Hit or myth? Understanding the true costs and impact of cybersecurity programs

Jason Choi, James Kaplan, Chandru Krishnamurthy, and Harrison Lung

Cybersecurity is a critical but often misunderstood aspect of companies' technology infrastructures. Here's how business and technology leaders can ensure that important corporate assets remain safe.

Companies are using all kinds of sophisticated technologies and techniques to protect critical business assets. But the most important factor in any cybersecurity program is trust. It undergirds all the decisions executives make about tools, talent, and processes. Based on our observations, however, trust is generally lacking in many organizations' cybersecurity initiatives—in part, because of competing agendas. Senior business leaders and the board may see cybersecurity as a priority only when an intrusion occurs, for instance, while the chief security officer and his team view security as an everyday priority, as even the most routine website transactions present potential holes to be exploited.

This lack of trust gives rise to common myths about cybersecurity—for instance, about the

types of threats that are most relevant, the amount of spending required to protect critical data, and even about which data sets are most at risk. Perceptions become facts, trust erodes further, and cybersecurity programs end up being less successful than they could be. If incidence of breaches has been light, for instance, business leaders may tighten the reins on the cybersecurity budget until the CIO or other cybersecurity leaders prove the need for further investment in controls—perhaps opening themselves up to attack. Conversely, if threats have been documented frequently, business leaders may reflexively decide to overspend on new technologies without understanding that there are other, nontechnical remedies to keep data and other corporate assets safe.

In our experience, when there is greater transparency about companies' cybersecurity programs, and trust among the various stakeholders, companies reap significant benefits. Businesses can make better decisions about their security priorities and response plans, as well as the training and investments required to hold attackers at bay. In this article, we explore four common myths executives tend to believe about cybersecurity, and we suggest joint actions business and IT executives can take to create more transparency and understanding company-wide about the technologies and processes that are most effective for protecting critical business information.

Separating myths from facts

Based on our work with companies across industries and geographies, we've observed that business and cybersecurity leaders fall under the sway of four core myths when discussing or developing protection programs for corporate assets.

Myth 1: All assets in the organization must be protected the same way

Not all data are created with equal value. The customer data associated with a bank's credit-card program or a retailer's loyalty-card program are of greater value than the generic invoice numbers and policy documents that companies generate in-house. Companies don't have endless resources to protect all data at any cost, and yet most deploy one-size-fits-all cybersecurity strategies. When faced with a request from the IT organization for more funding for cybersecurity, C-suite leaders tend to approve it reflexively (particularly in the wake of a recent security breach) without a more detailed discussion of trade-offs—for instance, how much is "too much" to spend on protecting one set of critical data versus another? Or if the company protects all external-facing systems, what kind of opportunities is it missing by not bringing suppliers into the fold (using appropriate policies and governance approaches)? Indeed, most business executives we've spoken with acknowledge a blind spot when it comes to understanding the return they are getting on their security investments and associated trade-offs.

In our experience, a strong cybersecurity strategy provides differentiated protection of the company's most important assets, utilizing a tiered collection of security measures. Business and cybersecurity leaders must work together to identify and protect the "crown jewels"—those corporate assets that generate the most value for a company. They can inventory and prioritize assets and then determine the strength of cybersecurity protection required at each level. By introducing more transparency into the process, the business value at risk and potential trade-offs to be made on cost would

then be more obvious to all parties. A global mining company, for example, realized it was focusing a lot of resources on protecting production and exploration data, but it had failed to separate proprietary information from that which could be reconstructed from public sources. After recognizing the flaw, the company reallocated its resources accordingly.

Myth 2: The more we spend, the more secure we will be

According to our research, there is no direct correlation between spending on cybersecurity (as a proportion of total IT spending) and success of a company's cybersecurity program. Some companies that spend quite a bit on cybersecurity are actually underperforming the rest of the market with respect to developing digital resilience[1] (Exhibit 1). In part, this is because those companies were not necessarily protecting the right assets. As we mentioned earlier, companies often default to a blanket approach (protecting all assets rather than the crown jewels). Throwing money at the problem may seem like a good idea in the short term—particularly when an intrusion occurs—but an ad hoc approach to funding likely will not be effective in the long term. Business and cybersecurity leaders instead must come to a shared understanding of costs and impact and develop a clear strategy for funding cybersecurity programs. The business and cybersecurity teams at a healthcare provider, for example, might agree that protecting patient data is the first priority but that confidential financial data must also be secured so as not to compromise partner relationships and service negotiations. They could allocate resources accordingly. Without this shared understanding, business leaders may balk when a data breach occurs after they've funded significant changes in the security infrastructure. The lack of transparency and trust between the C-suite and the IT organization will only get worse.

Myth 3: External hackers are the only threat to corporate assets

It is true that threats from outside the company are a huge concern for cybersecurity teams, but there are significant threats inside corporate walls as well. The very people who are closest to the data or other corporate assets can often be a weak link in a company's cybersecurity program—particularly when they share passwords or files over unprotected networks, click on malicious hyperlinks sent from unknown email addresses, or otherwise act in ways that open up corporate networks to attack. Indeed, threats from inside the company account for about 43 percent of data breaches.[2]

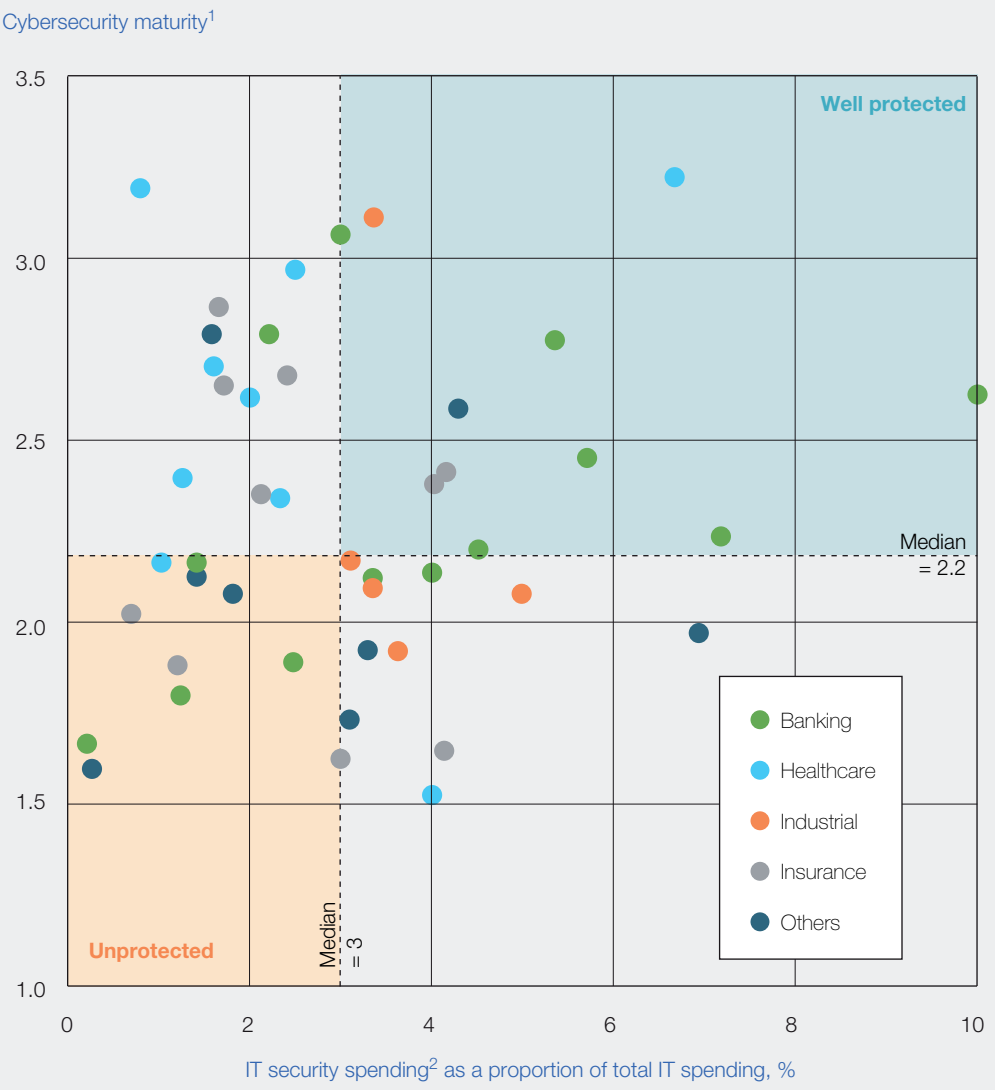
Business and cybersecurity leaders must therefore collaborate on ways to improve internal risk culture. They must educate employees at all levels about the realities of cyberattacks and best practices for fending them off—for instance, holding town meetings, mounting phishing campaigns, or staging war-game presentations to familiarize employees with potential threats and raise awareness. Many of these activities will need to be led by the CIO, the chief security officer, or other technology professionals charged with managing cybersecurity programs. But none will be fruitful if the company's business leaders are not fully engaged in a dialogue with the cybersecurity function and if companies don't build explicit mechanisms for ensuring that the dialogue continues over the long term.

[1] Unless otherwise indicated, statistics relating to the composition and effectiveness of companies' cybersecurity programs are from the 2015 McKinsey Cyber Risk Maturity Survey.

[2] *Grand theft data*, Intel Security, 2015, mcafee.com.

EXHIBIT 1

Companies' spending on cybersecurity does not necessarily correlate with level of protection.



Note: Reflects responses from 45 companies in the Global 500 about their cybersecurity spending and capabilities.

[1]Companies' cybersecurity maturity is rated on a scale of 1 to 4, with 4 being the most mature (highest-level talent and capabilities).
[2]Spending is rated on a scale of 1 to 10; no companies allocated more than 10% of their budget on security.

Source: 2015 McKinsey Cyber Risk Maturity Survey

Business leaders at all levels must realize that they are actually the first line of defense against cyberthreats, and cybersecurity is never the sole responsibility of the IT department.

Myth 4: The more advanced our technology, the more secure we are

It is true that cybersecurity teams often use powerful, cutting-edge technologies to protect data and other corporate assets. But it is also true that many threats can be mitigated using less-advanced methods. After all, most companies are not dealing with military-grade hackers. According to research, more than 70 percent of global cyberattacks come from financially motivated criminals who are using technically simple tactics, such as phishing emails.[3]

When companies invest in advanced technologies, but do not understand how best to use them or cannot find properly skilled administrators to manage them, they end up creating significant inefficiencies within the cybersecurity team, thereby compromising the cybersecurity program overall.

Companies must, of course, explore the latest and greatest technologies, but it is also critical that companies establish and maintain good security protocols and practices to supplement emerging technologies—for instance, developing a robust patch-management program[4] and phasing out software for which vendors no longer provide security updates. This sort of foundation can help companies mitigate many of the biggest threats they may face. Consider the following example: a patch covering the vulnerabilities that could be exploited by the WannaCry cryptoworm was released March 14, 2017—some two months before the ransomware worked its way into more than 230,000 computers across more than 150 companies.

Building a culture of resilience

Rather than perpetuate myths, business and cybersecurity leaders should focus on bridging the trust gaps that exist between them. We believe most companies can do that when technology and business leaders jointly train their attention on two main issues of control: how to manage trade-offs associated with cybersecurity, and how to discuss cybersecurity issues and protocols more effectively.

How do we manage trade-offs?

Technology professionals have a role to play in reeducating the C-suite about best practices in cybersecurity spending—specifically, illustrating for them why a tiered approach to cybersecurity may be more effective than blanket coverage for all. The budget cannot grow and shrink depending on whether the company recently suffered a system intrusion. Cybersecurity must be considered a permanent capital expenditure, and allocations should be prioritized based on a review of the entire portfolio of initiatives under way. Business and technology professionals must work together to manage the trade-offs associated with cybersecurity.

When discussing which initiatives to invest in and which to discontinue, business and cybersecurity professionals can use a risk-categorization model with four threat levels denoted, from minor to severe. The cybersecurity team can then engage the

[3] *2017 Data breach investigations report*, Verizon, 2017, verizonenterprise.com.

[4] Patch management is the structured process of acquiring, testing, and installing code changes to an administered computer system.

C-suite in discussions about the most important data assets associated with each part of the business value chain, the systems they reside in, the controls being applied, and the trade-offs associated with protecting higher-priority assets versus lower-priority ones.

At a broader level, technology professionals can help the C-suite create benchmarks for cross-company and multiyear expenditures on cybersecurity initiatives that can be reviewed regularly—for instance, cybersecurity spending as a percentage of overall IT expenditures. The CIO and his team could create a capital-expenditure index for security investments to help the C-suite justify cost per risk-adjusted losses or cost per percentage of infrastructure protected Or, technology and business professionals could jointly develop a formula for quantifying the upside of making improvements to the cybersecurity program. In this way, they can make clear decisions about which tools to buy and add to the existing cybersecurity architecture, which systems to upgrade, and which to retire.

Regardless of the metrics used, it is important to have a comprehensive, formal approval process for planning and reviewing capital expenditures associated with cybersecurity. Priorities must be set from a business perspective rather than a systems perspective. CIOs and chief security officers must collaborate with the business to identify those assets with the potential to generate the greatest amount of value for the business and develop a cybersecurity road map accordingly. The road map would illustrate the distribution of crown jewels across the organization and the greatest surface areas of exposure. It would outline current controls and the sequence for launching new security initiatives, looking two to three years out. Of course, business and cybersecurity executives would need to revisit these plans quarterly or annually to ensure that they are still relevant given changes to the environment. The road map would also define roles and responsibilities, as well as mechanisms by which the C-suite and the leaders in the cybersecurity function could monitor progress made against the plan and revise it accordingly.

How do we talk about cybersecurity?

Weak communication accounts for much of the lack of trust between business leaders and members of the cybersecurity function. Our research indicates that in most companies, cybersecurity professionals are at least two layers from the CEO in the corporate hierarchy, with few opportunities for direct discussion about protection issues and priorities (Exhibit 2). What's more, in about half of the companies we studied, there was little to no formal documentation shared by the cyber function with the C-suite about the status of their defense systems; many companies relied instead on occasional emails, memos, and notes (Exhibit 3).

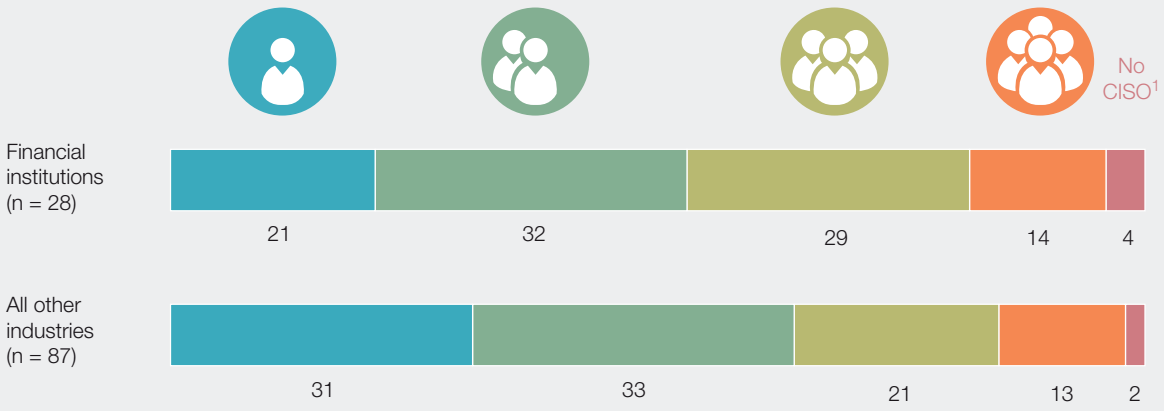
Furthermore, when business and technology professionals do get in a room together, cybersecurity is usually discussed using highly technical language—for instance, "We already have measures to cover all CVE, however APT is something we need to watch out for. With our current SVM and SIEM infrastructure, there is no way we can defend these advanced attacks."[5] Jargon notwithstanding, the technology and business professionals in the room all understand how critical it is to build

[5] CVE stands for common vulnerabilities and exposures, APT stands for advanced persistent threat, SVM stands for security and vulnerability management, and SIEM stands for security information and event management.

EXHIBIT 2

Cybersecurity teams' access to the C-suite is limited.

How many direct reports away is the senior-most cybersecurity executive from the CEO?, % of survey respondents



Note: Executives polled included chief information security officers and other C-suite executives charged with making decisions about cybersecurity investments.

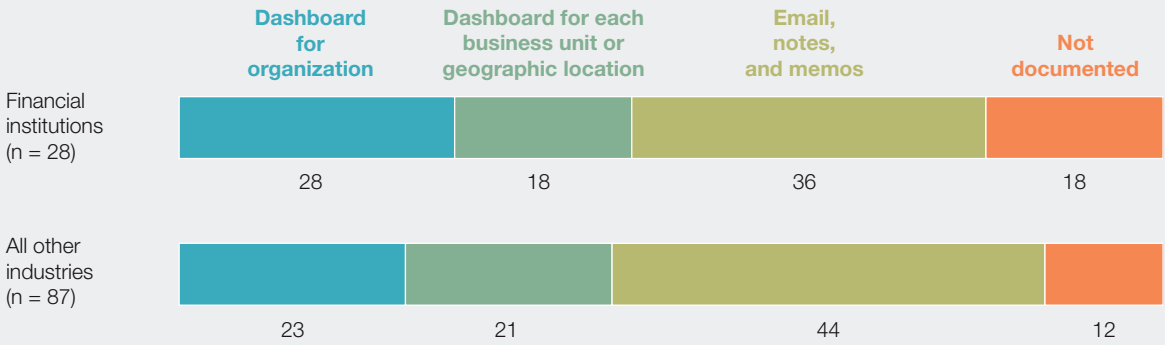
[1]Chief information security officer.

Source: 2015 McKinsey Cyber Risk Maturity Survey

EXHIBIT 3

Many cybersecurity teams use informal means to communicate with business leaders.

How do you summarize the status of defense systems to the chief information security officer and business-level executives?, %



Note: Executives polled included chief information security officers and other C-suite executives charged with making decisions about cybersecurity investments.

Source: 2015 McKinsey Cyber Risk Maturity Survey

a robust cybersecurity program given the potential effects on the bottom line if corporate assets are compromised. But each side is typically only getting half the story.

Instead of reporting that "ten vulnerabilities were remediated," for example, technology professionals can use visual aids and outcomes-oriented language to help business leaders understand potential security threats and ways to address them. A status update might be better phrased in the following manner: "Our cybersecurity team has patched a security hole in our customer-relationship-management system that could have given hackers access to millions of packets of our retail customers' data, creating $100 million in financial damage." Cybersecurity professionals could also clearly delineate and communicate levels of systems access for intended and unintended users—a database administrator would have greater privileges than frontline employees, for instance.

Finding a common vocabulary is important not just for ensuring clear communication between the C-suite and the cybersecurity function but also for raising awareness about potential cyberthreats and risks among employees throughout the company. Members of the cybersecurity function should schedule frequent, regular check-ins with staff at all levels to educate them about relevant cybersecurity topics—how to recognize a phishing email, for example—and to showcase the company's security capabilities. The cybersecurity team at one technology firm conducts "road shows" to demonstrate which systems are being scanned and how they are being monitored. One online retailer, meanwhile, includes details about its cybersecurity efforts in existing financial reports—for instance, reporting on its development of an antimalware scanner to protect the integrity of its recommendation engine, which helps drive advertising. It does this to illustrate that cybersecurity is part of the business process and can help drive revenue.

These discussions should take place regardless of whether the company is facing an imminent threat or not. The cybersecurity team at one company we observed shared with top leadership a simple breakdown of a typical security-event drill (Exhibit 4). The team wanted to give members of the board and the C-suite a step-by-step overview of what would happen in a typical attack—not just to prove the effectiveness of the company's security capabilities but also to familiarize individuals with potential threats so they might recognize them when they encounter deviations from the norm.

◆◆◆

As we mentioned earlier, technology leaders may have to lead the charge in forging direct communications, creating cost transparency, and identifying business priorities. But the tasks suggested will require experience in C-suite-level communication, budgeting, and strategy planning—some of which may be beyond the core skill set of those on the cybersecurity team. To come up to speed more quickly, cyber leaders may want to reach out to others with relevant expertise—for example, vendors and partners who can share best practices. In the spirit of agile development, cybersecurity teams may also want to take on these activities in "launch-review-adjust" mode. They could update threat and risk profiles in one- to six-month sprints, thereby ensuring they are responsive to the latest trends and technologies.

EXHIBIT 4

A cybersecurity data theft has a pattern of event and response.

1

Insider takes sensitive data via flash drive

A disgruntled employee installs indexing malware in corporate systems and transfers files from servers to USB drive.

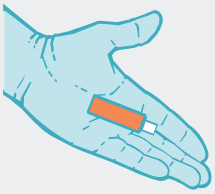
Visible hints

- Inquiry is made to senior executives about temp file being created and deleted.
- Slow laptops are reported to IT department and chief information officer.
- Help-desk ticket is sent to IT security lead.

Typical response

- Initially, the IT-security team does not realize that data are being threatened.
- Once the data are breached, the security team tries to determine best way to inform senior executives; the process is ad hoc, because protocols are not clear.

2



Insider gives or sells employee data to a cybercriminal

Cybercriminal uses old but valid credentials to access company servers and download employee records containing personally identifiable information (PII).

Visible hints

- Data-loss alerts are sent to the security lead in the IT organization.

Typical response

- Team focuses on the forensics of the alert but is not able to connect it to previous notifications.

3

Cybercriminal sells PII data to identity thieves on the black market

Identity thieves buy and use the employee data for fraudulent transactions.

Visible hints

- Based on individuals' and organization's complaints, the FBI detects the data breach and files a report with government affairs.

Typical response

- IT security reactively investigates employee data leak, trying to determine the scope of the breach.
- Team escalates event to privacy team.

4

Sensitive data is published on social media

Online bloggers publish video with references to the sensitive data stolen.

Visible hints

- An online video, found by employees, is sent to the head of communications.

Typical response

- The security team engages the communications group.

Source: 2015 McKinsey Cyber Risk Maturity Survey

Make no mistake, the time to foster greater transparency about cybersecurity is now. The board must have trust in the C-suite and its ability to handle security breaches without dramatically affecting the company's value and brand. The C-suite needs to trust the chief information security officer's claims that every penny spent on improving the security of IT infrastructure is worth it. The company needs to trust that vendors can properly protect shared data or ensure service stability if breaches occur. And, of course, customers need to trust that their personal data is being carefully safeguarded behind corporate walls.

The C-suite and the cybersecurity function can no longer talk past one another; security must be a shared responsibility across the business units. It must be embedded in various business processes, with the overarching goal of building a culture of resilience. The companies that take steps now to build greater trust between the business and the IT organization will find it easier to foster a resilient environment and withstand cyberthreats over the long term. ◆

Jason Choi is a consultant in McKinsey's Hong Kong office, where **Harrison Lung** is an associate partner; **James Kaplan** is a partner in the New York office, and **Chandru Krishnamurthy** is a senior partner in the Atlanta office.

The authors wish to thank Suneet Pahwa and Chris Rezek for their contributions to this article.

Digital/McKinsey

July 2017
Designed by Global Editorial Services

McKinsey.com
@DigitalMcKinsey
facebook.com/DigitalMcKinsey