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EXCELLENCE IN RISK MANAGEMENT XVI | APRIL 2019

Strategic Risk Finance in the Era of Big Data

MARSH & McLENNAN COMPANIES

Table of Contents

CONTENTS

Introduction

Risk management executives today operate in a time of abundance in two key areas: capital and data. Pension funds, sovereign wealth funds, and others have earmarked an estimated $1 trillion for investment in risk finance.[1] And on the data side, too, the numbers are staggering: Some 2.5 quintillion bytes are created every day (and that's a year-old figure!) By next year, 1.7 megabytes of data will be produced every second for *each* of the Earth's 8 billion people.

So what's the connection? By effectively marshalling data and risk modeling tools, organizations can better understand changes in their risk profiles and their risk bearing capacity, allowing them to access the opportunities presented by the growing levels of capital available to finance risk. The reward for those that get it right is to build a robust risk finance strategy and more resilient organization.

But making effective use of risk data remains a stumbling block for many companies. In fact, the *2019 Excellence in Risk Management* survey found that organizations' top priority for improving risk management capabilities is to improve their use of risk data and analytics. Again.

This has been the top priority each time we've asked the question since we first started doing so in 2013. Why isn't the needle moving? Are companies stuck in a "this-is-the-way-we've-always-done-it" mentality? Is data gathering taking precedence over data use? Are changes in analytics happening too fast? Do companies not recognize the potential benefits of a well-planned data and analytics strategy? Or are they simply unable to manage the wealth of information?

At the same time, many respondents were unfamiliar with alternative risk transfer (ART) solutions and what they offer. As the 16th annual *Excellence* report points out, there is a compelling relationship between understanding what alternative risk finance solutions can do and effective data and analytics. By leveraging data and grasping new risk finance opportunities, risk executives have an opening to be ART educators, and add value to the strategic decisions that affect their company's balance sheet.

Also in this year's report, we look at how technology has created a new data-driven approach. "Real-time" risk management holds the promise of more effective risk modification and better informed risk finance decisions.

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

9.2%

Growth of alternative capital during 2018.

SOURCE: GUY CARPENTER

[1] Guy Carpenter

Desire to Improve Data Use

Data and analytics at top of 2019 risk priorities

Data equals opportunity — but only when properly collected, skillfully analyzed, and insightfully deployed. Over the past decade, the amount of available data has exploded, while innovations in analytics have brought new ways to gain strategic advantages. And yet, the pace of change leaves many companies grappling with how to best use that wealth of information.

Organizations that are unable to harness their company's data are missing opportunities. Consider that to "improve the use of data and analytics" was the most frequently cited means by which organizations hope to improve their risk management capabilities this year, according to the *2019 Excellence in Risk Management* survey (see Figure 1). "It's all about data to prepare for the future, and risk management is really no different," the risk manager for a privately owned conglomerate said during an *Excellence* focus group discussion.

The *Excellence* survey has long asked about risk management priorities. In 2013 we first added "improve the use of data and analytics" as a choice, and risk professionals immediately made it their top priority. In 2019 it was still on top, and by a wider margin. Asked which aspects of data and analytics most needed improvement, "informing decisions on specific risks" took the top spot (see Figure 2). As a risk executive from a life insurance company said, "We are constantly under pressure to see around the corner."

FIGURE 1

Improving the use of data and analytics is a top risk management priority in 2019.

SOURCE: 2019 EXCELLENCE IN RISK MANAGEMENT SURVEY

What are the focus areas for developing your company's risk management capabilities in 2019? (Select up to three.)

Organizations also saw "optimizing insurance and other risk transfer programs" as a priority for data use. It's here that they can make a connection between modeling and the strategic opportunities presented by alternative risk transfer (ART) solutions. Interest in these products is increasing, but the uptake is slow, representing untapped opportunities for some.

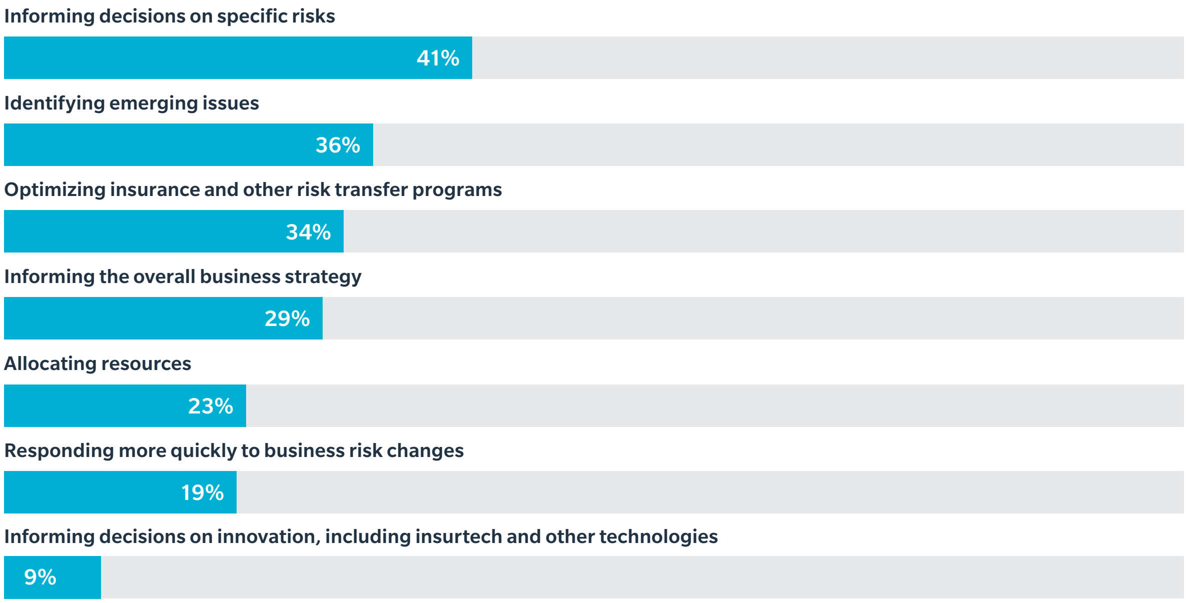
Not every risk executive approaches data with business strategy in mind, as shown by a split between C-suite and risk professional responses. The C-suite's top choices were tied between using data and analytics to inform specific risks and to inform the overall business strategy. Yet among risk professionals, less than one third cited the use of data to inform business strategy as a priority.

FIGURE 2

C-suite wants to see data used to inform the business strategy.

SOURCE: 2019 EXCELLENCE IN RISK MANAGEMENT SURVEY

My organization would benefit by improving its use of data and analytics in the following areas: (Select up to two.)



C-SUITE

1. **Informing the overall business strategy (41%)**
2. Informing decisions on specific risks
3. Identifying emerging issues
4. Allocating resources

RISK PROFESSIONALS

1. Informing decisions on specific risks
2. Identifying emerging issues
3. Optimizing insurance and other risk transfer programs
4. **Informing the overall business strategy (28%)**

Beyond Traditional Insurance

Alternative risk transfer solutions present new opportunities

As companies seek to reduce financial volatility, traditional insurance market solutions are increasingly supplemented by alternative forms of capital allocation. According to Guy Carpenter, alternative capital stood at $95 billion at the end of 2018, an increase of about 9% over a 12-month period and following 16% growth during 2017. Looking ahead, capital owners — including private equity funds, sovereign wealth funds, hedge funds, and pension funds — have earmarked an estimated $1 trillion for investment in risk finance.

Nearly a third (31%) of respondents to the 2019 *Excellence* survey said their organization uses or has used ART solutions, with another 8% saying they will do so within two years (see Figure 3).

Capital owners are looking to diversify their investments. Capital seekers, meanwhile, want to tap additional capital pools to finance risk more efficiently, smooth volatility, and create opportunities for diversification. By leveraging advances in risk modeling, ART solutions can be positioned at the forefront of innovation, providing coverage for risks that are traditionally difficult to quantify or insure — for example, the financial repercussions of a pandemic. But without effective modeling, an organization may not recognize the benefits of alternative finance solutions for such a risk, while capital providers would be unlikely to express interest.

Many factors come into play when assessing a company's readiness for an ART solution, including stakeholder knowledge, company size, and cost. One-third of respondents said they need to learn more before making a decision regarding ART solutions. Data-driven modeling is thus critical as companies need to compare traditional insurance against ART solutions to clearly understand the value each provides.

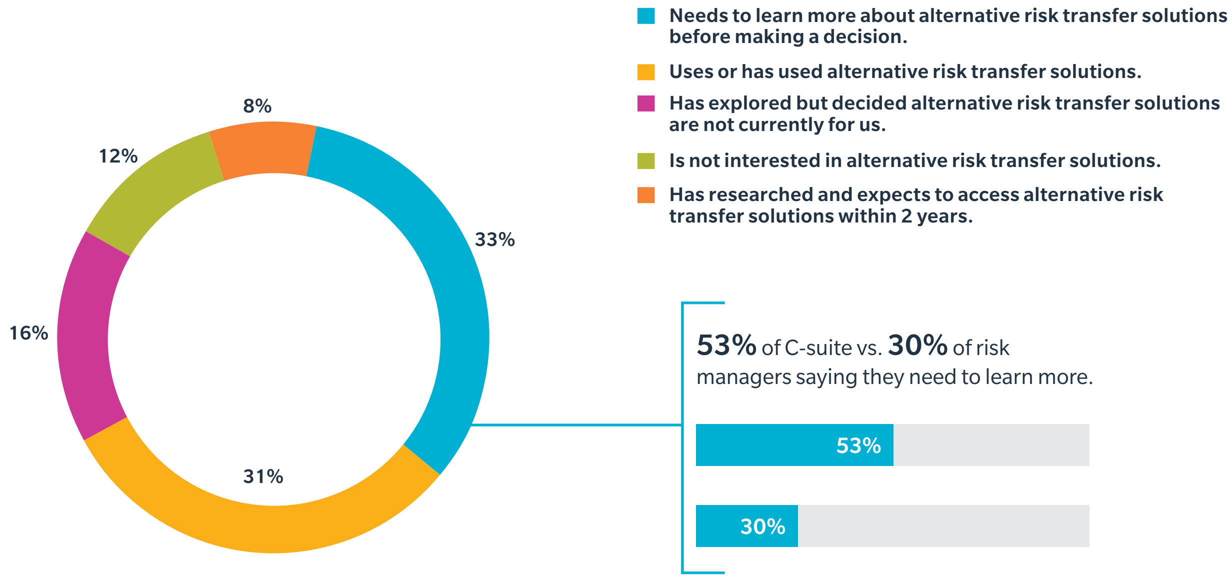
Among C-suite respondents, 53% said they need to learn more about ART solutions, while 30% of risk executives said the same. This should be seen as a call for risk professionals to educate both themselves and senior executives in order to add value to strategy conversations.

FIGURE 3

One-third of companies looking for more information on alternative risk transfer.

SOURCE: 2019 EXCELLENCE IN RISK MANAGEMENT SURVEY

In relation to alternative risk transfer my organization:



Alternative Risk Transfer Solutions in Use

Among focus group members there was general agreement that ART solutions hold promise. “It’s about getting more creative to keep costs down,” said the risk manager for a multinational hospitality company that was looking into parametric solutions to cover properties for wind perils.

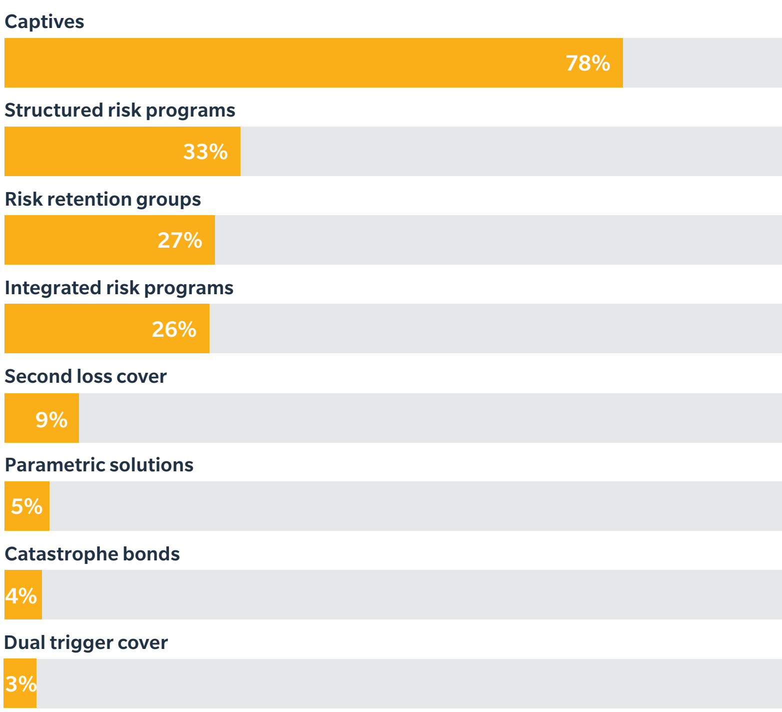
When asked which solutions were in use, it was no surprise that captives were far and away the top response (see Figure 4). Captives are often an integral part of an ART program, regularly used as a stepping stone toward other solutions. (For more on captives, see In Focus, page 6). Following captives, the most prevalent solutions were structured risk programs, risk retention groups, and integrated risk programs.

FIGURE 4

Captives top the list of ART solutions in use.

SOURCE: 2019 EXCELLENCE IN RISK MANAGEMENT SURVEY

My company uses or has used the following forms of risk finance:



WHAT TYPES OF ART SOLUTIONS EXIST?

Structured risk programs: Tailored products that include a portion of self-insurance.

Risk retention groups: These entities, which are owned by their insureds, are based on the federal Risk Retention Act, which allows insurers to underwrite all types of liability risks aside from workers’ compensation.

Integrated risk programs: A combination of different coverages within a single multiyear policy or program, sharing at least one limit of liability.

Second loss cover: A type of reinsurance in which the reinsurer indemnifies the original insurer (ceding company) for losses above a specified limit.

Parametric solutions: Index-based solutions covering a predefined event with a pre-determined payout mechanism that comes into play when the predefined event parameters are met or exceeded.

Catastrophe bonds: Commonly referred to as “cat bonds,” these derivative debt investment vehicles are designed to cover a specifically identified catastrophic loss event or a magnitude of loss associated with an event.

Dual trigger cover: These types of policies kick in when two types of predefined events take place.

IN FOCUS

Captives at the Core of Risk Finance

Captive insurance companies have been around for more than 50 years and are, by far, the best known alternative risk transfer solution — 78% of *Excellence* respondents that use or have used ART solutions have used a captive. A main difference between a captive and ART solutions — such as parametric coverage or integrated risk programs — is that a captive uses a company's own capital, not a third party's.

Captives have proven to be effective in financing self-retained losses for both large and small companies. Owners gain flexible options to finance emerging and high-severity risks, such as cyber liability and terrorism, although there is significant room for growth in using such alternatives. More than half of survey respondents using a captive said they plan to expand its use into other areas in the coming years (see Figure A).

As some *Excellence* focus group participants pointed out, it's relatively simple to compare one's captive to that of peers, adopt best practices, and gradually expand the captive vehicle's use. "We've been working with captives successfully for some years," said the risk manager for a multinational hospitality company, adding that the organization is considering other risks to finance through the captive, including cyber.

Data from the 2019 *Captive Landscape* report found that the biggest key driver for forming a captive is to act as a formal funding vehicle to insure risk that is being self-assumed by the parent company (See Figure B).

Captives can be a crucial component for companies interested in non-traditional solutions, due largely to their flexibility in accessing alternative risk capital. It is often difficult for companies to access alternative risk solutions without using an insurance vehicle — in fact it is an endeavor that few undertake. Instead, many organizations use a special purpose captive as a conduit to access investors. This allows them to purchase tailored risk solutions, most notably catastrophe bonds and integrated insurance products. Increasingly, captives are being used to insure emerging risks including wildfires, asbestos, and cyber.

Creating a captive can thus be a stepping stone for those wanting to diversify their risk finance portfolio. Among *Excellence* respondents who have researched ART solutions and expect to use them within two years, 69% are looking to captives. If increasing numbers of organizations use their captives to access non-traditional risk capital, it could in turn help bring more ART solutions into the mainstream.

FIGURE **A** Captive users planning to expand coverage areas written.

SOURCE: 2019 EXCELLENCE IN RISK MANAGEMENT SURVEY

When asked if they planned to write additional coverage areas in their captives over the next two years:

52% **said yes.**

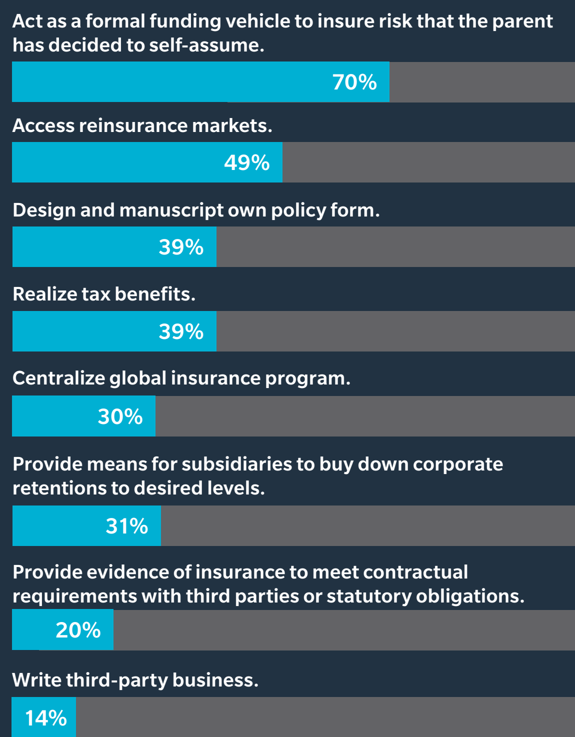
45% **said no.**

4% **said they would write fewer areas.**

FIGURE **B** Captives used for a variety of reasons.

SOURCE: MARSH'S 2019 CAPTIVE LANDSCAPE REPORT

Key Value Drivers



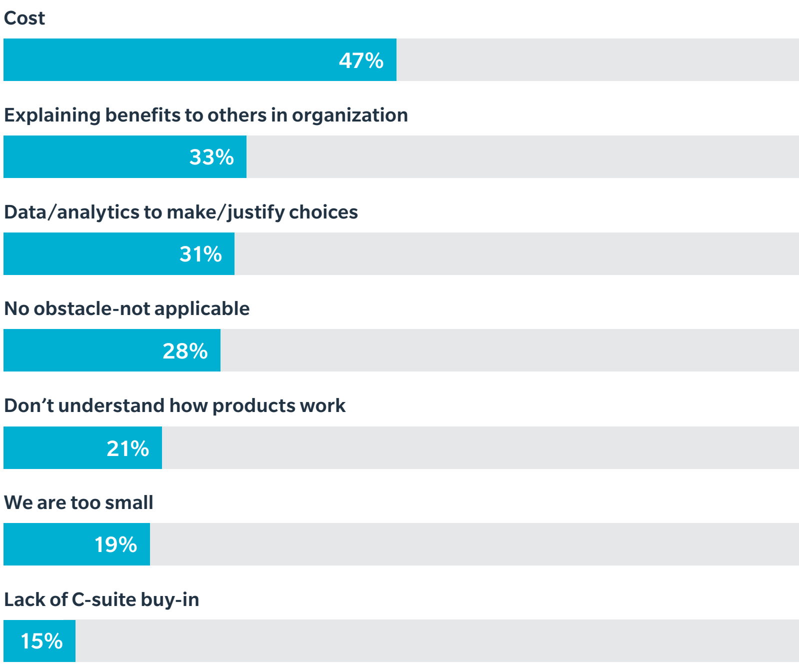
Cost and Understanding Obstacles

FIGURE 5

Obstacles to use of ART solutions include cost and explaining how they work.

SOURCE: 2019 EXCELLENCE IN RISK MANAGEMENT SURVEY

What are the main obstacles to using alternative risk transfer solutions for your organization? (Choose all that apply.)



Top three obstacles to using alternative risk solutions cited by C-suite executives and risk professionals:

C-SUITE		RISK PROFESSIONALS	
1	Don't understand how products work	1*	Explaining the benefits to others in the organization
2	Cost	1*	Cost
3	Too small	3	Data analytics to make /justify choices

*Tie

In looking at obstacles to the use of ART solutions, we again found an opening for risk professionals to educate others in their organization. Nearly half of C-suite respondents said they don't understand how the products work, compared to just 18% of risk professionals who said so (see Figure 5). At the same time, explaining ART solutions to others was the top obstacle cited by risk professionals.

Some focus group participants said they need more information to both understand and explain ART solutions. Having that would help others within the organization to "get more comfortable" with the concept, said the risk executive at a telecommunications company. For risk departments, modeling and otherwise researching available risk finance solutions can complement concurrent investigations of existing and emerging risks. For brokers and other risk advisors, this is an opportunity to not only educate risk executives about ART solutions and their benefits, but also to highlight the value of data and modeling tools.

Cost Remains a Hurdle

Cost was the main obstacle noted by *Excellence* respondents. In understanding costs between ART and traditional solutions, it should be noted that the two offer different benefits. Alternative solutions are rarely, if ever, simply a replacement for traditional insurance. Rather, they are used in targeted areas to address risks that may not be effectively covered through conventional means and to provide additional balance sheet protection that goes beyond that afforded by traditional insurance markets.

Comparing the financial costs between ART products and traditional ones fails to recognize the full value of ART solutions. While the cost of the product is important, decisions to use ART solutions are often driven by the protection afforded to the organization.

In Alternative Risk, Size Matters

Focus group participants agreed that company size plays a strong role in decisions around the suitability of ART solutions. “Smaller companies don’t have the ability to take on significant risk,” said the risk manager at a multinational networking products developer. “I don’t see smaller organizations stepping outside the box.”

It was somewhat surprising that nearly a quarter of the largest companies said they are simply not interested in ART solutions given that they are typically in a strong position to benefit. Larger companies are more likely to use ART solutions as they have stronger balance sheets and a greater ability to retain risk. There is also a growing interest among them to hedge their risks by using large aggregate excess programs that provide more material limits above very large retentions.

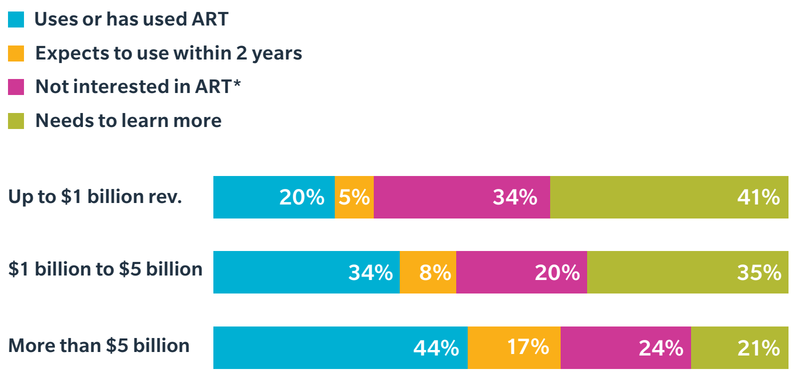
Still, 41% of smaller organizations say they want more information about ART solutions (see Figure 6). As alternative markets evolve, it’s possible their products will become more relevant to smaller companies.

FIGURE **6**

Largest companies more likely to use ART solutions; many smaller companies want more information.

SOURCE: 2019 EXCELLENCE IN RISK MANAGEMENT SURVEY

In relation to alternative risk transfer solutions, my organization:



***Includes those that have researched and decided against using ART solutions.**

As alternative markets evolve, it's possible their products will become more relevant to smaller organizations.

Strategic Use of Data and Analytics

Data and modeling can open the door to new opportunities

C-Suite Sees a Gap in Analyzing Data

A major gap respondents cited in organizations' risk management function is the integration with both operations and strategic planning (see Figure 7). This should concern those who believe risk departments should be strategic partners to the overall business — strategic thinking about risks cannot take place in a vacuum. In turn, data and analytics are increasingly a critical component of adding strategic value.

While integration with strategic planning and operations are recognized as common concerns for both executives and risk management professionals, C-suite respondents also called out the lack of data analysis. They saw it as a bigger issue than a lack of collaboration across the organization, educating others on risk management practices, and five other performance gaps that risk professionals ranked higher.

This divergence between C-suite executives and risk professionals' view of risk data analysis is noteworthy. Is the C-suite's view unfounded, or are those in the risk management function failing to see an existing problem? Whatever the reason, it points to a gap in priorities and shows the need for risk management professionals to deliver higher quality data and analysis, while also highlighting the need for better communication.

As emphasized by some focus group members, the sheer volume of available data can be overwhelming, whether for assessing ART solutions or any other facet of risk management. "Data is truly an area of focus, but we're trying to keep it simple because you can drown in it," said a risk executive at a multinational real estate trust.

There is a disconnect between how C-suite executives view the performance of risk data analytics and how risk executives view it.

#2 gap:

C-suite respondents said analyzing risk data is the second largest gap in risk management's overall performance.

#10 gap:

Risk executives said it was far down the list of problem areas.

FIGURE 7

C-suite finds analysis of risk data lacking.

SOURCE: 2019 EXCELLENCE IN RISK MANAGEMENT SURVEY

The biggest gaps in the performance of my organization's risk management function involve: (Select up to three.)

FIGURE 8

Use of risk data tends toward the tactical, not the strategic.

SOURCE: 2019 EXCELLENCE IN RISK MANAGEMENT SURVEY

Risk management professionals today are challenged with evolving their role in data management from what some saw as an "administrative" one — moving data/information from one place to another — to a more "strategic/analytical" role that embraces data for risk management decision-making. But to be an advisor, one needs to understand how to leverage the data more effectively.

When asked how companies use their risk management data, respondents leaned toward uses that appeared more tactical than strategic (see Figure 8). True integration with their organization's strategic planning will be more likely to occur for those who deliver data-based advice to top management; for example, showing how AI and machine learning can provide new opportunities to manage risk.

The most common use of data cited by respondents was to present it to outside providers, followed by other tactical uses such as for insurance renewals, ad hoc uses, and providing it to field operations. The first "strategic" use of data — for long-term adjustments to risk management strategy — was fifth on the list. Less than 30% said they specifically use risk data for strategic planning, which highlights another opportunity for risk executives.

Real-Time Risk Management

One new approach enabled by technological advances is "real-time" risk management, which holds the potential to reduce risk and transfer it more effectively. To understand what makes real-time risk management possible, consider three concurrent developments that are reshaping the risk landscape:

- **New real-time data streams.** Telematics, satellite imagery, wearable technology, sensors, mobile phones — these and other advanced technologies produce a near nonstop stream of data, much of which can be analyzed through structured algorithms to identify, assess, and manage risk.
- **Artificial intelligence.** With AI and machine learning, it's possible to process a lot of data quickly. This can allow for the creation of a dynamic view of risk that companies can use to take intervening decisions and actions or evaluate as part of their considerations in how alternative solutions may be incorporated into an overall risk transfer and finance strategy.
- **Insurance premium pricing differentials.** Policies that adjust price or coverage in relation to changes in risk signals are now available and being tested in certain markets. For example, some personal auto insurance policies provide premium credits based on insights gained through telematics-based driving behavior data. This is a new concept, and insurers are exploring the potential in other property-casualty insurance areas.

Among this year's *Excellence* survey respondents, 31% said they gather and use risk-related data around some of their exposures in real time (see Figure A). Given how new the concept is, this represents a significant proportion of risk departments. The caveat: It's difficult to say how many of the positive responses simply mean that the organization is gathering real-time data about risk exposures, but not actually using the data to manage risk.

At the same time, consider that the top priority among respondents for improving risk capabilities in 2019 was to improve the use of data and analytics, followed by upgrading risk management technology and access to information. Real-time risk management would seem to mesh with both goals.

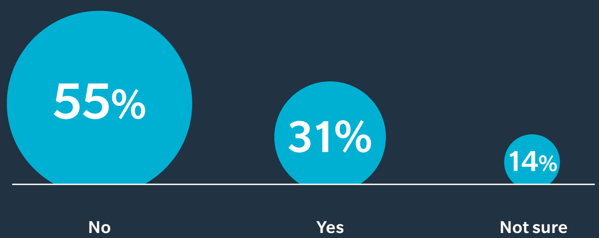
One potential stumbling block to the adoption of real-time risk management is the apparent gap in risk departments' engagement with technology use across the organization. We first asked in the 2017 *Excellence* survey, and then again in 2019, which common disruptive technologies companies are currently involved with or exploring (see Figure B).

FIGURE A

Less than one-third of organizations leverage real-time risk data.

SOURCE: 2019 EXCELLENCE IN RISK MANAGEMENT SURVEY

We gather and use data/information about many of our risk exposures in "real-time" (typically hourly, daily, or within 48 hours).



The data shows that many risk executives — and others — may not fully recognize the breadth of their organization's involvement with new technologies. In many areas — including IoT, sensors, telematics, robotics, and wearable technology — the percentage saying their organization uses or plans to use the technology has dropped since 2017. This does not align with other studies that show widespread use. For example, some estimates say 80% of companies are using AI in some form, but only 34% of *Excellence* respondents said their organization uses or plans to use AI.[2] Similar statistics can be found for other technologies on our list.

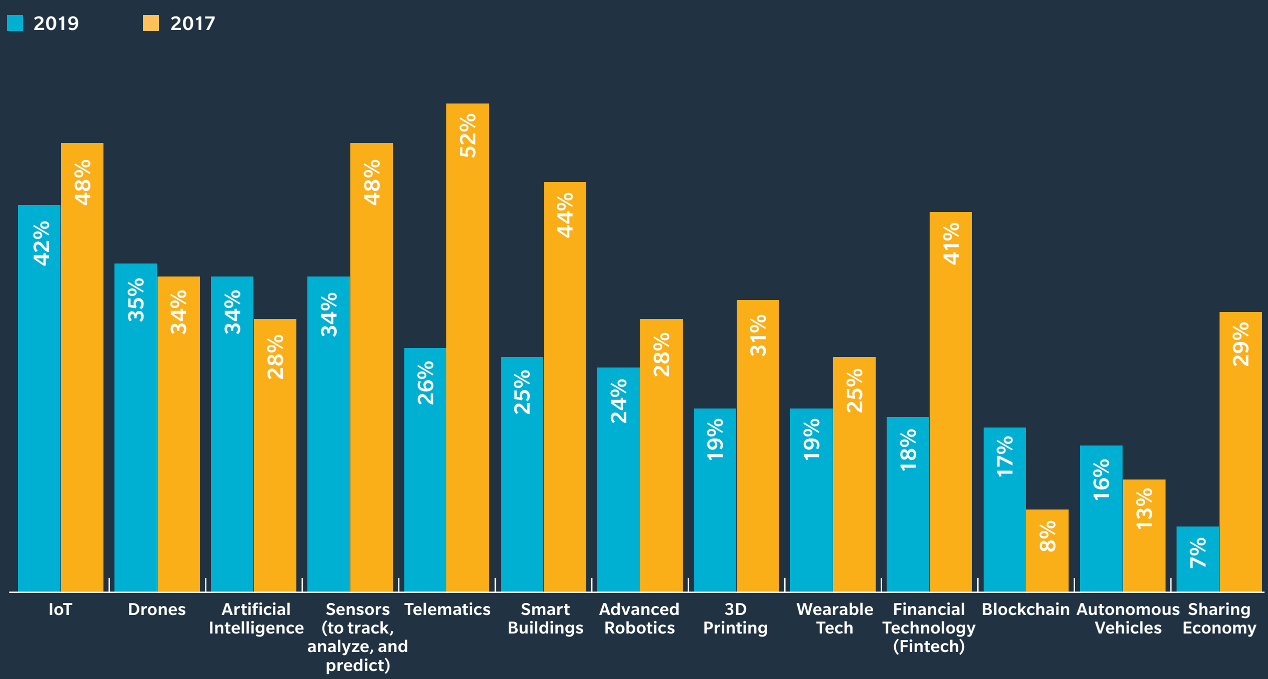
2 https://www.multivu.com/players/English/8075951-teradata-state-of-artificial-intelligence-ai-for-enterprises/

FIGURE
B

Companies using data-capturing technologies.

SOURCE: 2019 EXCELLENCE IN RISK MANAGEMENT SURVEY

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



What accounts for this discrepancy? Are risk management professionals focusing on current rather than emerging risks? Did some encounter adoption barriers between 2017 and 2019? Are they unfamiliar with the details of their companies' current operations or future plans? It's not entirely clear from the survey data, but going forward we anticipate the use of these emerging technologies in risk management to grow.

But even among those who said they do not use data in real time for risk management, 38% said they use the IoT, drones and AI are each used by 29%, 28% use sensors, and 21% telematics. All of those technologies have the potential to provide data and information that could be used in a real-time risk management approach.

Each new technology changes risk profiles, meaning that companies cannot afford to be surprised when one fails or goes awry. Each also brings opportunities. Risk executives who understand how technology impacts their exposures can fortify their strategic role, perhaps by exploring and championing such developing approaches as real time risk management.

The Future of Alternative Risk Finance

In deciding whether to explore ART solutions, organizations should begin by determining whether existing insurance products meet their needs. If not, it may be time to look outside the traditional marketplace (see Figure 9).

For example, consider the communications, media, and technology (CMT) industry. Just one-third of *Excellence* respondents from this sector said they were using or planned to use ART solutions. And yet, in a recent Marsh survey, CMT companies expressed wide dissatisfaction with available insurance solutions for such critical risks as data security and privacy, IT resiliency, technology errors and omissions, and others. Typical responses to such dissatisfaction was to adjust the "traditional" areas of risk finance programs, such as expanding terms, conditions, and definitions or changing limits and retentions. Just 4% in Marsh's CMT survey said they were leveraging alternative risk capital, likely representing a missed opportunity for many.

Companies that see potential in ART are looking at a range of coverage areas. At the top of the list are hard-to-insure exposures, cited by 38% of *Excellence* respondents. This underscores the need for risk professionals to develop a clear understanding of their company's overall risks, including those coming from new ventures and technologies. Others are exploring the potential for alternative solutions in obtaining better pricing on insurance products, managing property catastrophe risks, and managing financial and professional risks.

C-suite executives zeroed in on managing cyber risk, with more than half saying this is where they would like to see ART help. C-level executives are well aware that a cyber-attack could cost hundreds of millions of dollars and cripple a company. While risk professionals are, of course, well aware of cyber risks, they were far less likely to cite it as an area in which they were looking to ART solutions. This points to the continued need for risk professionals and C-suite leaders to engage around the emerging risks associated with cyber and technology and align on the strategies to address them.

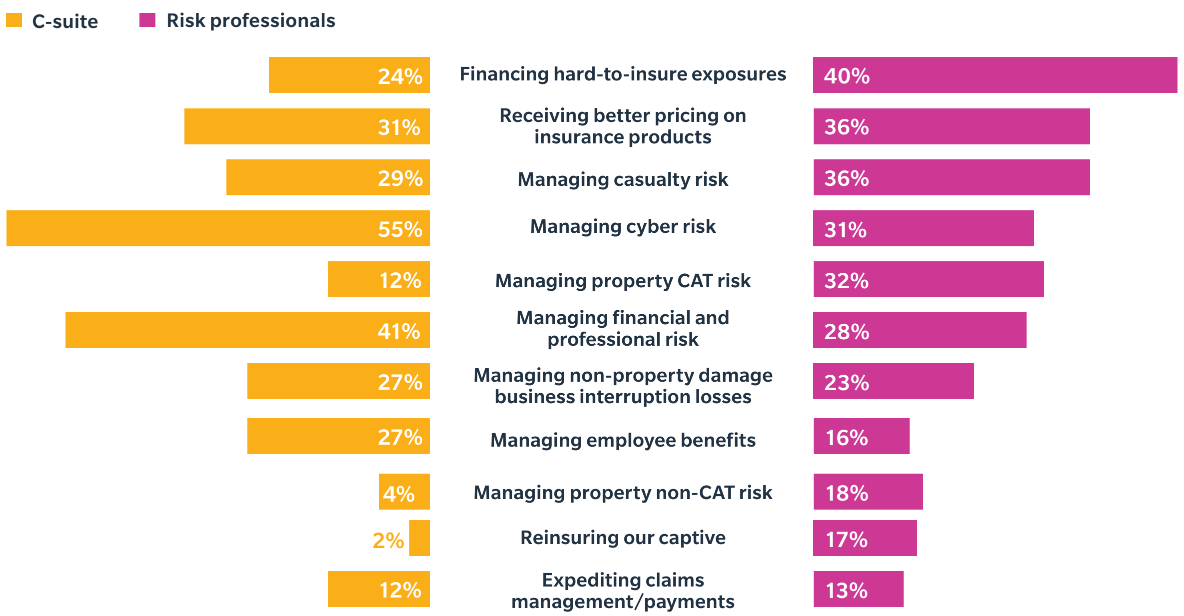
As interest in ART solutions grows among organizations, capital markets are looking to them to provide more informative data-based risk modeling. As they do so, capital providers can be expected to become more innovative in responding to the need.

FIGURE 9

Companies interested in ART for everything from hard-to-insure risks to cyber exposures.

SOURCE: 2019 EXCELLENCE IN RISK MANAGEMENT SURVEY

My organization could use alternative risk transfer solutions to help in the following areas: (Choose all that apply.)



“Data is truly an area of focus, but we're trying to keep it simple because you can drown in it.”

— RISK EXECUTIVE AT A MULTINATIONAL REAL ESTATE TRUST

Recommendations

Undertake a 360-degree analysis.

Work to understand the new technologies and value streams that exist within your company, and assess their associated risks.

Embrace data and analytics.

Take advantage of both internal and external data sources. Leverage new technologies for accessing "real-time" data to inform business decisions. Model changes in your organization's risk profile, desired level of volatility, and overall risk-bearing capacity.

Be the internal risk finance advisor.

Educate yourself about innovations in alternative risk transfer solutions and their fit within your organization's risk portfolio. Position yourself as the go-to person for ART insights and educate internal stakeholders.

Promote a forward-looking approach.

Leverage analytics and contribute insights that support future strategy decisions for your organization.

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