? If yes, when? If not, when do you project revenue to return to pre-Covid-19 levels?*

- 40 percent responded with yes.
- 40 percent responded with no.
- 20 percent did not respond for confidentiality reasons.

The average projected date when revenue is expected to return to pre-Covid-19 levels is 2022 forward.

**CxO Survey Question:** *What percentage of your full organization was working remotely prior to Covid-19?*

- 80 percent responded with 0–20 percent remote.
- 20 percent responded with 81–100 percent remote.

**CxO Survey Question:** *What percentage of your full organization went to remote work during the pandemic in 2020?*

- 80 percent responded with 81–100 percent remote.
- 20 percent responded with 41–60 percent remote.

**CxO Survey Question:** *What percentage of your full organization is working remotely today (Q1 2021)?*

- 50 percent responded with 81–100 percent remote.
- 25 percent responded with 41–60 percent remote.
- 25 percent responded with 61–80 percent remote.

**CxO Survey Question:** *What percentage of your full organization will work remotely post-Covid-19 (assume 2022 forward)?*

- 20 percent responded with 0–20 percent remote.
- 60 percent responded with 41–60 percent remote.
- 20 percent responded with 61–80 percent remote.

## Impacts on Consultants and Organizations Sourcing Strategy

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As indicated previously, some sectors did quite well during the pandemic, including information technology professionals and consultants, who were in high demand to provide a variety of services to struggling organizations as

a result of the global pandemic. Specifically, technology consultants did well assisting organizations with remote access solutions to a high percentage of organizational staff count, moving applications into cloud services, migrating on-premise voice systems into the cloud, and with large multiyear projects that were difficult to pause or cancel. That said, other sectors of the consulting world were not immune from impacts related to high global unemployment rates.

I've been through four recessions in my IT career and thought I'd seen it all until I witnessed the global and domestic U.S. impacts of the coronavirus pandemic. Typically, in a recession, the first to go in any organizational cuts are nonessential expenses. Second is capital spending for projects that have not yet been initiated. Third are consultants, followed lastly by staff. Organizations really don't like letting go of staff, even for short-term durations, because they fear the institutional knowledge and organizational experience that could be suffered. Rehiring resources after a recovery can take time with rebuilding lost institutional knowledge sometimes not recovering for years with new hires.

At the height of the pandemic in 2020 and according to researchers from Source Global Research, the global consulting industry "could lose 30 billion of value in 2020."<sup>62</sup> The research team goes on to suggest that the impact of Covid-19 on the global consulting world could be reduced by 19 percent from \$160 billion to \$130 billion.<sup>63</sup> Revenue reductions by region include the following:

- 15 percent for North America from \$78.7 billion to \$66.6 billion
- 28 percent for Europe from \$45 billion to \$32.2 billion
- 12 percent in Asia Pacific from \$24.8 billion to \$21.9 billion
- 19 percent in Latin America from \$5.1 billion to \$4.1 billion
- 18 percent in the Middle East from \$3.6 billion to \$3.0 billion
- 14 percent in Africa from \$2.9 billion to \$2.5 billion<sup>64</sup>

Impacts on consulting by industry vary widely with energy, healthcare, manufacturing, public sector, and business services rating as *higher risk* than other industries that include financial services, pharma, retail, technology, media, and telecommunications<sup>65</sup>:

- -25 percent for energy and resources
- -12 percent for financial services
- -28 percent for healthcare
- -21 percent for manufacturing
- -7 percent for pharma
- -22 percent for public sector

- -10 percent for retail
- -29 percent for business services
- -17 percent for technology, media, and telecommunications<sup>66</sup>

According to the latest research, the hardest hit services will be those where in which consultants' time and effort likely involves time at the clients' work place with travel to get there and back.<sup>67</sup> On the other hand, work that can be done remotely via online meeting and collaboration tools, which include strategy, will be less affected.<sup>68</sup> Also, larger multiyear projects that were initiated pre-Covid-19 will be less impacted as organizations are reluctant to kill large multi-year initiatives that align with either cost savings or revenue increases. Small, medium, and large projects that are not critical to an organization's near future success will be considered for shuttering, even if organizations have to pay a penalty to get out of those consulting agreements.

According to the latest Devex COVID-19 Trends Tracker survey of 560 development professionals from 113 countries, 39 percent of respondents indicated that "they or someone they know" lost their job in the year of 2020.<sup>69</sup> Independent consultants seem to be the hardest hit with 43 percent of respondents indicating contracts were canceled or more difficult to land.<sup>70</sup> Short-term contracts or consulting agreements that required travel and in-person meetings and workshops were affected worse than longer-term agreements.<sup>71</sup> According to the head of a consulting firm that works in the Oceania sector, "three out of four consulting assignments were canceled or permanently suspended" as a result of the Covid-19 pandemic.<sup>72</sup>

Organizations that source staff and consultants will likely change as a result of the recent pandemic, because many organizations have figured out how to be productive with staff and consultants working predominantly remotely. I asked my CxO panel some questions regarding their sourcing levels, pre-Covid, currently, and post-Covid. I also asked about productivity during the pandemic. Their responses follow:

**CxO Survey Question:** *Did you reduce consultants and staff in 2020?*

- 80 percent responded with no change in consultants and staff employment.
- 20 percent responded that staff was reduced by 10 percent with overall consultants unknown.

**CxO Survey Question:** *What percentage of hiring (consultants and staff) has returned to pre-Covid-19 levels as of **today** in first quarter 2021?*

- 20 percent responded that staff and consulting reductions have not returned to pre-Covid-19 levels.

**CxO Survey Question:** *When do you forecast hiring of consultants and staff to return to pre-Covid-19 levels?*

- 20 percent responded that staff and consulting employment should return to pre-Covid-19 levels by fourth quarter 2021.

**CxO Survey Question:** *Has employee productivity been impacted during the pandemic in 2020 and into 2021?*

- 40 percent responded that employee productivity has been impacted by an increase of 11–20 percent.
- 20 percent responded that employee productivity has been impacted by an increase of 21–30 percent.
- 40 percent responded no change or no comment due to confidentiality.

**CxO Survey Question:** *Will your staffing and sourcing strategy change as your organization **comes out of the pandemic** and returns to a more normal operating environment (assume 2022)?*

- 60 percent responded that their sourcing strategy *would* change (yes).
- 20 percent responded that their sourcing strategy *would not* change (no).
- 20 percent did not respond due to confidentiality reasons.
- 80 percent responded that more than half of staff would work two to three days per week remotely.
- 40 percent responded that 75–80 percent of IT staff would work remotely two to three days per week compared to 50 percent for non-IT staff.
- 20 percent of respondents indicated that staff would work 5–20 percent of the work week in the office with the remaining time spent working remotely.

*Yes. We will still look for folks (staff and consultants) in our area, but we are not limited on geography unless necessary for a client. This is a change from pre-Covid-19 in terms of willingness to consider the remote worker earlier in the process and as a viable alternative to being in a physical office.*

—SHAUN POULTON,  
Chief Operating Officer, Edgewater Federal Solutions

## Online Meeting and Collaboration Tools in Organizations

During the pandemic, organizations flocked to online meeting tools in larger quantities to accommodate a larger percentage of staff working remotely

outside of corporate offices. The prominent online meeting tools include Cisco WebEx, LogMeIn GotoMeeting, Zoom, Google Meet, Microsoft Skype for Business/Teams, and BlueJeans. A recent report from Markets-AndMarkets indicated that the “global video conferencing industry is expected to gain traction” as a result of the Coronavirus pandemic “to connect with remote workers, customers, and employees at the same time.”<sup>73</sup> Bans on travel domestically and internationally combined with increasing numbers of knowledge worker employees working from home helped drive increased adoption. Zoom was a major winner throughout the pandemic and is anticipated to retain a top leadership spot post pandemic due to its scale and feature set. Organizations looking for robust online meeting and webinar solutions with features like breakout rooms flocked to Zoom in 2020. Companies could leverage Zoom for free if they kept meeting durations to 40 minutes or less. Otherwise, organizations would have to opt for the fee-based solution. Note that most, if not all, the online meeting/videoconference solutions on the market only charge for licenses that *set up and run* meetings. Participants can join for free from either a full client installed version or a browser plug-in. This model allowed organizations to carefully select the appropriate team members that would set up (from an administrative perspective) meetings for various departments, thus optimizing license purchases.

Microsoft Teams, the follow up to Microsoft’s Skype for Business solution saw robust growth during the 2020–2021 pandemic as it rapidly scaled the number of concurrent video sessions and added more advanced features like breakout rooms. The organization where I serve as the CIO moved from GotoMeeting to Zoom for scale and feature reasons early on in 2020. We also upgraded our Skype for Business platform to Teams and adopted breakout rooms when Microsoft added that feature in the middle of our remote work environment.

According to IBM, the future of knowledge work will be a combination of virtual and in-person settings.<sup>74</sup> The study by IBM goes on to indicate that 81 percent of respondents indicated “they want to continue working remotely at least some of the time” post Covid-19.<sup>75</sup> Cisco recently reported an upgrade to its WebEx video conferencing solution that includes integration with online storage giant Box and a telehealth video connector to Epic, the healthcare electronic medical records (EMR) provider.<sup>76</sup>

According to a recent study of small business, 92 percent converted to virtual meetings via tools like Zoom and WebEx, with 34 percent of respondents finding the tools *extremely valuable*, followed by 43 percent *moderately valuable*.<sup>77</sup> The report goes on to indicate the following statistics:

- 39 percent of small businesses adopted video conferencing for permanent use, whereas 23 percent adopted it for temporary use.
- 47 percent reported the software increased productivity.

- 45 percent reported improved engagement with customers.
- 45 percent reported increased sales.
- 42 percent reported reduced costs.<sup>78</sup>

What's also fascinating about the small business study is that 45 percent of organizations indicated that they would *increase* their IT spending in 2021 from 2020 by somewhat or much more.<sup>79</sup>

Although it's safe to say that a large percentage of organizations adopted or expanded their online meeting/teleconferencing solutions throughout the pandemic, not all had a positive experience with the tools. Following are some of the reported advantages and disadvantages of online meetings:

### ***Advantages of Online Meetings***

- They can significantly reduce the cost of travel as an alternative.
- There's a positive environmental of using online meetings versus travel (ground, rail, air).
- It beats trying to find an open physical conference room.
- Recordings are easy and can be posted and leveraged for future need on company intranets.
- They are useful tools when screening job applicants.
- Knowledge workers working from home can avoid traffic and commuting times.

### ***Disadvantages of Online Meetings***

- They require extra software (including updates) on computers and mobile devices.
- Time differences for online meetings between participants can be sometimes tricky to navigate.
- There are technical issues resulting in audio, video, and connections due to a variety of things, not to mention poor quality home Wi-Fi signals or Internet connections.
- With too many participants, it's easy for individuals to *talk over* others.
- Some meeting topics just aren't well suited for online meetings with larger audiences, especially when topics get into emotional discussions.<sup>80</sup>

Another recent article looked at four specific downsides to online meetings. The author of the article indicated that after attending online meetings all day while working from home, he missed social interaction, balance, and mobility.<sup>81</sup> A second downside, specifically for working parents with children at home (also distance learning with tools like Zoom, Blackboard, and Canvas learning management systems (LMS)), found it challenging to manage

work and childcare, with support for their children’s online learning environment.<sup>82</sup> A third downside is “inequity in accessibility,” as some families with working parents and students in school can’t afford the same levels of high-speed Internet service or modern-day wireless networks (and how to maintain them) from home.<sup>83</sup> Some responsible corporations have been reimbursing staff for better quality Internet service while working remotely, but it’s still yet to be seen about whether these financial supplements will continue post-pandemic, regardless of whether workers come back to corporate offices or work a hybrid office/remote work schedule. The forth downside is related to security issues like Zoom bombing, which can occur as a result of individuals sharing online meeting credentials outside of an organization.<sup>84</sup> CIOs today need to mitigate online meetings from being hijacked by outside entities by providing clear guidance on meeting setup, and staff training and educational sessions about online meeting security. In addition, corporate staff should be trained on related security risks such as phishing, strong passwords, and social threats such as spear phishing to mitigate risks.

I asked my CxO panel a variety of questions about use and usefulness of online meeting and collaboration tools. Their responses follow:

**CxO Survey Question:** *What percentage of your organization staff regularly used online meeting tools prior to Covid-19?*

- 20 percent responded that 40 percent of staff regularly used online meeting tools prior to Covid-19.
- 40 percent responded that 60–75 percent of staff regularly used online meeting tools prior to Covid-19.
- 40 percent responded that 100 percent of staff regularly used online meeting tools prior to Covid-19.

**CxO Survey Question:** *Do you anticipate continuing use of online meeting tools like Teams, Zoom, WebEx, etc. postpandemic (assume 2022 forward)?*

- 60 percent responded that they would keep the use the same, while 40 percent responded that they would increase online meeting tools.

**CxO Survey Question:** *For 2022 forward, indicate whether you plan to decrease, increase, or keep the same percentage from the peak of the pandemic (2020) regarding online meeting tool usage?*

- 100 percent responded to keep the same or increase their use of online meeting tools

**CxO Survey Question:** *How satisfied was your organization with your online meeting tools throughout the pandemic?*

- 60 percent responded that they were very satisfied with their online meeting tools.
- 40 percent responded that they were somewhat satisfied or satisfied with their online meeting tools.

**CxO Survey Question:** *What steps are you taking to make satisfaction higher with online meeting tools?*

1. *Conduct additional user training to understand features better.*
2. *Conduct additional communication on technology standards supported along with raising awareness for the Acceptable Use Policy.*
3. *Conduct an end-user survey to understand the “voice of the customer.”*

—DAVID LIN,  
CISO, Gemology Institute of America, Inc.

## Lessons Learned

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After discussing things that went well and things that didn't throughout the pandemic with CIOs, CISOs, and CEOs across the country, I had to ask my CxO panel for their input on what they've learned the most about during the pandemic.

**CxO Survey Question:** *What top-five lessons have you and your team learned during the pandemic? Answers can be technology related, employee behavior, risk management, business continuity, and so forth.*

1. *Staff fatigue occurs faster when you are looking at a screen for 10–12 hours per day.*
2. *Increase phishing awareness.*
3. *Not everyone has a home office.*
4. *Increase helpdesk resources as people do not always remember how to use the tools.*
5. *You may need collaboration tools. Just one will not do.*

—EDWARD ANDERSON,  
CIO, International Monetary Fund

1. *Communications and meeting technologies were set up for traditional in person meetings and not conducive to remote or hybrid work.*
2. *The DR/BCP planning did not consider a pandemic company-wide shut-down as a scenario.*
3. *Frequent communications to employee population throughout the period of unknown is a must. Even if there are no updates. Hearing assurance from leadership has a calming effect.*
4. *In absence of clear guidelines or practice, people get creative out of survival instinct to achieve objectives. Example: taking office desktop computers and furniture in order to work remote.*
5. *The sudden increase and demand for remote work exposed the inadequacy of technology support. Further, known vulnerabilities are forced to be exposed due to the need to connect from the outside.*

—DAVID LIN,  
CISO, Gemology Institute of America, Inc.

1. *Have an onboarding/termination process that relates to remote and on-site alike. We were fortunate enough to onboard a handful of new team members in 2020 and did not have a formal onboarding process that was easily translated into a remote workforce. We adapted quickly and had a very transparent open-door policy for all. Transversely we did terminate two team members for performance-related reasons and experienced similar bumps in the process for a remote environment.*
2. *Security – develop and test on and offsite security measures/processes including file storage, sign on/login. With a primarily on-site team prior to COVID, we were able to lock down access from our physical location and adapt processes around a similar structure. When we moved to 100 percent remote, we had to adapt to home network access, process for storing files remotely and access control all over secure connections.*
3. *Culture in a remote and hybrid environment is different than on site. Making sure there are opportunities for face-to-face/in-person events, as well as those that can be done virtually. Trying to combine the two became cumbersome and not as effective as creating separate event “types” that appeal to each environment. More importantly, finding methods to keep a hybrid workforce engaged with each other and fostering trust within the team when we were accustomed to face-to-face/in-person [engagement] which seemed easier/more comfortable.*
4. *Business Development/Sales – finding opportunities in an environment where face-to-face networking was shut down was a major impact to our new client sales. The need to diversify the sales strategy/approach for inbound and outbound sales became critical. We pivoted by increasing SEO/SEM and more online marketing in an attempt to accomplish*

*what was typically done through networking groups, events, and face-to-face referral introductions.*

5. *Individualized Flexibility – COVID taught us that one size definitely does not fit all. We had team members with small children at home that had no options for out-of-the-home day care and needed flexibility in their workday. Our team really rallied around each other to make anything and everything work as best as they could. There was a lot of empathy for those with home environments that were not ideal work environments and any notion of “policy” around work schedules were quickly tossed and replaced with a 100% flexible mindset.*

—NICK DAMOULAKIS,  
CEO/President, Orases Inc.

1. *Remote work works, but there are a lot of trade-offs.*
2. *On-premise technology is vestigial.*
3. *Double down on risk management and security.*
4. *Perhaps the most important lesson learned is that IT should pursue a SaaS only strategy.*

—PETER BASKETTE,  
Vice President, IT, Riverbed Technologies

*IT suddenly launched into the forefront of operational sustainability, becoming more relevant than ever before by moving beyond the “ticket taking” mentality and into the strategic X-as-a-Service thinking. We learned many lessons through the progression of this pandemic and continue to stumble upon realizations of the importance of business and academic alignment with our rollout of our Agile Strategic Plan. We had lessons in resiliency, learning to adapt and overcome challenges, while in a remote setting. We had lessons in empathy as we held up and supported colleagues while Covid crept in and pulled workers toward supporting their loved ones. We also learned that work/life balance morphed into work/life integration. Much like the work we do to connect systems, we had to pivot into all things work and life at the same time. This also demonstrated intentional leadership as guiding a team in an ambiguous time absolutely required adaptive intentional leadership. I was able to create weekly fireside chats to share with the group about important organizational updates and how it affected them personally. In addition, we used this challenge not to just survive but to thrive and grow. This concept was new to a group that really only knew operations.*

*Intentional leadership required me to have town halls, leadership retreats, and constant communication on WHY we were doing the important work . . . not just the bits and bytes of it. Lastly, I would be remiss to not mention cyber hygiene and protecting our digital assets. With all of our*

*workers going remote, we had to ensure our faculty, staff, and students were secure as they completed their work from home. This included investing in transformational technology as well as launching several awareness campaigns. This pandemic has challenged and stretched the normal technology work into a framework of agile operations and autonomy in our work.*

—KENDRA C. KETCHUM,  
Vice President for Information Management  
and Technology, The University of Texas at San Antonio

## Things I've Done in My Career to Prepare

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I have spent decades working with IT teams to prepare and test for various types of disasters that could impact operations. Halfway through 2017, we set out on an aggressive multiyear strategy to modernize information technology. The strategy included multiple goals:

1. To reduce our reliance of on-premise solutions and reduce our data center's footprint.
2. To expand into the cloud and integrate systems with near real-time web services integrations.
3. To remake vendor management by focusing on the right strategic partnerships and outsourcing noncore technologies to vendors where the technology *was* their core competency.
4. To develop a world-class IT disaster recovery and business continuity program that included testing production cutover with non-IT staff for mission-critical systems including voice.
5. To create a best practice IT governance framework and cybersecurity approach that, simply put, *reduces risk and aligns IT spending with the organization's key business goals and initiatives.*

In 2017 and into 2018, we replaced physical servers with a robust and redundant virtualized environment that included consolidation and replacement of corporate storage area network (SAN) disk systems. In 2018, we removed our virtual desktop (VDI) platform and replaced it with a combination of laptops and mini-desktops with virtual private network (VPN) capability. We also started an aggressive strategy to move applications into the cloud within the boundary of a secure single sign-on multifactor authentication portal that included our messaging applications along with other cloud applications including the IT helpdesk service desk. In 2019, we launched our new SaaS-based grants platform and integrated payment services capability with multiple levels of redundancy across the country, deployed a new cloud-based business intelligence and data visualization solution, and

migrated our on-premise private branch exchange (PBX) phone system to a cloud-based voice-over-IP (VOIP) solution with an intelligent call-center menu and routing system. In Q1 of 2020, we launched the first three modules of our new human capital management (HCM) system in the cloud. Two and a half months later, we vacated our corporate offices for nearly 100 percent remote work.

Simply put, we had a great strategy with a traditional IT disaster recovery and business continuity plan but got lucky on the timing of the Coronavirus pandemic. If the pandemic had hit us earlier, the negative impacts would have been felt with increasing severity in 2019, 2018, and 2017. Not all organizations were lucky, and many CIOs paid a heavy price for their organizations not being as prepared as they could have been for a once-in-a-lifetime global pandemic. This text will provide readers with factual information from CIO, CISO, COO, and CEO contributors, as well as researched information on what worked and didn't work, lessons learned, and how organizations are changing their IT strategy for the future so that *when* another global pandemic, or other significant business disruption or regional emergency affects their geographic corridor, the impacts will be far less than the Covid-19 pandemic.

## Recommendations and Predictions

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To close this chapter out, I advise CISOs, CIOs, to CEOs to take a hard look at their organizations over the past year and a half and ask hard questions regarding what they'd do differently to prepare for a long-term revenue and staff impacting issue like a global pandemic. While I hope that we never experience the severe health, economic, and organizational impact of Covid-19 again, I'm adept enough to know that we've had worse in the past and will continue to have challenges that rise to a global response in the future. That said, I have the following predictions and recommendations regarding topics in this chapter.

### Recommendations

- Organizations should continue their adoption of cloud services post-pandemic and integrate where possible through encrypted application programming interfaces (APIs) and web services.
- Best practice organizations will *not* reduce their online meeting tools as the pandemic winds down and should prepare for the next office disruption (such as the flu or wave of additional Covid mutations). The office of the future will be cloud-based and leverage a highly mobile workforce.

- Organizations should look for ways to optimize the use of online meetings for optimum staff productivity. This may include a review of the frequency, duration, and planning approaches for meetings in their organizations.
- Organizations should consider incentives to bring employees to corporate offices that optimize the time they are there versus working remotely to keep worker productivity high.
- Companies should consider hoteling solutions and supporting applications that maximize the use of their likely reduced corporate footprint of the future. Many organizations should consider downsizing their corporate offices to save money, and to keep employee turnover low and productivity high.

## Predictions

- The United States and global economies will recovery quite well in 2021 and into 2022 as long as inflation remains low, vaccine adoption remains high to obtain herd immunity, country level unemployment benefits start pulling back to promote unemployed and underemployed individuals applying for available jobs, and virus mutations are still protected by the mainstream vaccines on the market.
- On June 8, 2021, the U.S. Bureau of Labor Statistics reported that the United States had over 9.3 million jobs available.<sup>85</sup> Growth in the U.S. job market will continue to improve in 2021 as unemployment benefits slow in Q3 and will continue to slow into 2022 as the economy attempts to recover to pre-Covid-19 employment levels.
- Vaccine booster shots may be required every 8–12 months after the initial vaccine shots were administered. Unfortunately, the data and recommendations change frequently. Pfizer recently announced that immunity from its vaccine is waning and recommends a third dose between 6 and 12 months after initially being fully vaccinated.<sup>86</sup> Unfortunately, the U.S. Centers for Disease Control (CDC) disagrees. What a public health and relations nightmare for consumers and businesses. Who is right? Time will tell us the real scientific answer on the frequency and need for booster shots. That said, Americans and citizens around the globe will likely falter in keeping current on booster shots, fueling virus variants for years that circulate via global travel.
- The coronavirus will continue to impact countries and companies around the globe for years, especially in countries with low vaccination rates. As of July 2021 and according to *Our World in Data*,

Gibraltar leads the pack with the highest percentage of their population being fully vaccinated.<sup>87</sup> Malta (79.34 percent), Iceland (70.24 percent), Seychelles (69.29 percent), Cayman Islands (69.24 percent), San Marino (67.18 percent), United Arab Emirates (66 percent), Bermuda (62.68 percent), Bahrain (60.14 percent), and Israel (60.04 percent) round out the top 10 most vaccinated countries.<sup>88</sup> The United States ranks nineteenth at 47.69 percent fully vaccinated.<sup>89</sup> Unfortunately, there are over 60 countries that have very low vaccination rates, which include the Democratic Republic of Congo, Uganda, Vietnam, Afghanistan, Iran, Iraq, Ukraine, Egypt, Jamaica, Pakistan, Venezuela, Nepal, and South Africa where less than 5 percent of their population is vaccinated.<sup>90</sup> It is a heavy challenge to vaccinate 9 billion people across the globe. As a result, countries with low to moderate vaccination rates *must* prepare for waves of resurgence of the Covid virus variants and waves of potential full remote work for their knowledge workers.

- Corporate employees will demand more flexible working environments (hybrid in office/remote) from 2021 forward.
- Corporations will greatly rethink their corporate offices of the future in both look, feel, safety, and size.
- Residential real estate outside of major cities will continue to rise from 2021–2024 as more employees move out of expensive apartments and homes in and surrounding major cities for less expensive housing.
- Traffic in and around major cities in the world will ease slightly over the next several years as more knowledge workers take advantage of working from home a percentage of the workweek.
- Corporate real estate will change, likely with a glut of corporate clients selling or subletting (if they can) space at a reasonable, albeit less square foot cost due to an anticipated shrinking corporate office footprint.
- Online meeting tools are here to stay as organizations will maintain them in a hybrid office/remote work environment.
- Companies will spend more on technology (cloud, collaboration, security, and mobile devices/applications) in 2021 through 2024 as organizations become less reliant on corporate data centers and on-premise solutions and workers leverage mobile computing devices that are capable of accessing both cloud and on-premise applications and data.
- Telehealth options for patients offered through medical providers will continue, albeit at a lower rate than during the height of the pandemic. Customers (patients) will leverage these tools where appropriate instead of driving to doctors' offices for routine or minor issues. This trend of reduced driving to the office, grocery store, doctors, and

so forth will persist as consumers reduce their driving-cost footprint. Hosting of telehealth with elastic cloud solutions will likely scale down to less concurrent usage than during the pandemic.

- Major fast-food restaurant chains across the globe will retool their businesses to offer *less* in-person dining and *more* options for mobile ordering and pickup. Automation will heavily come into play as chains like McDonald's and Yum! Brands use automation to reduce costs, mainly labor, resulting in a small to moderate labor reduction for this portion of the food services sector.
- Snow days in America are gone. Schools and likely businesses will leverage mobile devices and world-class secure remote access solutions, including voice, so that corporate workers can work when there is inclement weather, whatever it is. Global businesses will likely follow the American model because it will increase productivity in organizations that leverage technology to work from anywhere.

## Notes

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