



EXCELLENCE IN RISK MANAGEMENT XIV

APRIL 2017

Ready Or Not, Disruption Is Here

How risk professionals are addressing the
challenges of disruptive technology

SOLUTIONS...DEFINED, DESIGNED, AND DELIVERED.



Ready Or Not, Disruption Is Here

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Introduction

The Fourth Industrial Revolution has arrived and is spreading at warp speed. Technology today plays a vital role in promoting global prosperity, but the pace and scope of innovation also creates uncertainty, expressed by some as “disruptive technology.” These are technologies that either purposefully displace existing products or that introduce ground-breaking ways of doing business, creating a new industry or turning an established one on its head.

As we have seen over 14 years of the *Excellence in Risk Management* project, leadership in most organizations increasingly relies on risk management professionals’ insights. Today, that means that risk executives have both a responsibility and an opportunity to better educate themselves about technological innovations, which are reshaping their businesses and industries. For the 2017 *Excellence* report, in partnership with the Risk & Insurance Management Society (RIMS), we conducted focus groups with risk executives in a variety of industries and surveyed another 700 of your peers to understand how the risks of disruptive technologies are being addressed.

We believe risk management professionals should be leading the way as companies adapt to technology innovation, with the understanding that those who fail to do so will be relegated to a support role. The good news is that both the desire and ability to play a leading role are there.

We hope you find this report a useful tool to stimulate discussions in your organization and with your peers. And we encourage you to reach out to us with any questions or comments you may have.



**\$230
BILLION**

*invested in
the “Internet of
Things” in 2016
by US companies;
expected to grow to
\$370 billion by 2018.*

Source: International Data Corp.

Fragmented Approach, Fragmented Results

Companies that fail to recognize disruptive technology risks and coordinate their management will be unable to optimize the opportunities

Technology integration. It's one of the benefits companies seek from disruptive technologies. Consider a major construction firm that built its business on the quality of its machinery. Nowadays, telematics, sensors, wearables, and other technologies allow the company to keep its business model fresh and offer a range of 21st Century services.

On the flip side: Risk fragmentation. It's what many companies experience when innovation disrupts their organizations. The pace of innovation globally has made risks more complex and interconnected. This leaves many executives struggling to understand how disruptive technologies affect their business strategies, models, and operations.

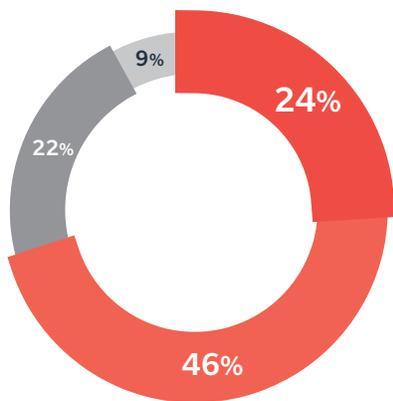
Organizations generally, and risk management professionals in particular, need to adopt a more proactive approach to educate themselves about disruptive technologies — what is already in use, what is on the horizon, and what are the risks and rewards. Forward-leaning executives are able to properly identify, assess, and diagnose disruptive technology risks and their impact on business models and strategies.

Technology Use Awareness Gap

The 2017 *Excellence* survey asked which of 13 common disruptive technologies companies are currently involved with or exploring (see figures 1 and 2). The result was surprising.

FIGURE 1 Disturbing percentage of risk managers unaware of disruptive technology prevalence

How many disruptive technologies does your organization use or plan to use?



- No disruptive technology use
- Use one to three disruptive technologies
- Use four to six disruptive technologies
- Use six or more disruptive technologies

PERCEPTION



of risk professionals say their organization doesn't use or plan to use the Internet of Things.

YET

REALITY



of companies will be using Internet of Things technologies within two or more years, according to some estimates.¹

PERCEPTION



of risk professionals say their organization uses or plans to use wearables.

YET

REALITY



of companies across a range of industries are evaluating or using wearable technologies.²

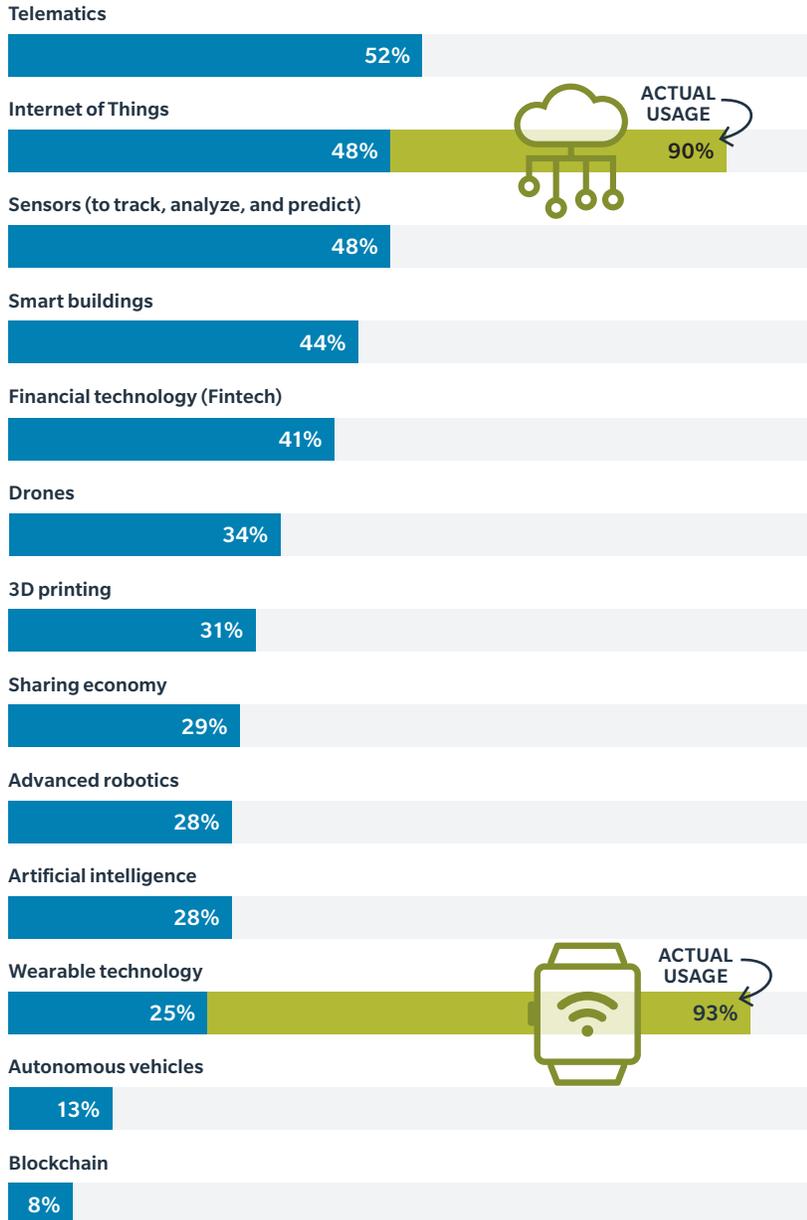
¹ <http://www.businesswire.com/news/home/20160610005466/en/TIA-Releases-Annual-MRF-Survey-Enterprise-IoT>

² <http://www.techrepublic.com/article/invisible-revolution-how-wearables-are-quietly-invading-the-enterprise/>

FIGURE
2

Disturbing percentage of risk managers unaware of disruptive technology prevalence

Which of the following disruptive technologies is your company currently involved with or planning to use?



“Shifts in the business environment could force the industry to use more disruptive technologies. We would probably need to feel the pain before we would be forced to use it.”

— SENIOR RISK DIRECTOR FOR A NATIONAL RESTAURANT CHAIN



Twenty-four percent of respondents said they do not use or plan to use any of the 13 disruptive technologies. And yet more than 90% of companies are either using or evaluating the Internet of Things (IoT) alone, according to industry studies.

We believe this shows a gap in understanding: Too many organizations don't realize the pervasiveness of some technologies. Our list included telematics, sensors, and the IoT — can a quarter of the companies not be at least considering their use, and soon? Are risk management professionals focusing on current rather than emerging risks? Or are they simply unaware of their companies' plans?

We believe many respondents who did not seem to recognize their organizations' use of certain technologies were mesmerized by the "gradual evolution rather than radical change"¹ with which technology now disrupts the business world. But companies cannot afford to be surprised when technology fails or goes awry. Risk executives need to fortify their strategic role by understanding how technologies impact business models and the direction of entire industries.

¹ World Economic Forum, *Global Risks Report 2017*, <http://reports.weforum.org/global-risks-2017/part-3-emerging-technologies/3-1-understanding-the-risk-landscape/>

Investing in Risk to Break Down Barriers

By definition, disruptive technologies can make or break a business. Which is why it's surprising that survey respondents identified the top impediment to understanding disruptive technology risks as "other areas have greater priority" (see figure 3).

The inability to model the magnitude of disruptive technology risks — another highly rated impediment — undoubtedly contributes to the lack of focus on them. Models, data, analytics — such tools can help prioritize, but they require commitment from leadership to invest in them.

And that want for investment is a symptom of the need to better align strategic thinking around the risks within organizations. As we have noted in previous years, such alignment is an ongoing challenge, but it is critical to effectively identify and manage changes to an organization's risk profile.

Today's risk executives are asked to develop insights that will help leadership prepare for the unexpected — such as the risks of disruptive technologies. But even the most forward-thinking risk management professional will get bogged down by everyday tasks and managing "ordinary" risks. Improving organizational risk alignment should include investment in the resources that give risk executives the additional bandwidth to stay on top of the accelerated pace of new and emerging risks.

FIGURE 3

Symptoms of organizational misalignment and increasing "siloes"

What barriers inhibit your organization's ability to understand the impact of disruptive technology risks on business strategy and decisions?

■ Organizational misalignment

Inability to model the magnitude of the risk

31%

Other areas have greater priority

31%

General lack of awareness of key risk management concepts

27%

Lack of cross-organization collaboration

27%

Lack of resources

27%

Demonstrating the return on investment

24%

Budget

22%

Applying current risk management framework to new risks

17%

Lack of regulatory clarity

17%

Attracting and retaining talent with the right skill sets

12%

Lack of senior management commitment

12%



“It’s a new space that nobody’s quite sure how to operate in and it certainly raises a lot of questions around liability and insurance. As a device company, we’re used to product liability, but now we’re into medical malpractice and things like that.”

— RISK PROFESSIONAL FOR A
MEDICAL DEVICE COMPANY

Changing Business Models, Changing Risk Profile

Companies will need to adapt their risk management approaches as disruptive technologies alter business strategies, models, and risk profiles

Companies face a balancing act between allowing innovation to proceed unhindered and evaluating the potential consequences to internal and external stakeholders. Risk management professionals, like others, are often playing catch-up when it comes to understanding exactly how their business will be impacted.

According to experts on organizational structures, the people driving such changes tend to be “doers who lead empowered employees with the freedom to take risks and make their own decisions on the fly without the distraction of coordination, collaboration, and hierarchical decision making.”¹ That’s not a description of a typical risk management function.

But in our 2014 survey, C-suite respondents identified “strategy and execution aptitude” and “business acumen” as the most important abilities risk managers would need in the coming years. Those attributes can give risk executives a leg up in connecting with the “disruptors” and tying them back to the business model and risk profile.

Disruptive Technology and Liability

A disruption in business models and risk profiles can shift liability and have implications for risk transfer decisions.

For example, automobile manufacturers traditionally built cars, rolled them out the door, and shipped the responsibility for driving to consumers. But as carmakers engage deeper with autonomous driving technology — such as parking, lane, and brake assists — some liability has shifted. Auto manufacturers and suppliers now have liability related to on-the-road performance and safety, which changes their risk profiles.

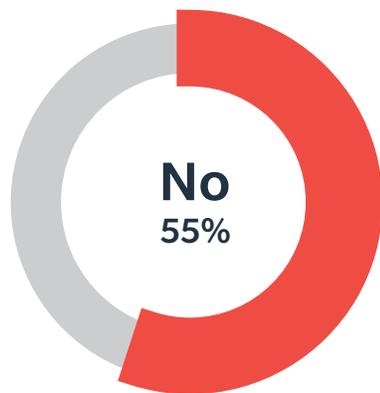
Interconnectedness is at the heart of many disruptive technologies, whether it’s to one another in an enclosed environment or in a greater scale through the internet. Because a single incident can ripple through entire systems, the connections bring the potential for higher frequency and increased severity of adverse events. Such possibilities raise insurer concerns about aggregation risk.

¹ Oliver Wyman, *Ten Digital Ideas*, <http://www.oliverwyman.com/content/dam/oliver-wyman/global/en/2016/sep/Ten-Digital-Ideas-2016.pdf>



MORE THAN HALF
of organizations have not
conducted risk assessments
for disruptive technologies.

Has your organization conducted risk assessments to more deeply
understand the risk associated with disruptive technologies?



Awareness gap between risk managers and C-suite.





77%

*of organizations
do not assess
their customers
and suppliers
for cyber risk.*

Source: Marsh, *European 2015 Cyber Risk Survey Report*

The interrelationship across coverages is also becoming more complex. For example, an October 2016 distributed denial of service attack shut down several popular websites for hours. The attack was amplified by the criminals' use of internet-connected cameras, routers, printers, and more. In an increasingly interconnected world, what becomes of the boundaries between, for example, traditional product liability and cyber insurance? Will insurers change the way they provide coverage for risks associated with connected devices?

Risk Assessments Lacking

A primary responsibility for any risk executive is ensuring that new and emerging risks are being assessed. With disruptive technology, we found a significant number (55%) of respondents saying there is no risk assessment being done. And the feeling was higher among C-suite respondents (80%) than risk management professionals (51%).

Given the impact that disruptive technology can have on the strategy of an organization, such lack of attention to the risks should be viewed as unacceptable.

These results also indicate that risk management professionals may not have the support for a more holistic approach across the organization. In recent years we have pointed out that when risk management reports into an area other than finance, their breadth of responsibilities were often broader, encouraging greater engagement with the rest of the organization. A collaborative, cross-functional risk approach can help close those gaps.

Beyond the lack of risk assessments, risk executives identified other challenges to managing disruptive technologies (see figure 4). These included challenges in establishing effective cybersecurity (noted by 46% of the respondents) and evaluating consequences to the organization (32%).

FIGURE
4

Enterprise governance issues dominate list of challenges in addressing disruptive technologies

What are the main risk management challenges facing your organization in relation to disruptive technologies?

- Enterprise-focused risk management/governance challenge
- Data/analytics-focused risk management challenge
- Finance-focused risk management challenge

Establishing effective cybersecurity

46%

Evaluating consequences to the organization (such as human capital, supply chain)

32%

Evaluating consequences for external stakeholders (such as customers, shareholders)

27%

Upgrading IT infrastructure

27%

Developing appropriate metrics to evaluate

21%

Evaluating insurance coverages for applicability (such as failure to perform data privacy, management liability)

20%

Keeping up with regulations

16%

Understanding who in our company owns the risk

16%

Determining appropriate risk sharing

15%

Evaluating talent capabilities

15%

Managing potential effects in contracts (such as technology vendors/customers)

15%

Understanding connectivity between risks

15%

Making sure the board/leaders are aware of and driving the changes

13%

Managing physical risks

8%



Leverage Cybersecurity Concerns

Cyber tops the list of risk management challenges

The word “technology” often leads to a knee-jerk correlation with “cyber risk.” So it was no surprise that cybersecurity ranked as the dominant concern related to disruptive technology among respondents across various industries.

For example, 65% of health care organization respondents — more than any other industry — cited cybersecurity as a top concern. This may be related to a combination of the stringent rules surrounding personal health information, the sensitive nature of that information, and the target that hackers have placed on the industry’s back.

But the focus on cyber risk may at times obscure other concerns organizations should be considering regarding disruptive

technologies. Although data breach and privacy issues should not be downplayed, organizations cannot afford to take their eyes off of other risk concerns related to disruptive technology.

Several risk management professionals we spoke with suggested using the current allure around cyber risk to pivot to broader discussions: “‘Cyber’ is a good catch-all word,” a risk executive at an industrial contracting firm told us. “It provides a level of comfort that people can understand. If you get too detailed or technical during conversations about disruptive technologies, people may be less willing to engage. But if you keep it general, keep it high level, and talk about potential cyber threats and managing them — that’s an easy way to start the conversation.”

These conversations should examine the overall impact of disruptive technologies to organizations, including, but not limited to, cyber risk.

Establishing effective cybersecurity topped the list for nearly all industries

What are the main risk management challenges facing your organization in relation to disruptive technologies?

■ Cybersecurity



Risk Committee Usage Dangerously Declining

Continued drop in the number of companies with risk committees should be addressed

The spread of disruptive technologies is only going to accelerate. And as organizations look for ways to manage the associated risks, we would make a case for strengthening connections and discussions across the organization through cross-functional risk committees.

And yet, we continue to see a decrease in the number of organizations reporting that they have such committees. This year, only 48% of respondents said they have a cross-functional risk committee, a drop from 52% last year and 62% five years ago.

Interestingly, 41% of respondents without a committee said their company *should* have one. We believe this is recognition that managing risk is more difficult and less effective when organizations do so from siloes.

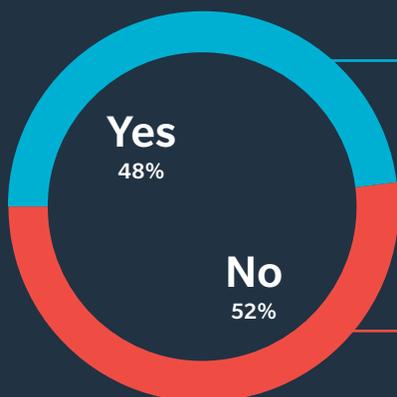
Whether discussed in weekly, monthly, or quarterly organization-wide committee meetings, emerging risks — including disruptive technologies — need to be examined regularly to anticipate and manage the acceleration of business model changes. When risk is siloed, too often the tendency can be toward an insurance-focused approach to risk transfer rather than an enterprise approach that may lead to pursuing untapped opportunities.

Some organizations without an executive-level risk committee do have a risk-specific committee, for example, one dedicated to cyber risk. Such groups can eventually be leveraged to discuss a broader range of risks. In fact, a cyber-risk committee is a potentially good inroad for discussion of broader disruptive technology risks.

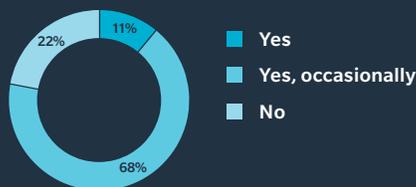
Organizations should cultivate and foster risk committees as part of their operations. This can improve governance to bring about a better understanding of emerging risks, a core requirement of risk management according to business leaders.

More than 50% of organizations do not have a cross-functional committee

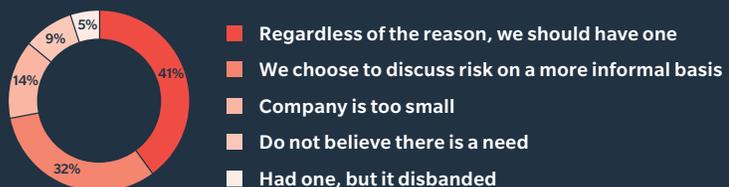
Does your organization have a cross-functional risk committee?



If 'yes,' does the committee discuss disruptive technologies?



If no, why doesn't your organization have one?





77%

of CMT companies said cyber risk was of great concern, yet only...

36%

of those companies believe they are adequately protected against cyber risk.

Source: Marsh, 2017 Communications, Media, and Technology Risk Study, <https://www.marsh.com/us/insights/research/communications-media-technology-risk-study-2017.html>

Everyone Has a Stake

Organizations should integrate assessment and analysis of disruptive technology risks into existing business strategy decisions

Today's disruptive technologies will soon be — and in many cases already are — the norm for doing business.

As disruptive technology changes business models, risk executives should actively engage key stakeholders — from senior leaders to operations employees to suppliers — in developing risk management capabilities and bringing insights to bear on business strategy decisions.

Over several years of this study, whether we looked at emerging risks, departmental structure, or organizational alignment, four themes for developing risk management capabilities and optimizing risk finance recur (see figure 5):

- Invest in and improve the use of data, analytics, and technology.
- Formalize risk management education across the organization.

FIGURE 5 Risk professionals and C-suite generally share priorities for developing risk management

What are the focus areas for developing your company's risk management capabilities in 2017?

RISK PROFESSIONALS

- 1 Improve the use of data and analytics
- 2 Integrate risk management into strategic planning
- 3 Formalize risk management training/education across the organization
- 4 Upgrade risk management technology and access to information
- 5 Invest in broadening risk management resources with current employees

C-SUITE

- 1 Formalize risk management training/education across the organization
- 2 Upgrade risk management technology and access to information
- 3 Improve the use of data and analytics
- 4 Integrate risk management into strategic planning
- 5 Improve risk governance structure

- Integrate risk management into strategic planning.
- Improve the governance around understanding emerging risks.

Around disruptive technologies, the C-suite and risk professionals generally agree on these priorities, although their ranking of them varies slightly

Understanding How to Harness Data

Despite vast amounts of available data, many companies struggle with the question: Which data present the truest picture of risk?

Despite years of respondents saying their organizations intend to invest in data and analytics, their effective use remains elusive: Analytics again ranks near the bottom of techniques respondents say they use to assess and model risks (see figure 6).

We believe organizations should make it a priority to re-evaluate their data and analytics usage. Understanding how disruptive technologies can change risk profiles can provide a clearer view of the type of data needed.

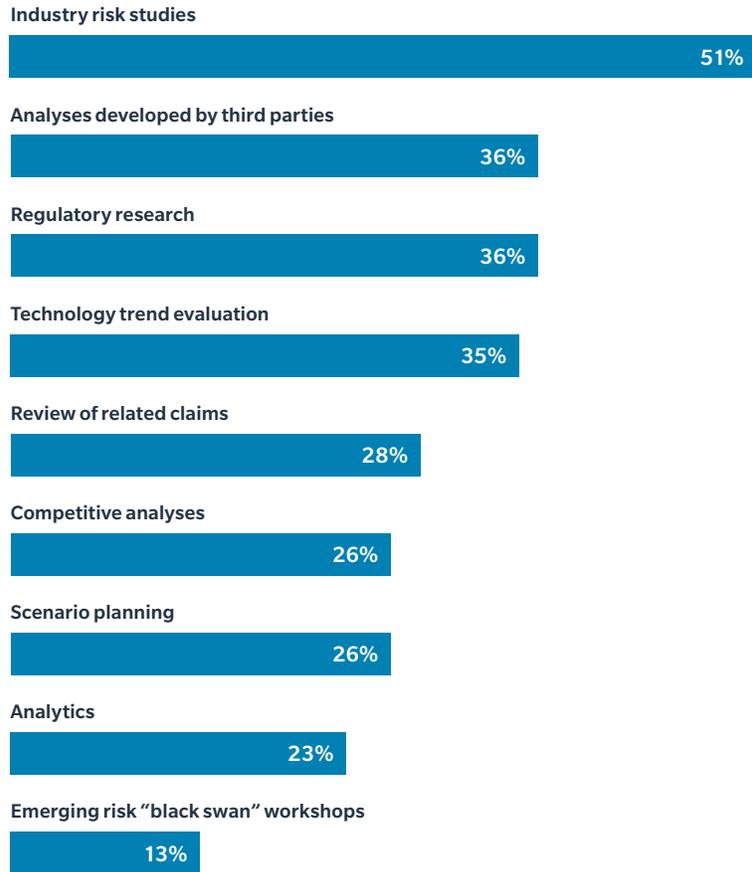
Retailers, for example, traditionally rely heavily on industry benchmarking. But as retailers turn to new technology for payments, inventory tracking, worker safety, and transportation, they will realize new insights by analyzing data similar to technology companies, financial institutions, and others.

Another promising tool in risk modeling is scenario planning, which only 26% of survey respondents said they use to assess and model disruptive technologies. Scenario planning exercises evaluate how

FIGURE 6

Risk managers are relying on inadequate sources to assess disruptive technology risk

Which risk management techniques does your organization use to assess/model disruptive technology risks?



90%

of the world's data was created in the last two years.

Source: IBM, <https://www-01.ibm.com/software/data/bigdata/what-is-big-data.html>

future events may play out based on various potential situations. In evaluating disruptive technologies, scenario planning can be useful, for example, in evaluating second- and third-order consequences related to supply chain risks.

Developing a consistent approach to applying data and analytics will make it easier to alert stakeholders to the pace at which technology could be disrupting organizations.

Integrating With ERM

Integrating disruptive technology evaluation into a strategic risk management framework (such as an enterprise risk management (ERM) program) will provide a more complete picture of the risks.

Strategic risk management processes focus on uncertainties in a collaborative, cross-functional approach across the organization. The benefit of an enterprise lens is that gaps that might otherwise go unnoticed are easier to identify, assess, and manage.

Formalizing risk management education across the organization, whether through learning management systems or one-on-one coaching and consultation, drives responsibility for risk management to those who can modify risk in an informed way.

Integrating risk management into strategic planning provides greater insights into “what’s around the corner,” including technologies that could change business models.

Upgrading management technologies into a single source with easy access to information would highlight the interconnectedness of disruptive technology and the interdependencies for the organization.

**“You can’t stick your head
in the sand with what’s
happening with disruptive
technology. At some point,
you have to adapt.”**

— DIRECTOR OF RISK MANAGEMENT FOR A MAJOR FREIGHT COMPANY

Recommendations



Educate yourself.

Learn the terminology of disruptive technology.

Be conversant in the leading-edge innovations in your industry and in others.

Pay attention to the hits and misses and the emerging risks, especially around those technologies your organization is using or planning to use.



Expand your network and foster collaboration.

Build cross-functional relationships inside your organization.

Take part in established risk committees — or start one from scratch.

Study and confer with experts outside of your industry to better understand how disruptive technology may shift your risks.



Push for investments.

Learn which data and analytics tools will best suit your organization's needs; then make a case for investing in them.

Ensure you hire people with the right skill sets to keep you on the leading edge.



Consider the wider impacts of disruptive technology.

Understand how the interconnected nature of disruptive technology risk impacts your various insurance contracts.

Use "cyber risk" as a wedge issue to draw attention and examine a variety of risks related to disruptive technologies.

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ABOUT THIS REPORT

This report is based on more than 700 responses to an online survey and a series of focus groups with leading risk executives conducted by Marsh and RIMS in January through March 2017.

Marsh is one of the Marsh & McLennan Companies, together with Guy Carpenter, Mercer, and Oliver Wyman.

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