troutman sanders

Emerging Technologies

Survey Report

About the Survey

During the second half of 2018, Troutman Sanders issued a survey to C-level executives and senior decision-makers in the information technology, finance, product development, and legal departments of U.S. companies to help understand how they are currently using or evaluating the implementation of four emerging technologies: artificial intelligence (AI)/machine learning, data analytics, blockchain, and the Internet of Things (IoT). The survey inquired about the level of investment companies are making, both in terms of dollars and talent, as well as the factors that are influencing the extent to which they are using these technologies.

The 413 respondents to the Emerging Technologies Survey came from a broad cross section of public and private companies in five primary industries—financial services/banking, healthcare/life sciences, insurance, manufacturing, and energy.

Due to rounding and questions where respondents could select more than one answer, certain final percentages may not equal 100 percent.

We appreciate and thank those who contributed their views and shared their experiences.

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With Technology Investment Rising, Risk Management Needs Sharper Focus

Technology-driven innovation is evolving at a rapid pace, and companies are finding it difficult to manage the associated risks and business considerations that arise as they try to keep up with the impact of emerging technologies and other innovations.

The issues addressed in the Troutman Sanders Emerging Technologies Survey include the extent to which emerging technologies are being adopted, the level of investment that companies are making and the risks and obstacles to execution.

Consistent among the respondents were concerns about using and protecting data. When implementing emerging technologies, such as AI, data analytics, blockchain, and IoT into business operations, data security is a top concern.

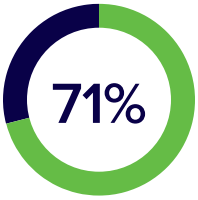
While data is the very bloodline of emerging technologies, organizations worry that it is among their most exposed vulnerabilities. As the world becomes increasingly integrated, organizations are worried that owning data is ever more important, yet problematic, especially when they feel their existing risk management efforts may not be up to the task.

91% of respondents reported that their organization's risk management practices need at least some level of improvement.

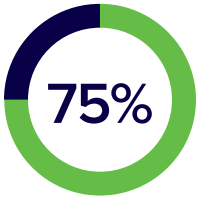
Looking toward the future, respondents felt that over the next three to five years, for AI, data analytics and blockchain, their biggest concerns center on regulation and legal risk. For IoT, respondents were marginally more preoccupied about funding and investment scarcity.

58% of the respondents noted **data privacy and cybersecurity** as a significant concern.

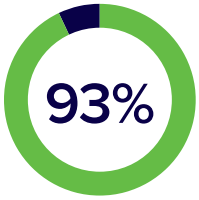
Despite the risks associated with these emerging technologies, respondents reported a fairly high adoption rate.



using AI and machine learning

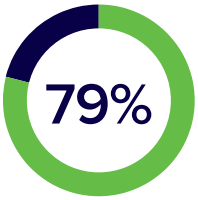


using IoT

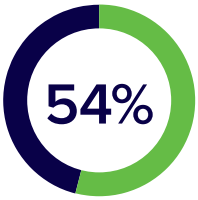


using real-time data analytics

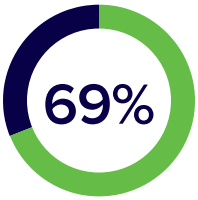
Companies realize the importance of adopting the latest technologies and are committing to allocate funds and resources to achieve their desired results. Our study found that in 2019:



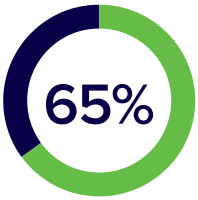
of respondent companies plan to increase technology spending



plan to boost their technology budget by more than 10 percent



plan to add additional employees to develop emerging technologies



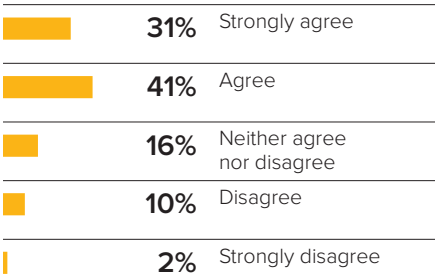
of companies that are adding technology staff anticipate a greater than 5 percent rise in new tech hires

While companies realize the need to bolster their technology products and employ top tech talent, they have not come to this decision without some hesitation. Among our respondents, 51 percent had significant concerns about rising technology budgets, while 44 percent felt finding and retaining high-tech talent is a serious challenge.

In the following pages, we share not only the results of the survey, but also our thoughts on how to mitigate the risks inherent in emerging technologies.

Companies are Embracing Emerging Technologies

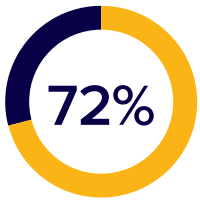
To what extent do you agree with this statement: My organization has a technology and innovation strategy that allows us to stay ahead of new products or offerings developed by competitors.



Survey respondents spoke loud and clear that they are adopting emerging technologies, but not without some trepidation.

Key Findings

Respondents were highly confident in their company's technology and innovation strategy.



of respondents agree or strongly agree that emerging technologies allow them to stay ahead of the competition.

Companies with:

1,000+ employees **$1B+** revenues

were more confident than smaller ones.

C-suite respondents, especially chief technology officers, chief information officers and chief innovation officers, reported the most confidence in their strategies.

Innovation Strategy and Key Risks

What do you see as the biggest risk to the adoption of the following technologies over the next 3-5 years?

	Regulation, litigation and legal risk	Reputational risk	Funding and investment scarcity	Competition within industry	Resource allocation
Data analytics	30%	14%	17%	18%	20%
Artificial Intelligence (AI) and machine learning	26%	17%	25%	15%	17%
The Internet of Things (IoT)	25%	11%	29%	20%	16%
Blockchain technology	30%	16%	24%	15%	15%

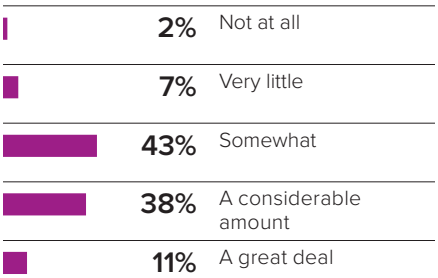
As excited as companies are to adopt the emerging technologies, they are realistic about the need to mitigate new risks.

Key Findings

The highest portion of respondents said that regulation, litigation and legal risk is the top obstacle to adoption of AI, data analytics and blockchain in the next three to five years.

For IoT, funding and investment scarcity edged out legal risks. For the other technologies, budget constraints ranked second, or a close third in the case of data analytics.

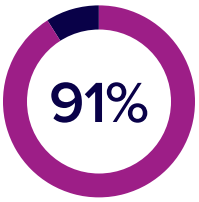
Indicate the extent to which your organization's risk management practices could be improved to better monitor and quantify risks associated with the adoption of emerging technologies.



Key Findings

The results are consistent with a *2017 KPMG Tech Risk Management Survey*, which concluded: "While not actively assessing the risks of adopting emerging and disruptive technologies, the majority of those surveyed are very aware that these risks exist. And, the risks may only escalate as companies seek to increase their investment in these technologies."[1]

The data reveals broad consensus among large and small organizations, C-suite executives and mid-level decision-makers across sectors that companies need to improve risk management.



of respondents say their organization's risk management practices need improvement.

Emerging Technology Stance

Which of the following most accurately defines your company's approach to adopting emerging technologies?

Key Findings

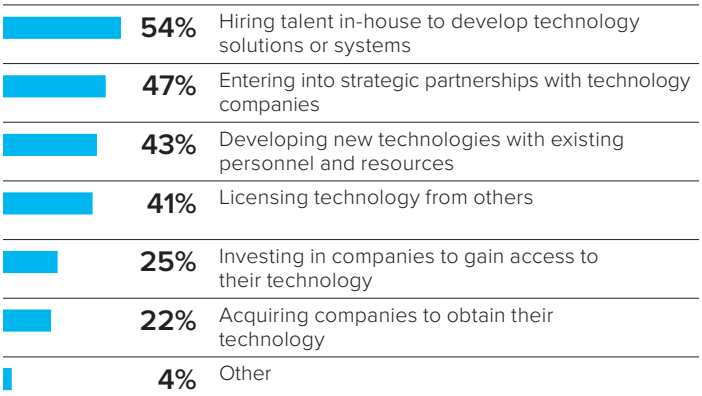
How respondents see their company:

37% Challenger
30% Follower
27% Leader

"Market Leaders"

How CEOs, presidents and owners across industries describe their firms.

What are the main strategies your organization is employing to implement new technology-based solutions or processes that enhance how you do business or serve customers?



Key Findings

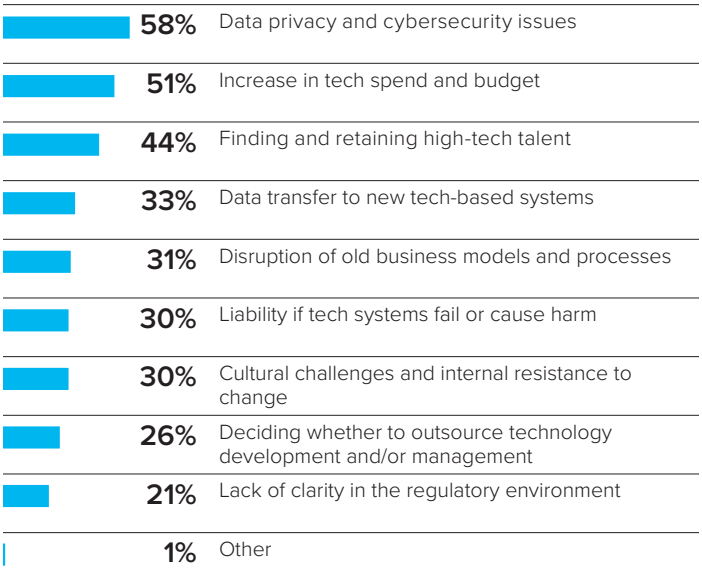
Larger organizations are:

more likely than smaller ones to hire talent in-house.

also more likely to develop new technologies with existing personnel and resources, showing parallel paths toward digital goals.

According to an HBR study, hiring for technology roles is difficult because it typically requires a broad range of skills: advanced statistics/mathematics, new analytics methodologies, advanced systems analysis, business fundamentals, regulatory and legal understanding, and general IT technical and data architecture skills.[2]

Which of the following are of significant concern to your organization regarding the adoption or implementation of emerging technologies?



Key Findings

Several factors are driving concerns over privacy and cybersecurity. In addition to high-profile security breaches and privacy violations, multinationals have been rushing to comply with the European Union's General Data Protection Regulation (GDPR), which went into effect in May of 2018. More recently, California became the first state to pass a data privacy law, the California Consumer Privacy Act, which will go into effect in 2020.

Corporate law departments are also boosting technology budgets.

"Expanding the use of technology"

was the second most common tactic for handling law departments' rising workload, cited by 31 percent of respondents to an HBR Consulting survey.

When asked about which technologies they would implement in the next two years, respondents answered:[3]

29% Contract management solutions
28% AI technology
26% Legal spend analytics

Practical Considerations for Managing Emerging Technology Risks

Many survey respondents expressed concern about new risks presented by emerging technologies. The following are some practical considerations on how to begin preparing for the risks posed by the top technology acquisition and integration strategies.

Addressing Data Privacy Risks
As interconnectivity grows, so do the opportunities to develop better products, and the companies that fail to leverage those opportunities may find themselves falling behind their competitors. Our survey underscores that emerging data-based technologies are heavily sought after for integration across all industries.

As products and services become increasingly data-driven, developers and users of emerging technologies must address the requirements of global data privacy laws, which continue to evolve. See *Troutman Sanders Data Privacy: The Current Legal Landscape 2018 Reviewed*. C-level executives and in-house counsel are very concerned about data security and the potential for data misuse. New use cases for data will create vast new legal issues. But looking to precedence derived from old technologies and services offers few guidelines. Businesses must adopt privacy compliance regimes that promote good data hygiene and constructive use of data. In addition, staying informed of recent enforcement actions, legal cases and guidance and regulations focused on the data use and innovation landscape will be critical.

Protecting Against Vendor-Related Risks
In licensing technology, it is essential to recognize that a vendor's actions or technology may present risks for which a company could be liable, but that are beyond the company's control. When licensing technology from a vendor, it is therefore critical to take stock of the potential risks and build indemnities into the contract. For instance, a licensed solution may not comply with the requirements of the GDPR or the California Consumer Privacy Act, raising regulatory risks for their clients.

Ensuring Data Retention Compliance
Companies should consider the litigation readiness and e-discovery implications for any new technology-based tool. Data may need to be collected for discovery in an inquiry concerning whether customer data use complies with applicable statutes, or to assess whether certain data was compromised during a breach. Companies must be able to preserve, analyze and export relevant information for investigations and litigation. By their very nature, custom and emerging technology solutions will not have standard modes of preservation and exportation for use in discovery. Custom solutions may also contain or create additional information that must be retained, such as how users access data and how the system processes it.

Managing In-House Talent Risks
For any company seeking to deploy emerging technologies, new talent is an important investment that calls for thorough legal and risk protections. A key concern is securing ownership of intellectual property. To do this, companies need to use the appropriate safeguards, such as confidentiality and work product assignment agreements, with both in-house hires and contingent workers.

Another issue for tech talent is the use of restrictive covenants, such as noncompete, nondisclosure and nonsolicitation provisions. These contractual terms are controversial among tech workers. Proponents say they are necessary to protect valuable trade secrets, while critics argue that they hinder worker mobility and startup activity.

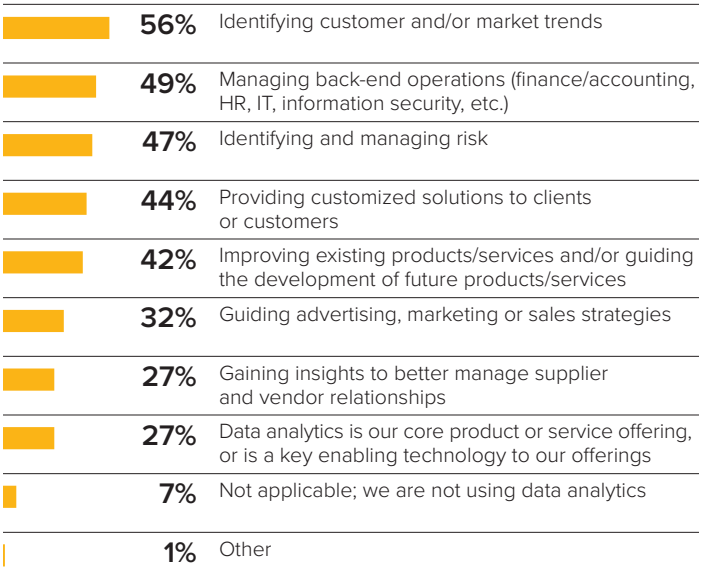
Restrictive covenants must be carefully reviewed to ensure enforceability. The provisions must be tailored to each state and often to a worker's individual employment situation. There is no one-size-fits-all approach if a company wants an enforceable restrictive covenant. At a minimum, to prevent potentially significant disputes, companies should investigate whether new hires are bound by restrictive covenants and implement measures to guard against violating them.

Handling Strategic-Partnership Risks
Given the speed of innovation, many legacy companies have been increasing their partnerships with technology companies. While this tends to be an effective way to secure high-quality talent and respond quickly to marketplace changes, it also raises unique risks. Partnerships can result in joint ownership of intellectual property. This tends to be an unfavorable situation, requiring the owners to grant permission for virtually any disposal of the intellectual property rights. The joint owners may have very different interests in the technology, possibly leading to disputes and lawsuits.

Further, when developing new technology, companies should be sure to consult with intellectual property counsel to consider the options for protecting it. It's also important to consider that others may have already secured patent rights on similar technology. Using such technology poses a variety of risks, including lawsuits resulting in damages and injunctions. A careful review by intellectual property counsel can help identify and mitigate risks.

Data Analytics

How, if at all, is your organization currently using data analytics?



Key Findings

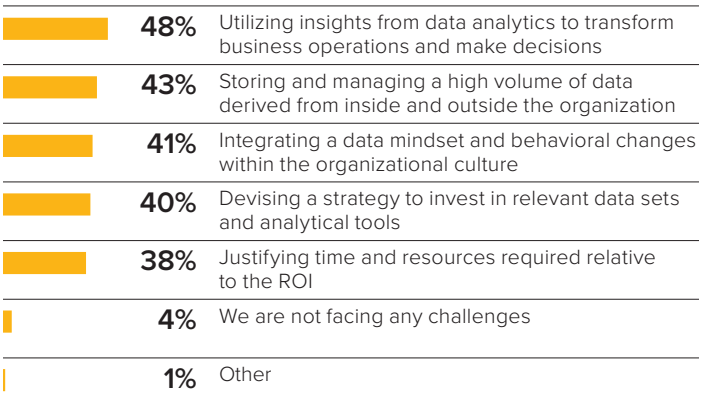
"Big data analytics has risen from eighth in importance to third..."

according to Boston Consulting Group's 2018 innovation report.

More than half of respondents said that their companies use data analytics for a variety of purposes connected with innovation, including identifying new areas for exploration, providing input for idea generation, revealing market trends, informing innovation investment decisions, and setting portfolio priorities."[4]

Finance department professionals were more than twice as likely as CEO to use data analytics for back-end operations, suggesting greater contact with technology.

Which of the following challenges does your organization face in using data analytics?



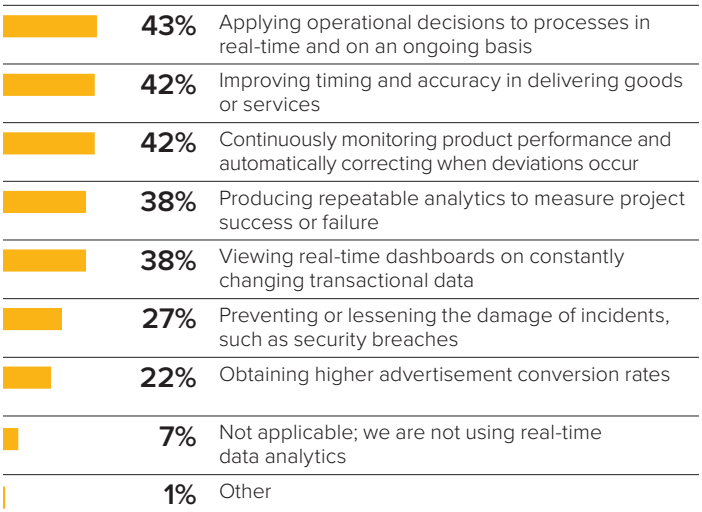
Key Findings

"Utilizing insights to transform business operations and make decisions"

65% of respondents working in larger firms with revenue over $1 billion citied this as a big challenge.

McKinsey notes that many companies are struggling to apply analytics insights: "It's starting to dawn on company executives that they've failed to convert their analytics pilots into scalable solutions." This, McKinsey adds, is because organizations frequently lack analytics translators "who can help leaders identify high-impact analytics use cases and then 'translate' the business needs to data scientists, data engineers, and other tech experts so they can build an actionable analytics solution."[5]

How, if at all, is your organization currently using real-time data analytics?



Key Findings

The majority of C-level respondents said their firms are using real-time data analytics to improve the timing and accuracy of delivering goods and services. They are also applying operational decisions to processes in real time and on an ongoing basis.

Large organization respondents were:

Over 50%

more likely than smaller organization respondents to say their company uses repeatable analytics to measure project success or failure.

2x

as likely as smaller organization respondents to use real-time data analytics to prevent or lessen the damage of incidents, such as security breaches.

Artificial Intelligence

How, if at all, is your company currently using AI and machine learning?

31%	Providing customized solutions to clients or customers
31%	Identifying customer and/or market trends
29%	Not applicable; we are not using AI or machine learning
29%	Improving existing products/services and/or guiding the development of future products/services
27%	Managing back-end operations (finance/accounting, HR, IT, information security, etc.)
27%	Identifying and managing risk
15%	Guiding advertising, marketing or sales strategies
13%	AI or machine learning is our core product or service offering, or is a key enabling technology to our offerings
11%	Licensing to customers for use in their products

Key Findings

Top uses for AI include:

> **Identifying customer or market trends**

> **Providing customized solutions to customers**

Fewer than a third of respondents are not using AI or machine learning.

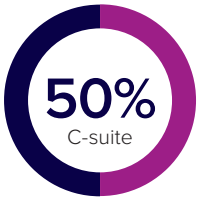
The non-adopter respondents are roughly evenly split between small and large organizations.

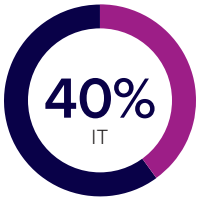
Which of the following are of concern to your organization in utilizing AI?

53%	Finding individuals who have technical skills and expertise in human-machine collaboration
51%	Data collection, management and analysis issues
49%	High investment costs
35%	Difficulty evaluating options for employing AI and machine learning
31%	Competition from technology companies
2%	We do not have any concerns
1%	Other

Key Findings

Finding qualified individuals was identified as a challenge by:





Top concerns include:

- **Finding individuals with technical expertise**
- **Data collection**
- **Management and analysis issues**
- **High investment costs**

IoT

How, if at all, is your company currently capitalizing on the opportunities presented by the IoT?

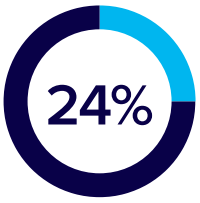
33%	Providing customized solutions to clients or customers
33%	Identifying and managing risk
31%	Identifying customer and/or market trends
31%	Improving existing products/services and/or guiding development of future products/services
30%	Managing back-end operations (finance/accounting, HR, IT, information security, etc.
24%	Not applicable: we are not using IoT-enabled devices
19%	Ensuring equipment safety and protecting against physical threats
18%	Guiding advertising, marketing or sales strategies
10%	IoT is our core prduct or service offering, or is a key enabling technology to our offerings
1%	Other

Key Findings

Among C-level executives,

"Providing customized solutions for clients"

was a top use, with nearly two in five choosing this response.



of respondents at both small and large firms said they are not using IoT.

A 2018 Bain & Company survey predicted that the IoT market would double to $520 billion by 2021, but stated that "despite bullish growth predictions, enterprise customers have tempered their expectations about the pace of adoption." The report explained,

"Many enterprise customers say they are tempering their expectations about pace of IoT adoption, realizing that complete solutions may take longer to implement and yield the expected return.[6]"

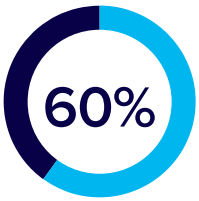
Which of the following are of concern to your organization regarding IoT-enabled devices?

52%	Mitigating risks related to cybersecurity, data breaches and privacy concerns
44%	Managing the volume of data resulting from increased connectivity of devices
41%	Hiring and training professionals who understand the capabilities and risks associated with an IoT-centered approach
39%	Handling the risks of business interruption if a compatible business model is not developed
32%	Extracting insights from large databases
5%	We do not have any concerns

Key Findings

Research by Bain & Company finds that security remains a top barrier for IoT adoption:

"Enterprise customers would be willing to buy more IoT devices if their concerns about cybersecurity risks were addressed – on average, at least 70 percent more than what they might buy if their concerns remain unresolved.[7]"



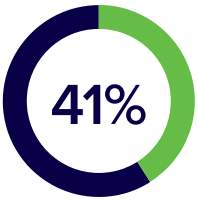
of organizations say they do not have the analytics capabilities to take advantage of the data generated from IoT sources,[8] according to a survey by Capgemini.

Blockchain

How, if at all, is your company currently using blockchain technology?

41%	Not applicable; we are not using blockchain technology
25%	Offering a security, identity or anonymization service
24%	Assisting with legal compliance, transactions or contract management
22%	Ensuring efficient supply chain management
22%	Increasing transparency of transactions
21%	Securing record keeping
17%	Offering coins or tokens, or helping facilitate virtual coin transactions
11%	Blockchain is our core product or service offering, or is a key enabling technology to our offerings
1%	Other

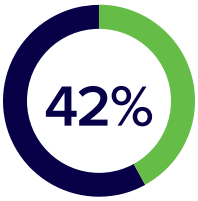
Key Findings



of respondents across all industries, reported their organizations are not using blockchain technology at this time.

Greenwich Associates found that blockchain is posing challenges:

"Despite the enthusiasm and hype surrounding blockchain technology, its integration in existing systems is proving difficult...



of respondents identified scalability as a significant problem."[9]

Which of the following are of concern to your organization in using blockchain technology?

59%	Cybersecurity and data confidentiality risks to the blockchain network
41%	Vulnerability to operational and technological failures
40%	Uncertainty about legal and regulatory requirements
38%	Third-party risk when sourcing technology from external vendors
32%	Organization's level of preparedness to work across and outside the enterprise
24%	Investment required to implement and maintain blockchain technology
4%	We do not have any concerns
1%	Other

Key Findings

"Cybersecurity and data confidentiality risks" are a top concern across industries and job functions.

Blockchain is widely regarded as being able to augment cybersecurity, although every system has its vulnerabilities. According to Deloitte, "the biggest vulnerability in the blockchain framework will lie outside the framework in 'trusted' oracles. A corrupted oracle could potentially cause a domino effect across the entire network. An attack on an oracle could either be direct or indirect via third parties connected to the oracle."[10]

Conclusion

Companies are adopting emerging technologies at a significant pace and are widely optimistic about how this will improve their business. The rapid transformation, however, is raising valid concerns about the potential risks. As outlined in this report, companies should carefully review their policies and procedures for a wide variety of risks—ranging from intellectual property protection and disputes to data privacy best practices and compliance—to ensure they are adequately guarding against them.

New laws will be written and precedents set in the next three to five years. Now more than ever, companies must be vigilant about regulatory changes and key decisions.

Notes

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