

A New Definition of Catastrophic Risk

Technology Industry Risk Study 2020



A New Definition of Catastrophic Risk

Over the past several years, catastrophic risk from extreme weather, driven by climate change, has drawn much attention from activists, the media, governments, and an increasing number of business leaders. Less attention has been paid to another potentially catastrophic risk: the failure of technology to perform. In a global, digitally interconnected economy, such a failure can have devastating consequences.

Were technology and digital infrastructure to fail catastrophically — either through intentional attacks or errors — global commerce could grind to a halt. Data would be lost, or rendered inaccessible. Systems would fail to communicate. Critical infrastructure such as power plants, hospitals, and airports could be shut down. In every sense, massive technology failure could be catastrophic.

When technology fails even on a lesser scale, it potentially creates a range of first-party exposures for technology companies, alongside numerous liability risks for companies that use technology. These exposures go beyond data breach and technology errors and omissions. They could include bodily injury and property damage if, for example, a technology failure led to an autonomous vehicle crash or an industrial accident.

Marsh's *2020 Technology Industry Risk Study* explores a new definition of catastrophic risks: The greatest catastrophic risks for technology companies and technology-enabled businesses are likely not natural disasters. They are technology and data infrastructure failures. Given this new definition, companies must answer key questions: What are these risks? How do you measure them? What are you doing to mitigate them? How are they discussed in your organization?

We surveyed a range of communications, media, technology, and emerging industry risk professionals and executives globally on these and other questions. We thank all who participated in this year's survey.

If you have any comments or questions about the results or our interpretations, please drop me a line at the address below, or reach out to your Marsh representative.

You can also send us a Tweet to @MarshGlobal using the hashtag #MarshCMTRisk.



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Top Risks for Technology Companies

Respondents to *Marsh's 2020 Technology Industry Risk Study*, said that technology companies are most concerned about keeping their systems, networks, and products secure and running (see Figure 1). For the fifth consecutive year, they named data security and privacy as the most critical risk for technology companies. But that's not to say it's a static risk — more than two-thirds believe it will grow even more complex in the next three to five years.

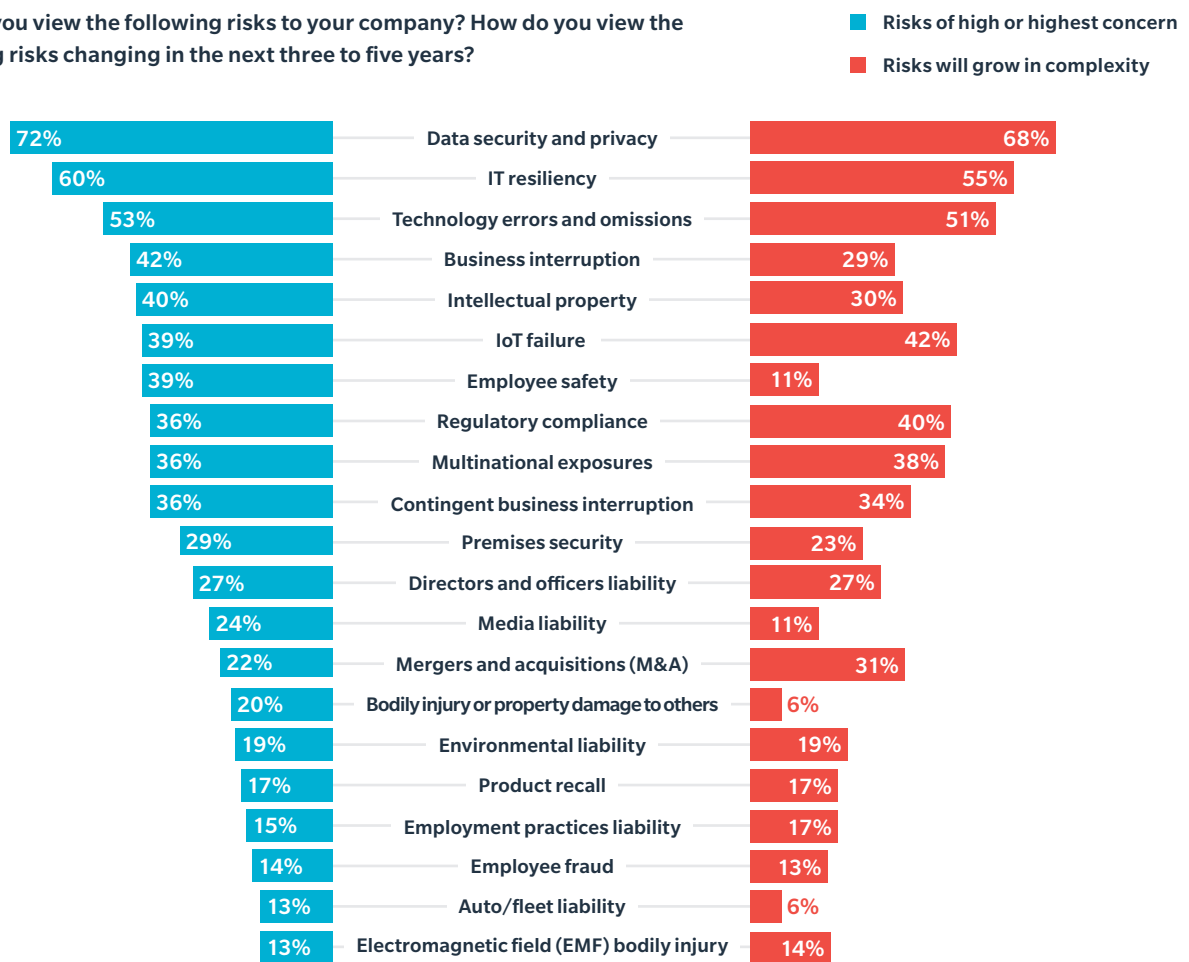
One risk that continues to score low among top risks is bodily injury or property damage to others; it's only considered a top risk by 20% of respondents. However, with the rise of autonomous vehicles, industrial IoT, smart homes, and more, a technology failure has potential to cause physical harm to people and property. Forward-thinking risk leaders should ensure they are covered for this growing liability.

FIGURE
1

Keeping systems safe and running is the main risk concern for tech companies.

SOURCE: 2020 MARSH TECHNOLOGY RISK STUDY

How do you view the following risks to your company? How do you view the following risks changing in the next three to five years?



Percent of respondents selecting the risk as a high or highest concern.

Percent of respondents expecting risk to increase in next 3-5 years.

Technology Failure is the New Catastrophic Risk

The biggest disaster that can strike a company in 2020 is more likely to be a cyber-attack or event than a natural catastrophe.

top four catastrophic risks related to a technology failure (see Figure 2).

When considering potentially catastrophic risks, the top rank from survey respondents went to: “Hackers exploit flaw in your product and cause data breaches at many of your customers.” Three of the

This is not surprising considering the increased value of data and intangible assets in the modern economy. In 1975, tangible assets

FIGURE
2

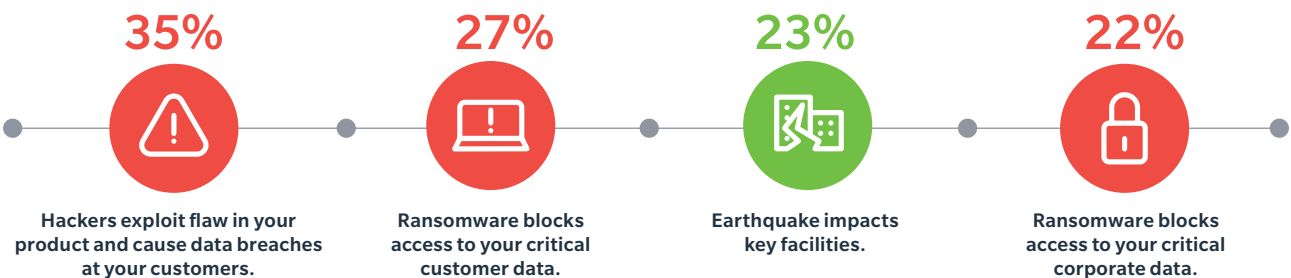
Companies cite technology risks high in potential for catastrophic loss.

SOURCE: 2020 MARSH TECHNOLOGY RISK STUDY

Which of the following scenarios would you view as a catastrophic loss for your company — a loss where damages exceed your insurance limits and/or your cash reserves?

● Technological ● Environmental ● Geopolitical

Greatest Concerns



Mid-Level Concerns



Lower Concerns



comprised 83% of market capitalization in the S&P 500 and intangible assets represented 17% — a ratio that has since inverted¹.

Hackers, such as those deploying ransomware to block access to data and key systems, could be more devastating to a business than a natural disaster that destroyed important physical assets. While the physical loss of a headquarters or data center would be expensive, redundant systems typically allow companies to recover quickly. However, without access to their data and digital infrastructure, most companies cannot function.

Technology companies take a different view of the likelihood and impact of risks than do the broader array of respondents to the World Economic Forum’s 2020 *Global Risk Report*. While environmental concerns such as climate change and weather dominated the top long-term risks in that report, technology companies responding to Marsh’s survey were more focused on the impact of technology failure. This may be partly due to the responsibility that technology companies have for developing, maintaining, and protecting the systems that help keep the global economy running. A failure of many of those systems would foment a global crisis and could be a catastrophic event for companies that failed to protect those systems.

Geopolitical risks — such as regulatory scrutiny, anti-trust actions, and trade sanctions — scored lower on the scale of catastrophic risks in this year’s technology risk study. Less than 11% of respondents viewed any of these risks as catastrophic. While these risks ranked lower now, it will be important to watch civic activism throughout 2020 as individuals, politicians, and regulators call out for scrutiny of large, data-enabled technology companies. If these voices spark more regulation and/or major shifts in consumer engagement, they could drive substantive business model changes.

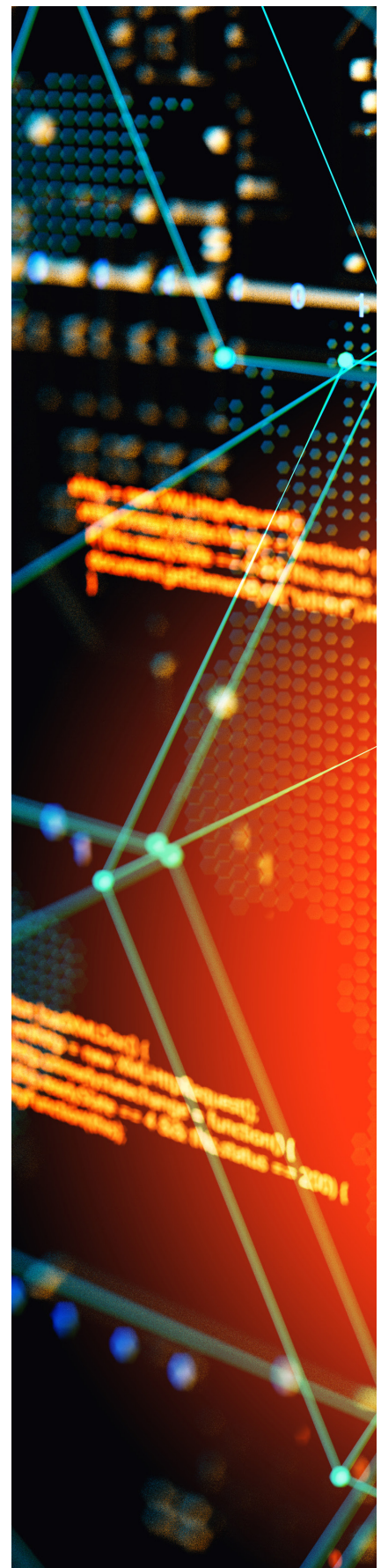


FIGURE 3

WEF respondents have a different view — prioritizing environmental concerns.

SOURCE: WORLD ECONOMIC FORUM GLOBAL RISKS PERCEPTION SURVEY 2019-2020

◆ Environmental ◆ Geopolitical ◆ Societal

Top Risks By Likelihood

- ◆ 1 Extreme weather
- ◆ 2 Climate action failure
- ◆ 3 Natural disasters
- ◆ 4 Biodiversity loss
- ◆ 5 Human-made environmental disasters

Top Risks By Impact

- ◆ 1 Climate action failure
- ◆ 2 Weapons of mass destruction
- ◆ 3 Biodiversity loss
- ◆ 4 Extreme weather
- ◆ 5 Water crises

¹ “Annual Study of Intangible Asset Market Value from Ocean Tomo, LLC.” www.oceantomo.com, Ocean Tomo, LLC, 4 Mar. 2015, www.oceantomo.com/2015/03/04/2015-intangible-asset-market-value-study/.

FIGURE
4

Tech companies are talking about catastrophic loss scenarios.

SOURCE: 2020 MARSH TECHNOLOGY RISK STUDY

How extensive are the discussions within your company around evolving catastrophic loss scenarios?

Minimal or no significant discussions

6%

Discussions beginning to gain momentum

19%

Fair amount of discussions with selected internal groups

35%

Significant amount of discussion with multiple internal groups involved

18%

High priority agenda item for C-Suite, board and throughout the company

22%

WHO'S IN THE ROOM?



Understanding Your Catastrophic Exposures

More than 75% of technology survey respondents are holding discussions of catastrophic risk at more than preliminary levels (see Figure 4). Such discussions will be most effective if they engage the appropriate range of stakeholders and receive buy-in from senior leadership. Just over 20% of respondents say catastrophic risk is a high priority item for the C-suite, board, and throughout the company.

Discussions of catastrophic risks should involve the entire company. Plans to prepare for a catastrophic loss scenario can't be something that "risk management is handling." Just over one-third of respondents said their organizations are holding discussions with limited internal groups. This is a step in the right direction, but what about the rest of the company? To fully understand the impact of catastrophic loss, all parties should weigh in. Risk management needs to expand "who's in the room" to ensure all potential impacts are considered.

The key role for risk management is as the glue that holds discussions together, through the use of data and analytics. Representatives from sales, operations, and others may be able to explain how their areas will be affected, but only effective use of a full tool kit of risk data and analytics will allow your company to quantify and compare those impacts.

More than 90% of survey respondents use some sort of processes for understanding catastrophic risks (see Figure 5). From researching risks using third-party reports, developing enterprise risk management committees, and holding whiteboard/scenario planning sessions, key stakeholders are discussing the risks.

However, fewer than one-in-five of respondents use customized loss models and data-driven predictive analytics. The lack of customized and rigorous analytics makes it difficult to truly quantify and understand emerging and catastrophic risks. While 21% of respondents use “off-the-shelf or standardized risk quantification tools,” insights from these should serve only as the baseline for risk quantification. If your company is developing innovative and customized solutions for your customers, you can’t expect to understand your emerging risks without investing in customized loss models and data-driven predictive analytics. As innovators and disruptors, your company’s risks are far more complex than standard tools are capable of understanding.

FIGURE 5

Tech firms using a range of tools to understand catastrophic risk.

SOURCE: 2020 MARSH TECHNOLOGY RISK STUDY

What is your company doing to understand and quantify these emerging catastrophic risks?



Red Flag

Minimal efforts or not at all

10%



The Basics

Review of external research and industry risk studies

62%

Formalized enterprise risk management process

54%

Implementation of formalized scenario planning across risk functions

43%

Informal white-board sessions with internal experts and stakeholders

34%

Off-the-shelf or standardized risk quantification tools

21%



Best in Class

Customized loss models

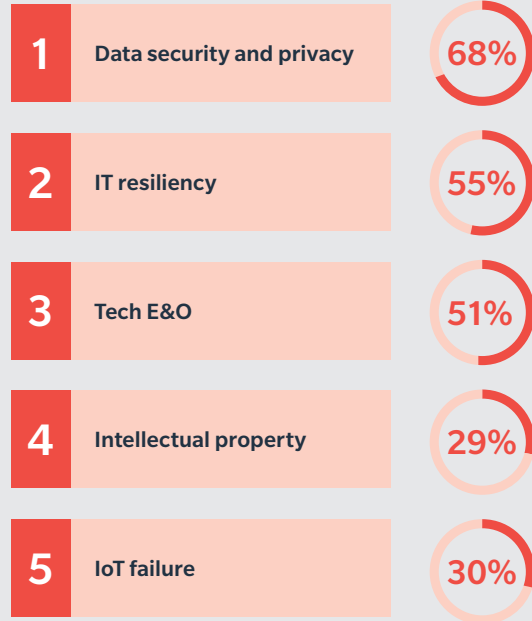
19%

Deep data-driven predictive analytics

9%

TOP 5 TECH RISKS IN 2020

Respondents expecting the risk to be more of a concern in the next three to five years.*



*See Figure 1 on page 1 for the full list.

Keeping up with the Pace of Change

The pace of change in 2020 is accelerating rapidly. Newly developed digital solutions make communication faster, commerce more seamless, and economies more interconnected. But those interconnected systems bring risks that emerge and scale faster than ever. When looking at the top risks for technology companies, it's not surprising that the top five also rank near the top of those expected to be a greater concern in the next three to five years (see Figure 1).

A little more than half of respondents believe they are keeping up with this blistering pace of change (see Figure 6). But 35% say they are not able to keep pace and understand current technology-based risks (see Figure 6). Those challenges will grow as companies seek to expand product and service offerings, including the 53% of respondents intending to launch more partnerships (see Figure 7).

FIGURE 6

Most companies believe they are keeping pace with tech-based risks.

SOURCE: 2020 MARSH TECHNOLOGY RISK STUDY

Given the rising complexity and increased threats, is your firm keeping pace with understanding and measuring technology-based risk across its value chain to appropriately hedge and contain the risk?



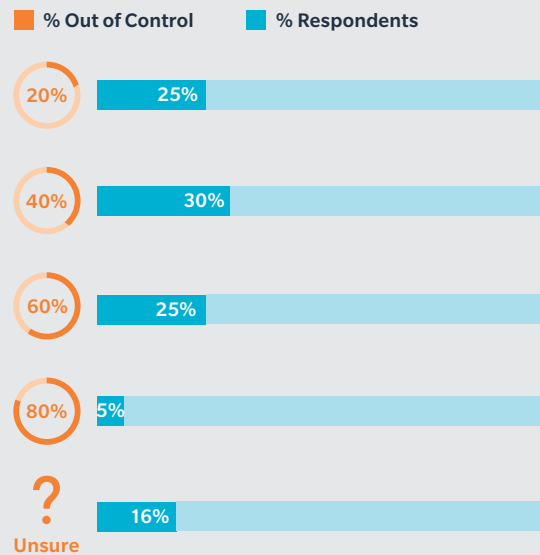
Launching new partnerships can create risks that are outside of the company's direct control. Sixty percent of respondents say that reliance on third-party technology means that 40% or more of their risks are beyond their direct control – and an additional 16% are not sure if any of their risks are outside of their control. The expansion of partnerships has the potential to further increase this lack of control — making risks more complex and difficult to quantify.

The greater percentage of risks that lie outside the direct control of your firm further increases the need for customized loss models and deep-dive predictive analytics. Yet, as previously discussed, few respondents are actually using these tools.

The expanding use of labs and innovation centers — 39% of respondents are embracing these accelerated development structures — also create new challenges for risk management (see Figure 7). Risk management should engage with these groups and provide agile and innovative ways to remove or lessen risk from innovation. Just as risk management must ensure that all business groups are in the room for discussions of emerging risks, risk management should work with new innovation labs to ensure risk management has a seat at the table during their innovation discussions.

RESPONDENTS SAY SIGNIFICANT PORTION OF THEIR RISKS OFTEN LIE OUTSIDE OF THE DIRECT CONTROL OF THE FIRM

What percentage of the firm's risk lies outside the direct control of the firm?



SOURCE: 2020 MARSH TECHNOLOGY RISK STUDY

FIGURE
7

Technology companies are expanding product offerings.

SOURCE: 2020 MARSH TECHNOLOGY RISK STUDY

How is your company expanding its products/service offerings?

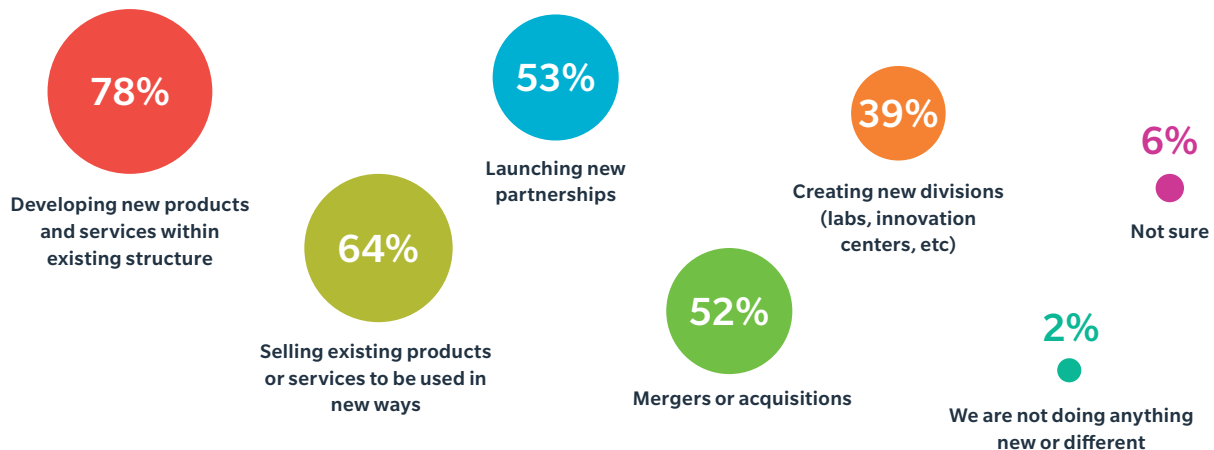


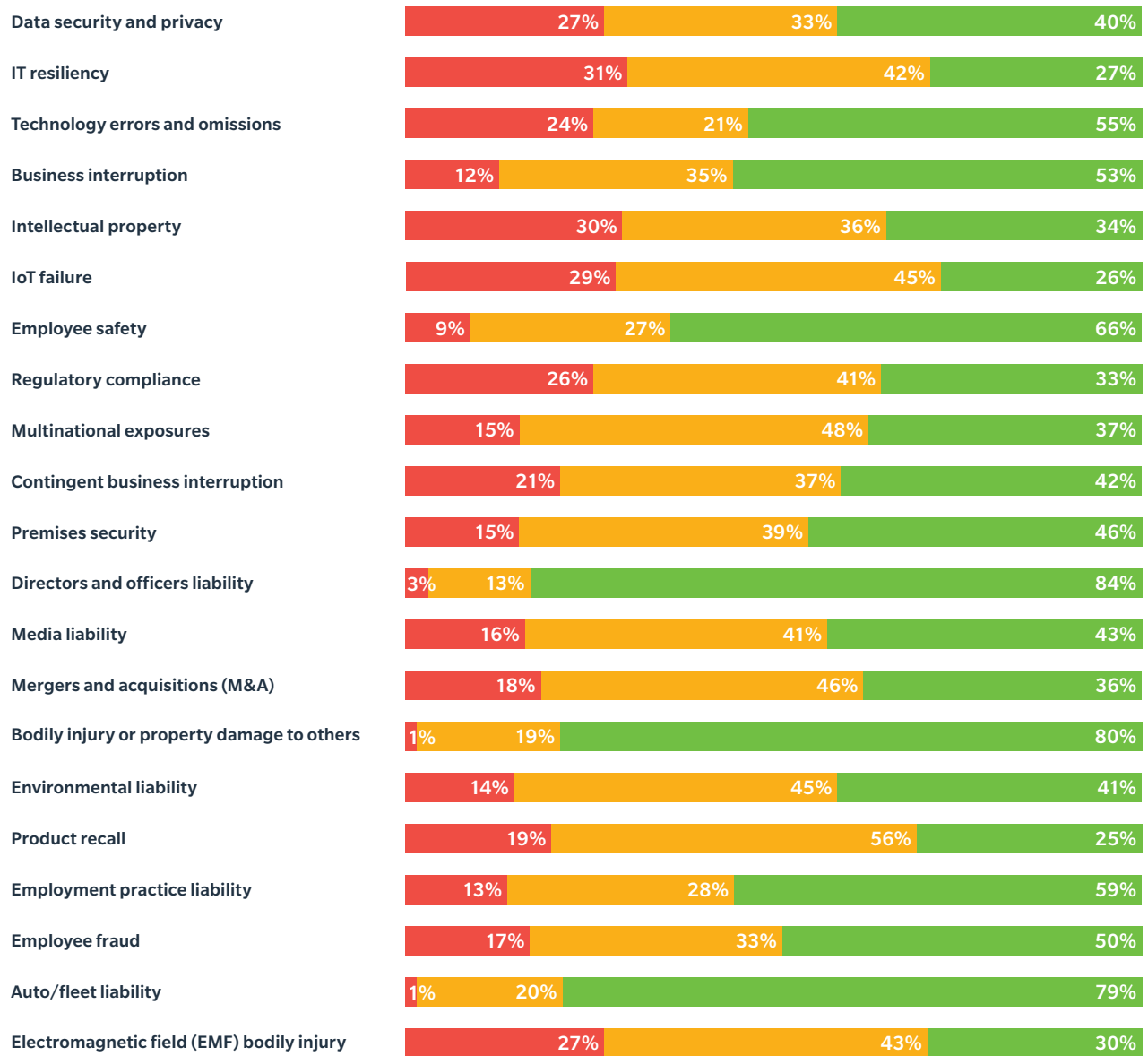
FIGURE
8

Many key risks perceived as lacking adequate risk transfer solutions.

SOURCE: 2020 MARSH TECHNOLOGY RISK STUDY

For those portions of risk being transferred, how would you rate currently available insurance solutions?

■ “Completely inadequate” or “Some relevant coverages” ■ “Neutral” ■ “Mostly aligned” or “Well-matched to the risks”



Taking Control Where Coverage is Inadequate

Many respondents rate the insurance solutions for emerging risks to be less than adequate (see Figure 8). More than 50% had negative or neutral opinions on the adequacy of insurance solutions for key risks such as data security and privacy, IT resiliency, intellectual property, regulatory compliance, and multinational exposures. More established risks, such as tech E&O and business interruption, receive slightly higher ratings, but few risks are viewed as being adequately addressed by available insurance solutions.

Companies across industries rely on technology and data to run their business, which increases the liability risks for companies that develop the systems and store the data. Risk professionals face even greater challenges finding risk transfer solutions when insurance markets are in a period of transition. Global commercial insurance pricing increased for the ninth consecutive quarter in the fourth quarter of 2019, according to Marsh's quarterly Global Insurance Market Index. Average commercial insurance pricing increased

11% in the fourth quarter of 2019; the largest average increase since the survey began in 2012.

In the face of significant reductions in capacity or increases in pricing, most respondents rely on traditional tactics during renewal negotiations (see Figure 9). While driving competition among carriers is important, many respondents say they are changing limits, retentions, or terms and conditions to mitigate premium increases.

When faced with a transitioning market, technology risk leaders may benefit by looking for innovative solutions. Investing in analytics, investigating alternative capital solutions, and/or understanding how a captive might help, can lead to solutions that can protect your budget and limit exposure. Take control of the process and become a seller of risk rather than a buyer of capacity.

FIGURE
9

Traditional approaches remain the norm in addressing capacity and pricing issues.

SOURCE: 2020 MARSH TECHNOLOGY RISK STUDY

What levers do you use when presented with significant reductions in capacity or increases in pricing?

■ Traditional approaches ■ Taking control

Taking policy to market and seeking a new carrier.



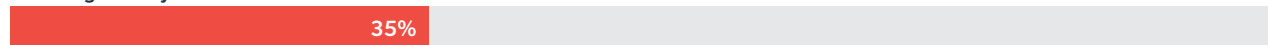
Changing limits or retentions.



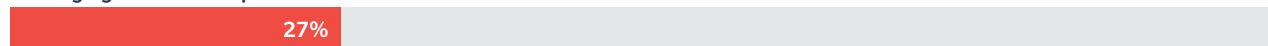
Changing terms, conditions, or definitions or services.



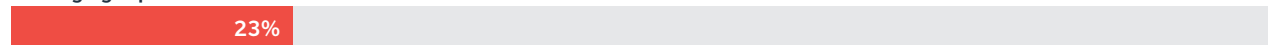
Investing in analytics to retain more risk.



Leveraging alternative capital.



Leveraging captive.



One Company — Many Business Models

Few technology companies think of themselves as “just” software developers. Communication services companies aren’t just connecting wireless calls — they’re also developing new technologies, enabling payments, and creating streaming video. Hardware companies aren’t just building devices, they’re also coding software to integrate their products into larger digital ecosystems. To survive, many companies operate under a variety of business models (see Figure 10).

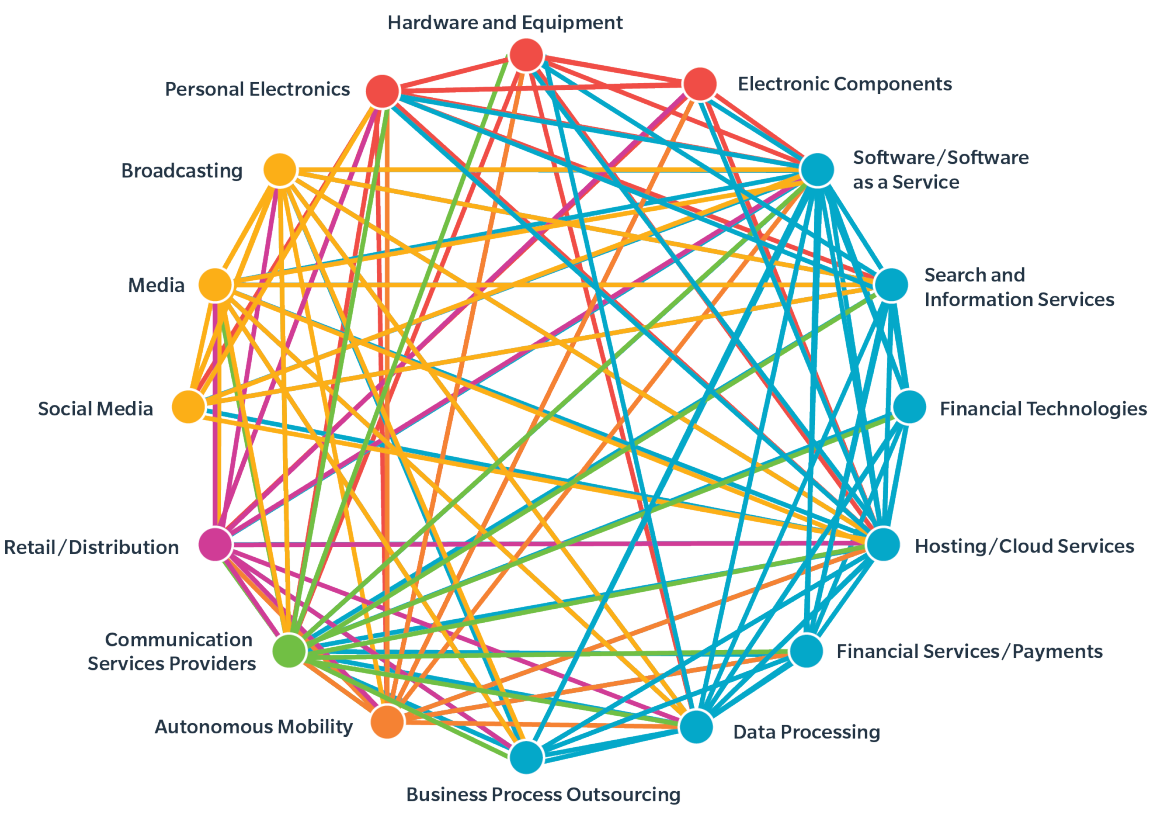
FIGURE 10

Tech companies increasingly operate across multiple sectors.

SOURCE: 2020 MARSH TECHNOLOGY RISK STUDY

Which of the following best describes your company? Select all that apply.

- Software and IT Services
- Media
- E-commerce
- Hardware
- Communication Services
- Mobility
- Hardware
- Communication Services



Looking Forward

A new definition of catastrophic risk encourages risk managers to challenge traditional mindsets and approaches to risk management. A year ago in this report, we talked about developing a new mindset for risk management. That advice is still vital today. Risk leaders should be:



Expansive

Communications infrastructure, technology innovation, and the pursuit for “eyeballs” permeate and enable disruption across every industry. A broad range of new and emerging risks will follow.



Adaptable

It’s more than change being a constant. It’s an acceleration, and we should move to continually question our understanding of risk, our responses, and our relevance.



Resourceful

IoT and the data economy are creating unimaginable and unbounded data sets. There is a tremendous opportunity to leverage new sources of data for risk assessment, risk mitigation, and risk treatment.



Predictive

As risk professionals, we are experts at looking in the rearview mirror. The pace of change is accelerating, and we should use new data sets and tools to improve our ability to look ahead and inform overall business strategy.



Old School

Sophisticated data, analytics, and tools are the price of entry. But we need to talk, to discover, to pick up a marker and explore ideas on a white board. We are in uncharted territory.

That advice still holds today. But as governments, activists, and politicians pay closer attention to technology companies and their impacts on society, we recommend one more mindset in 2020:

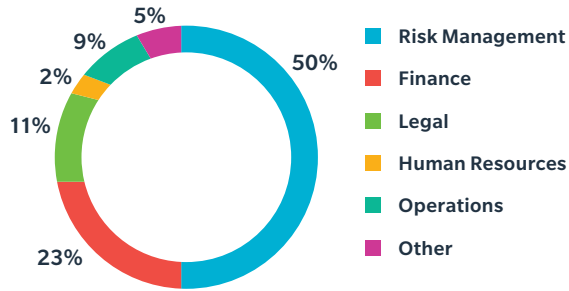


Connected

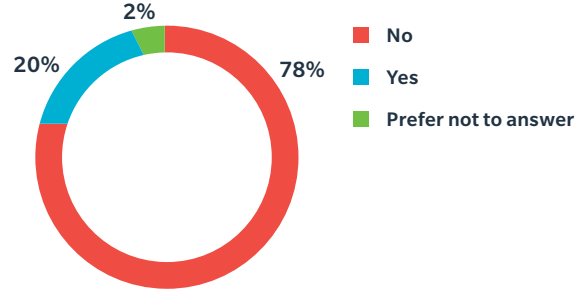
As companies develop environmental, social, and governance standards, risk managers should ensure they understand and have global ESG connectivity. This means engaging diverse voices and experiences to ensure you understand how society may be viewing your company. If you don’t have diverse voices helping you predict risks, are you sure you are considering all the impacts? Get connected and make better risk decisions.

Survey Demographics

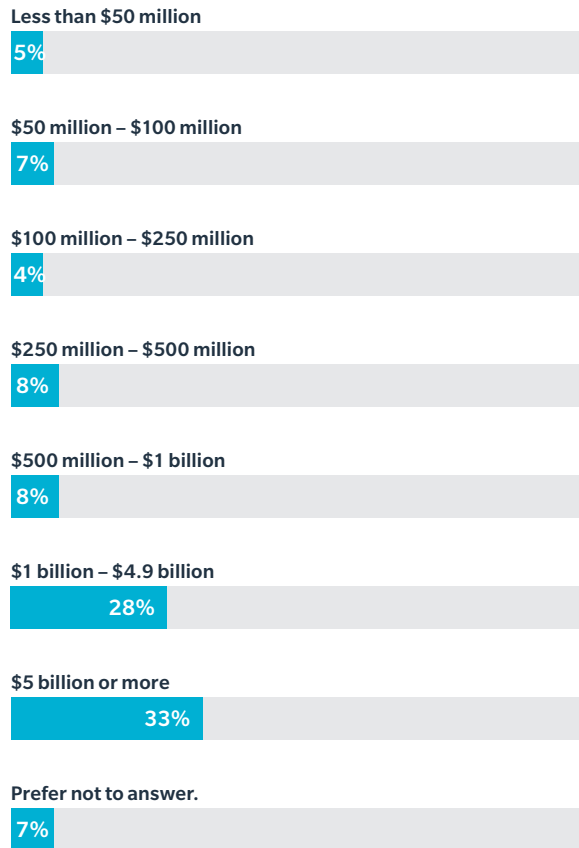
Role of Respondents



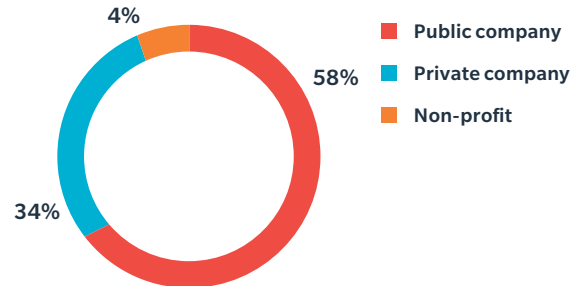
Respondents in the C-Suite



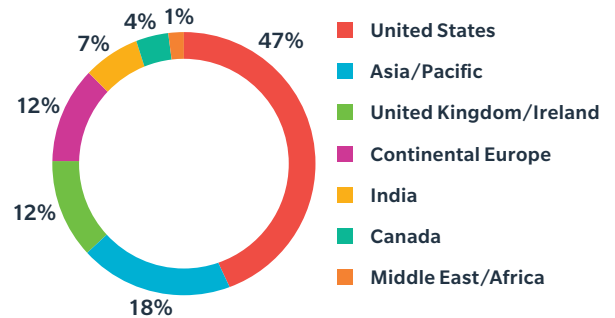
Respondent Company Revenue



Respondent Company Ownership



Respondent Company Headquarters



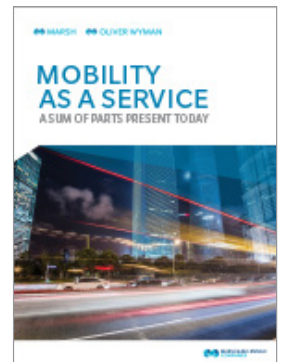
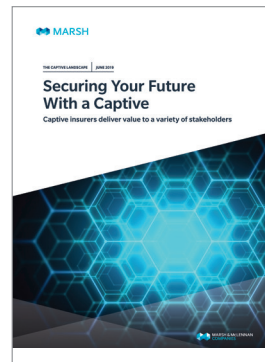
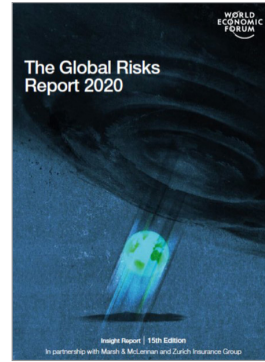
Additional Insights

This survey and report are part of the thought leadership that Marsh & McLennan produces each year, which includes research, insights, events, and occasional commentary on current items of interest to our clients.

Marsh's Technology Practice also hosts several national events throughout the year, which in 2020 are expected to include:

- Communications, Media, and Technology Risk Roundtable at RIMS Annual Conference.
- Silicon Valley Technology Risk Forum.

To get more information on upcoming reports, events and thought leaderships, please reach out to your local Marsh representative or email cmt@marsh.com to be added to our mailing list.



Marsh's Technology Industry Expertise

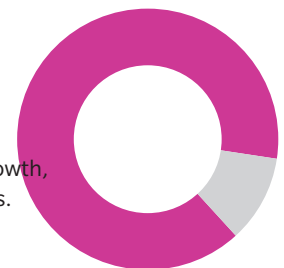
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600+
 dedicated tech risk management professionals.

Placing **\$2B** premium.

Local, specialized tech expertise in
100+
 global offices.

2000+
 tech clients, globally.

Committed to the
85%
 of clients that are high-growth, middle-market companies.



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ABOUT THIS REPORT

Marsh's Technology Risk Study — now in its fifth year — draws from the survey responses of more than 150 technology risk professionals from around the world. For more information on the report and how Marsh can help you mitigate your technology risks, please contact:

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