RESEARCH REPORT

Spotlight Report: Cyber Resilience and Business Impact in Manufacturing

LevelBlue

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Contents

About the Research
We wanted to better understand enterprise cyber-resilience strategies and how they are being handled throughout organizations. To uncover this data, in January 2025 we engaged FT Longitude to survey 1,500 C-suite and senior executives across 14 countries and seven specific industries: energy and utilities, financial services, healthcare, manufacturing, retail, transportation, US state and local government and higher education (US SLED).

The total number surveyed in manufacturing is 220. This is the Spotlight Report: Cyber Resilience and Business Impact in Manufacturing for 2025.

We would like to thank FT Longitude, our research partner, and Altitude Management, our design partner, for making this report possible.

We use the following definition in this report:
Cyber resilience: This refers to the entire IT estate and includes the organization as it relates to computing and its ability to recover from an unexpected interruption—from cyber incidents to natural and human-caused disasters.

1. Cyber Resilience: A Proactive Stance Builds Business Confidence

AI tools promise manufacturing organizations unprecedented levels of efficiency, optimized processes, and enhanced automation. But the blazing speed of its evolution—far faster than governance and regulations can keep up—is a reason to be cautious.

In this year's Spotlight on manufacturing, we uncover how the industry is protecting itself from increasingly numerous and sophisticated attacks.

Key findings include:

Manufacturing executives cannot afford to overlook cybersecurity

Increasing risks and the fast-developing threat landscape are elevating the importance of cyber resilience on the C-suite agenda, but organizations could be placing too much confidence in their ability to manage threats:

- 28% of manufacturing executives say their organization suffered a breach in the past 12 months
- 37% say they are experiencing a significantly higher volume of attacks
- 65% say that media reports of high-profile breaches have elevated cybersecurity on the C-suite agenda
- 51% say they are highly or very highly competent at defending themselves against cyber adversaries that are using AI techniques

Manufacturing organizations struggle to defend against new types of attack

Manufacturing organizations expect AI-powered attacks, deepfakes, and synthetic identity attacks in 2025. But many are not prepared for them:

- Just 32% of manufacturing executives say they are prepared for AI-powered threats, despite 44% believing they will happen
- 30% feel their organization is prepared for deepfake attacks, even though 47% are expecting them

Visibility of the software supply chain is a low priority

Manufacturing organizations are underestimating how under-regulated AI tools could pose a risk to their extended ecosystem:

- 54% say they have very low to moderate visibility into the software supply chain
- Just 26% say that engaging with software suppliers about their security credentials is a priority in the next 12 months

Manufacturing companies will thrive by becoming more proactive and more aligned

Responsibility for cyber-resilience measures is making its way into more areas of the business:

- 68% of executives say that their cybersecurity team is aligned with lines of business
- 65% say that leadership roles in their manufacturing organization are measured against cybersecurity KPIs

We hope you enjoy reading this year's research and would be delighted to discuss its conclusions and recommendations with you in more detail.

2. Business Impact: Aligning Cybersecurity with Strategic Goals

Making an organization cyber-resilient both protects it from loss and, at the same time, creates an environment that fosters productivity and innovation.

An increasingly complex and concerning threat landscape is elevating cybersecurity up the agenda: 37% of manufacturing executives say they have experienced a significantly higher volume of cyber attacks than 12 months ago, and 28% have experienced a breach in the past 12 months.

Some 65% of manufacturing executives say that media reports of high-profile breaches have pushed cybersecurity up the C-suite agenda. And as AI-powered technologies make attacks more sophisticated, 60% of executives say that it is becoming more difficult for employees to identify real threats.

Figure 1

Manufacturing executives report competence at both defending against AI attacks and using AI for security

Q: How would you rate your organization's competence in the following areas?

% of respondents
N=220

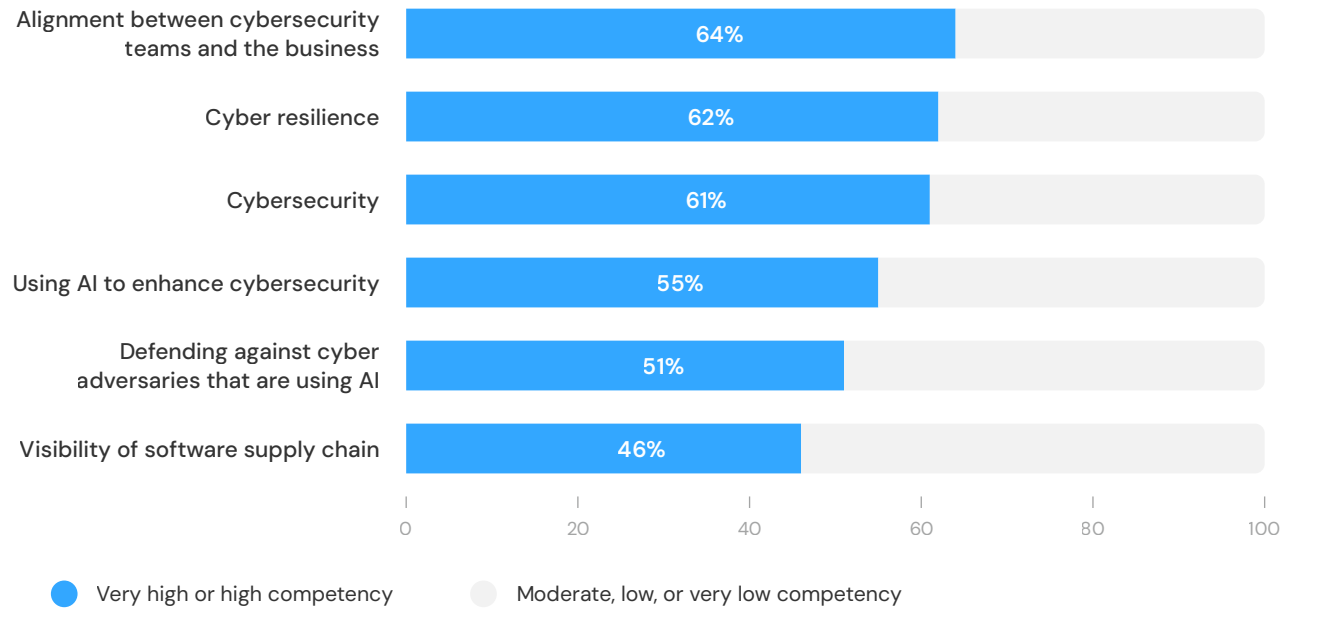


Figure 2

After technology improvements, manufacturing organizations are prioritizing boardroom engagement and business alignment

Q: Which of the following will be a priority for your organization over the next 12 months as it seeks to improve its cyber resilience?

% of respondents
N=220

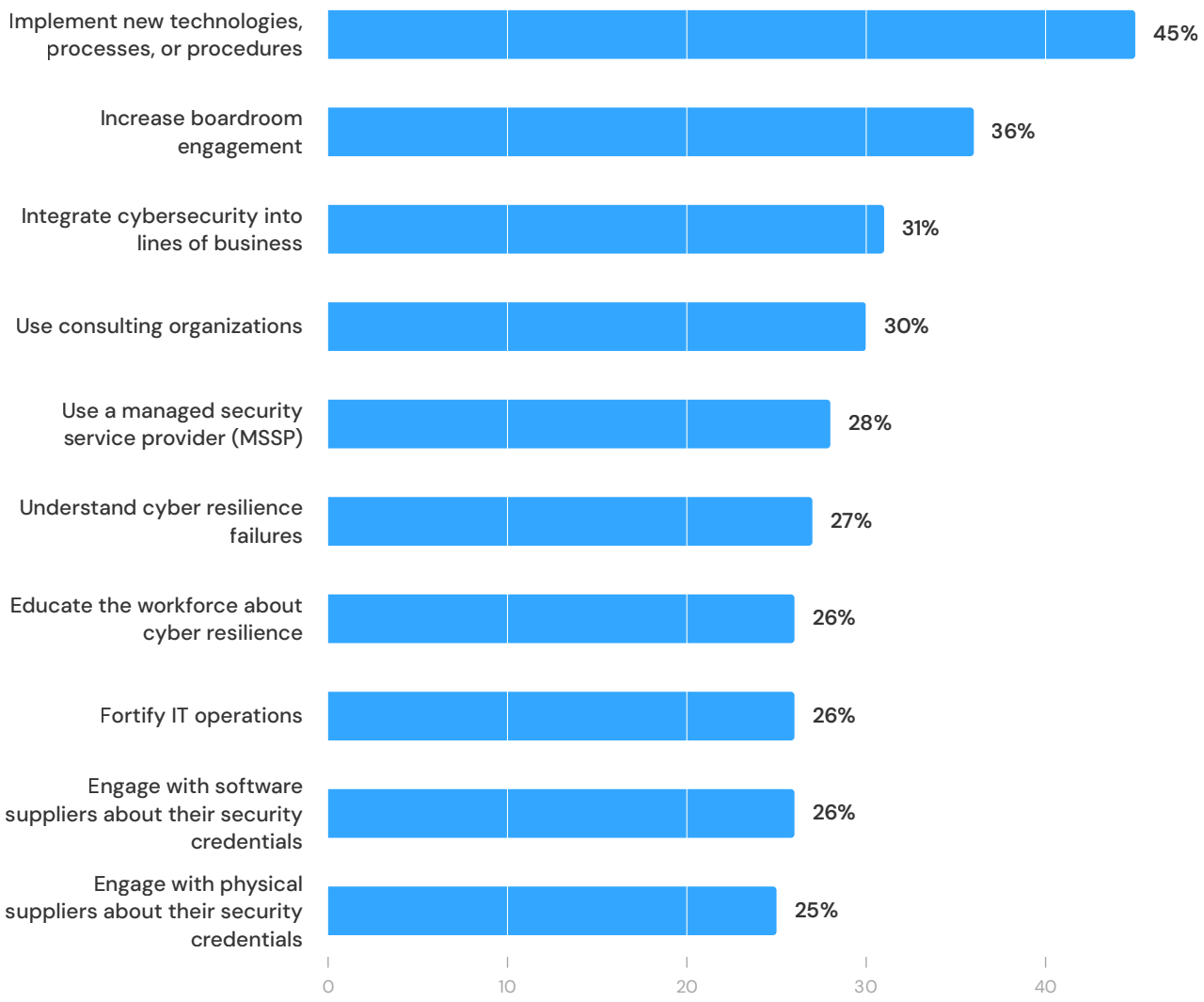
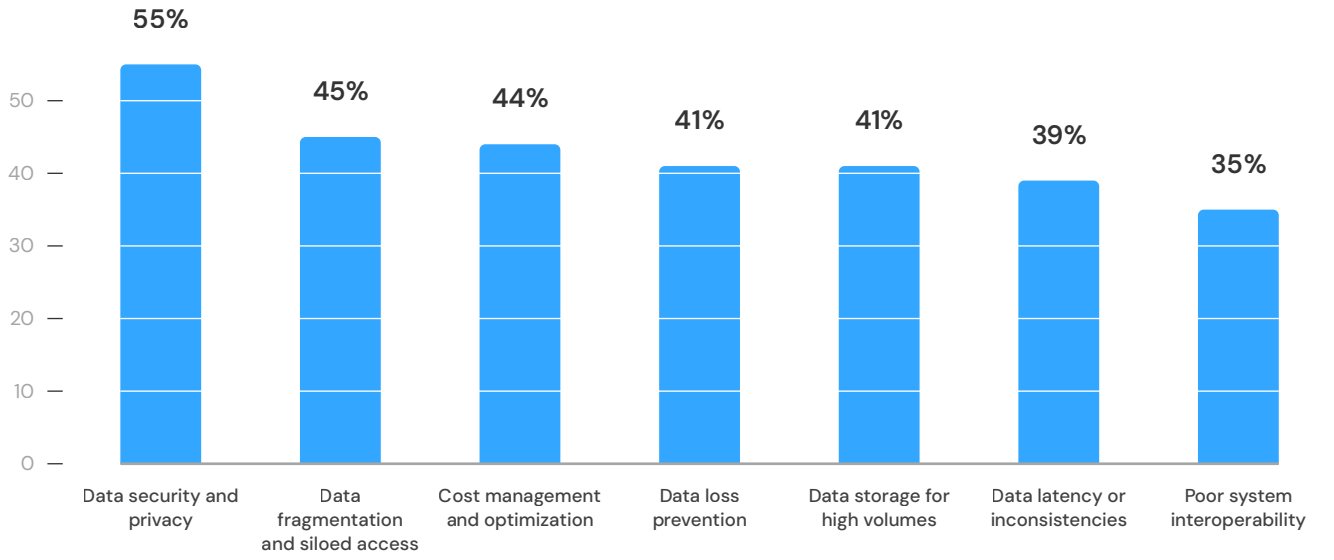


Figure 3

Data security is the biggest concern for manufacturing executives

Q: What are your organization's biggest data challenges as you move towards computing beyond the perimeter of your own organization?

% of respondents
N=220



Do manufacturing organizations fully understand the potential threat of AI-related adversaries?

Despite their concerns, manufacturing executives are feeling confident about defending themselves against AI-related adversaries and using AI to enhance defense (Figure 1). More than half (51%) say they are highly or very highly competent at defending themselves against cyber adversaries that are using AI techniques, and in implementing and using AI to enhance cybersecurity (55%).

Given the pace of change in today's threat landscape, organizations must be careful not to become complacent by placing too much confidence in current capabilities.

Manufacturing organizations are elevating discussions to the highest level

Effective leaders see cyber resilience as a core business function. They integrate it into business decisions from the top and ensure that it is prioritized across the organization. Having a boardroom engaged with cyber issues means the organization is better prepared to handle incidents and minimize losses. Manufacturing organizations recognize this: more than one-third (36%) say they are increasing boardroom engagement in cyber-resilience discussions, making it the second-highest priority for improving cyber resilience in the next 12 months (Figure 2).

Manufacturing organizations are balancing their approaches to risk and innovation

Cybersecurity not only protects assets, but it can also help manufacturing organizations to access new revenue streams. By making their digitalization efforts cyber-resilient, organizations can build trust, while enhancing their reputations and confidence, which creates a robust and flexible environment for innovation and development.

To develop cyber resilience, cybersecurity teams need to be aligned with lines of business. This creates a more balanced approach to cybersecurity, budgeting, and innovation risk.

Manufacturing organizations recognize this: nearly two-thirds (64%) say cybersecurity teams are highly or very highly aligned with the wider business, and further alignment with lines of business is a top three priority for the next 12 months.

Nearly half of manufacturing organizations (44%) say they have effectively aligned business risk appetites with cybersecurity risk management, and more than half (55%) allocate a cybersecurity budget to new initiatives from the beginning.

Aligning cybersecurity with lines of business allows organizations to take bigger risks with innovation. Manufacturing organizations are starting to see results: 69% say that an adaptive approach to cybersecurity enables them to take greater innovation risks.

But are organizations downplaying the AI risks?

Higher levels of cybersecurity alignment also seem to reduce manufacturing organizations' caution about implementing AI. Only 28% of manufacturing executives say they are reluctant to implement AI tools and technologies because of cybersecurity ramifications.

AI adoption is happening too fast for regulations, governance, or mature cybersecurity controls to keep pace, which increases organizations' attack surface and risk exposure. Executive confidence about implementing AI despite the cybersecurity ramifications suggests a disconnect. They recognize the very real risks, but are nevertheless enthusiastic about implementing the technology—possibly without adequate safeguards in place.

Data security concerns prevent manufacturing organizations from focusing on business opportunities

Computing beyond the perimeter is standard practice in manufacturing organizations, and businesses are having to move away from solely relying on traditional network perimeter security and toward a more comprehensive approach. In this context, concerns about data security and privacy are still the biggest challenge, according to 55% of executives (Figure 3). Manufacturing organizations must get more comfortable with the cybersecurity measures they have put in place and move on to support the business with better-performing and higher-quality insights.

Aligning cybersecurity with lines of business allows organizations to take bigger risks with innovation.

3. Silo Breakthrough: Alignment and Collaboration for a Proactive Manufacturing Culture

An organization with a cyber-resilient culture is a place where everyone, at every level, understands their role in cybersecurity and takes accountability for it—including protecting sensitive data and systems.

The barriers to cyber resilience are lessening as accountability grows

According to our research, understanding of and alignment on cyber issues is improving across manufacturing (Figure 4).

The perception of cyber resilience as purely a cybersecurity issue, rather than a priority for the whole organization, is far less of a barrier this year (31% of executives identify this as a barrier, compared with 43% in 2024). And 29% now say that the governance team not understanding cyber resilience is a barrier, compared with 38% in 2024.

Cybersecurity culture is spreading throughout the organization, but some obstacles remain

Manufacturing organizations are making good progress overall at integrating cybersecurity across their operations (Figure 5). As an industry, they are pulling ahead by taking actionable steps: 65% say leadership roles are now measured against cybersecurity KPIs (compared with 60% of the total sample), and 70% are educating the workforce about social engineering tactics, compared with 62% of the total sample.

Manufacturing organizations should consider engaging more with outside experts to improve enterprise awareness. The number expecting to use external support for training and awareness in the next two years (38%) is significantly higher than those who have used them in the past 12 months (30%).

External expertise is especially important because some enterprise-wide cybersecurity measures are still falling short (Figure 6). Only 35% say that cybersecurity due diligence for mergers and acquisitions is effective. And there is room for organizations to foster more resilient cultures: less than half (44%) say they have an effective company-wide cybersecurity culture.

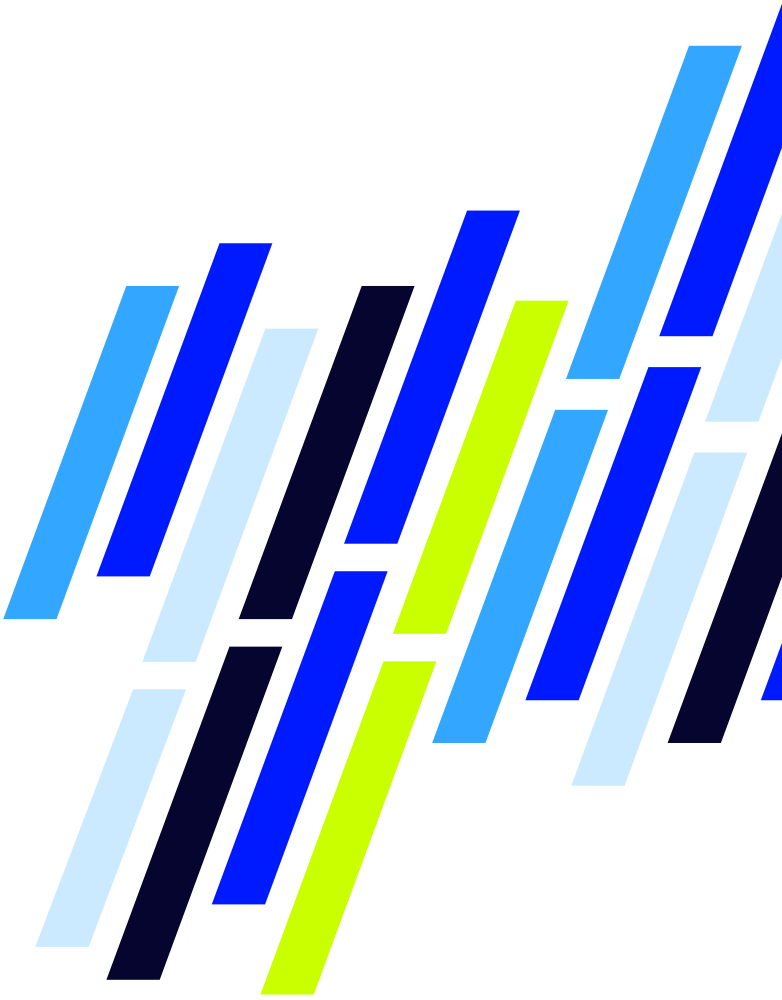


Figure 4

Cyber understanding and alignment have improved year over year

Q: To what extent are the following barriers to cyber resilience in your organization? (Sometimes, frequently, or very frequently a barrier)

% of respondents
N=220

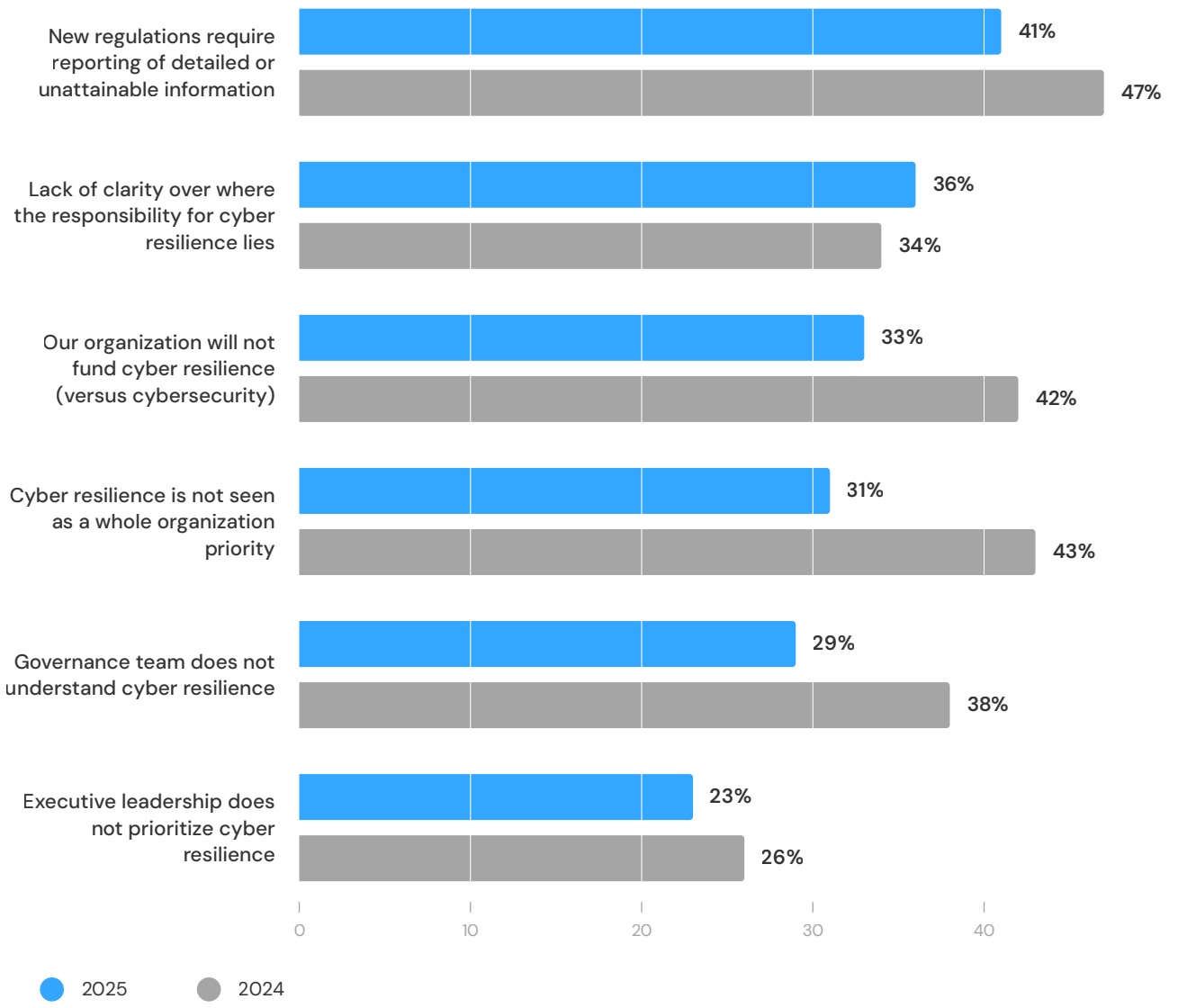


Figure 5

Manufacturing organizations are implementing cybersecurity measures at all levels

% of respondents
N=220

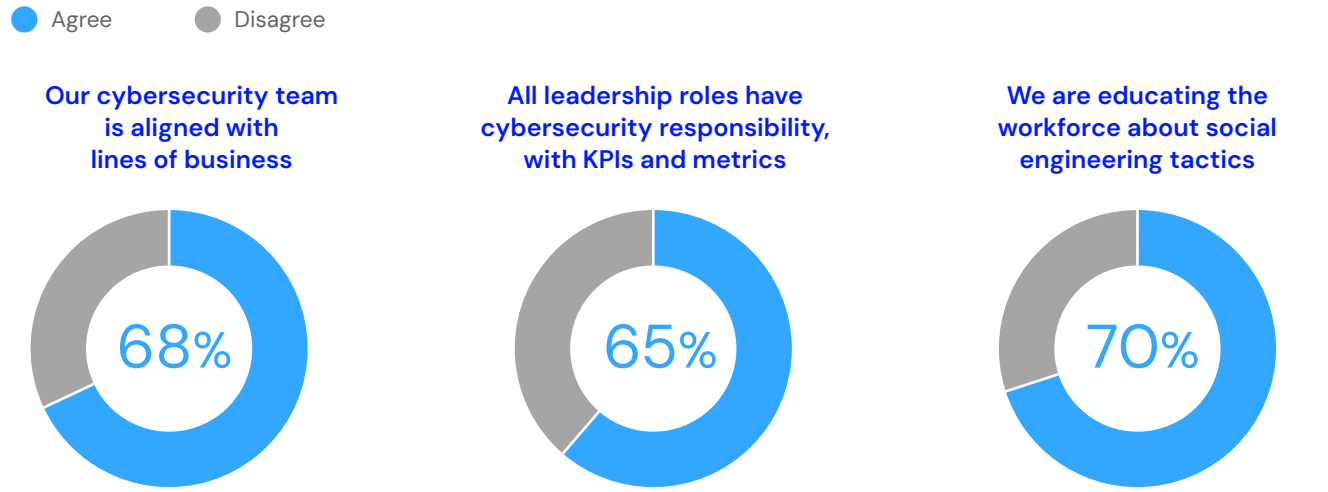
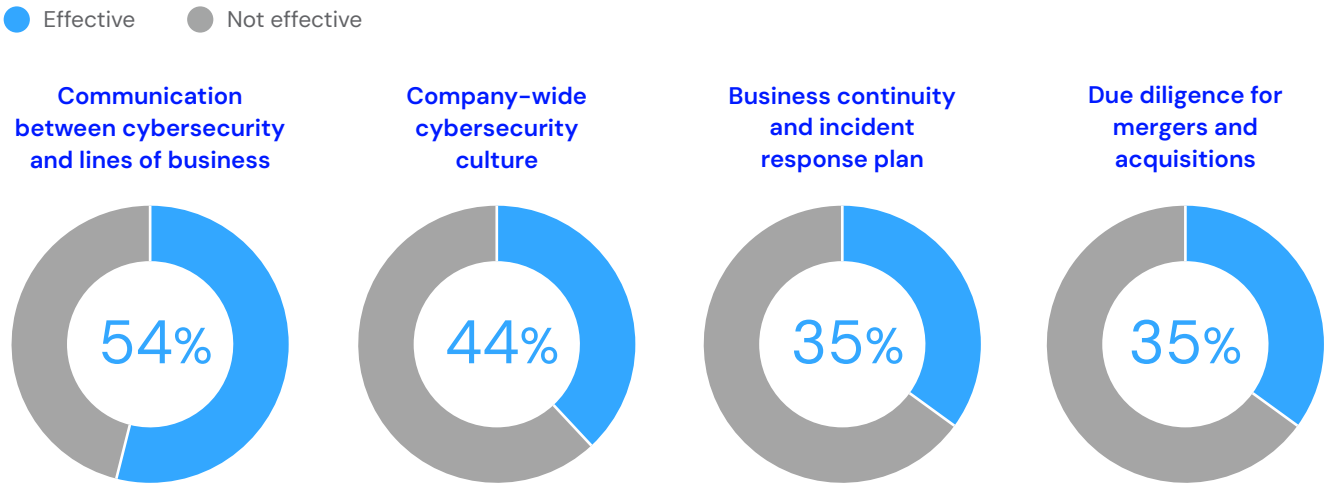


Figure 6

Enterprise-wide cybersecurity measures show there is still work to do

Q: How effective are the following areas of cybersecurity within the wider organization?

% of respondents
N=220



4. Evolving Vectors: Preparing for More Sophisticated Attacks

Manufacturing organizations say that sophisticated attacks are imminent

AI tools are supercharging cyberattacks, allowing threat actors to rapidly identify and exploit vulnerabilities through automated large-scale ransomware and phishing campaigns (Figure 7). They can also use AI to craft more persuasive phishing messages, create deepfakes for fraud schemes, and develop malicious code and new variants of malware that cybersecurity systems are less likely to detect.

But the manufacturing industry is not ready

Only 32% of manufacturing organizations say they are prepared for AI-powered attacks, and 30% for deepfake and synthetic identity attacks.

Rising geopolitical tensions have led to an explosion of distributed denial of service (DDoS) attacks. "Hacktivists" and nation-state groups are using this technique of flooding a network or website with traffic to overwhelm the system in a bid to disrupt critical infrastructure. Attackers are also exploiting the increase in insecure IoT devices to build large botnets to scale attacks. DDoS attacks have existed for nearly three decades, which makes them one of the internet's most long-standing and prevalent threats, but 37% of manufacturing executives in our survey say they are prepared for a DDoS attack.

Machine learning and cyber resilience are investment priorities

When asked to what extent their organization is investing in certain measures to prepare for new and emerging types of cyber threat (Figure 8), manufacturing executives are focused on machine learning and building cyber resilience. Overall their priorities align with those of the total sample.

Top five areas for significant investment:

- Machine learning for pattern matching (71% manufacturing vs 67% total sample)
- Cyber resilience processes across the business (69% manufacturing vs 67% total sample)
- Generative AI for social engineering attacks (64% manufacturing vs 64% total sample)
- Application security (67% manufacturing vs 69% total sample)
- Enhanced software supply chain security (63% manufacturing vs 62% total sample)

Building cyber resilience across the business is a significant investment area. This data demonstrates a strong alignment with the broader goal of integrating cybersecurity strategies throughout the business, which we've seen in earlier sections of the report.

Surprisingly, only 34% are investing moderately or significantly in Zero Trust Architecture (ZTA). An effective ZTA provides additional layers of protection against unpredictable threats. It can quickly identify suspicious behavior, implement defense measures, and respond to incidents. It can also help to encourage cyber-resilient behavior among users, which helps to extend the effectiveness of measures throughout the organization.

External support is a critical part of proactive cyber resilience

Manufacturing organizations recognize that they cannot do this alone (Figure 9). More than one-third (38%) expect to enlist cybersecurity consultants in the next two years to help them understand the increasingly complex and dynamic threat landscape, a similar number to the 36% that have done so over the past 12 months.

But they are also increasingly turning to cybersecurity insurance advisors, perhaps in response to the growing number of attacks that they are defending against. Over the last 12 months just 29% said they had sought outside help in this area, compared with 40% who expect to do this over the next two years.

Figure 7

Manufacturing executives are expecting more varied types of cyber attacks

Q: How likely is it that the following attacks will occur in your organization over the next 12 months?

% of respondents
N=220

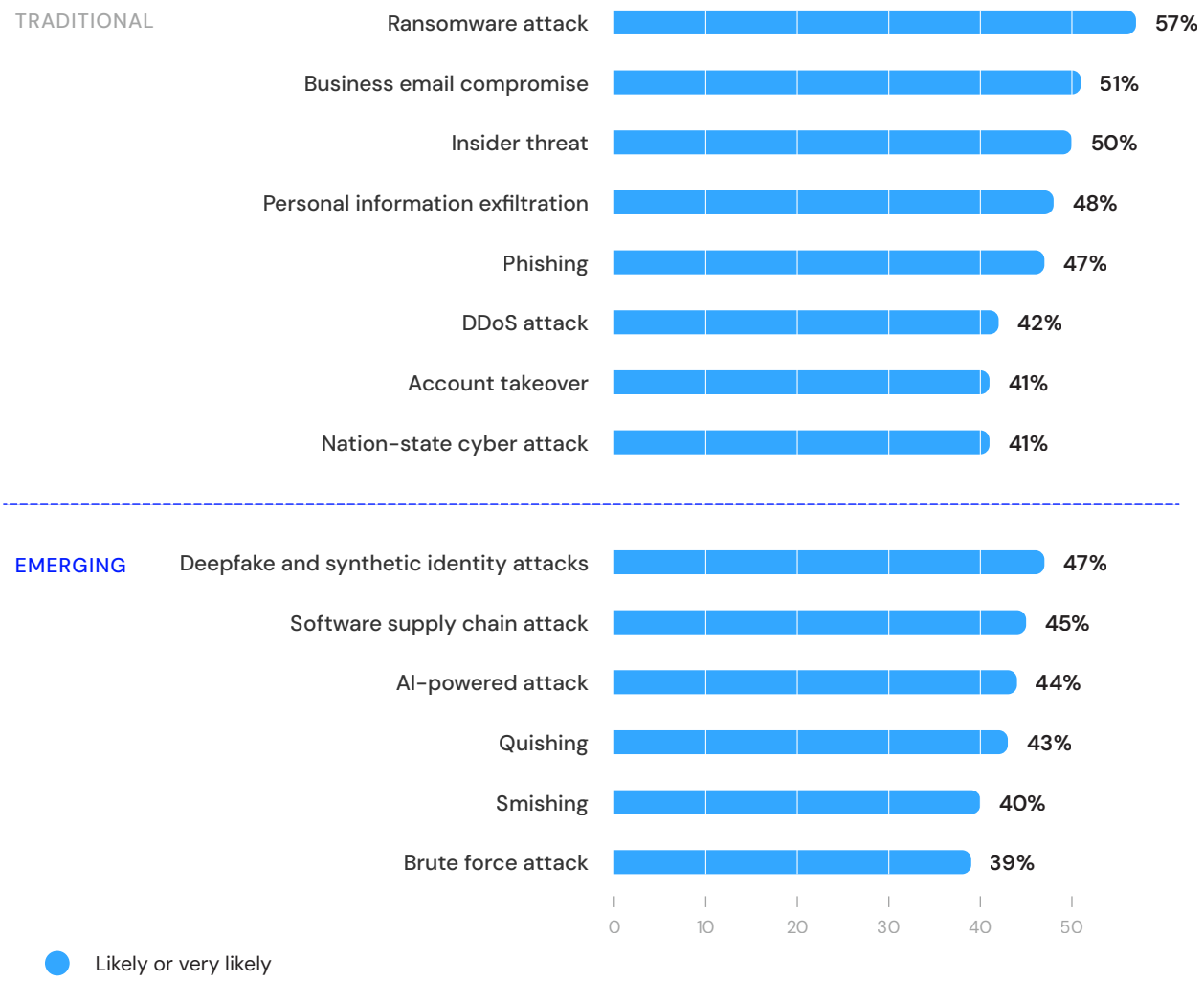


Figure 8

Building cyber resilience and machine learning are investment priorities

Q: To what extent is your organization investing in the following measures to prepare for new and emerging types of cyber threats?

% of respondents
N=220

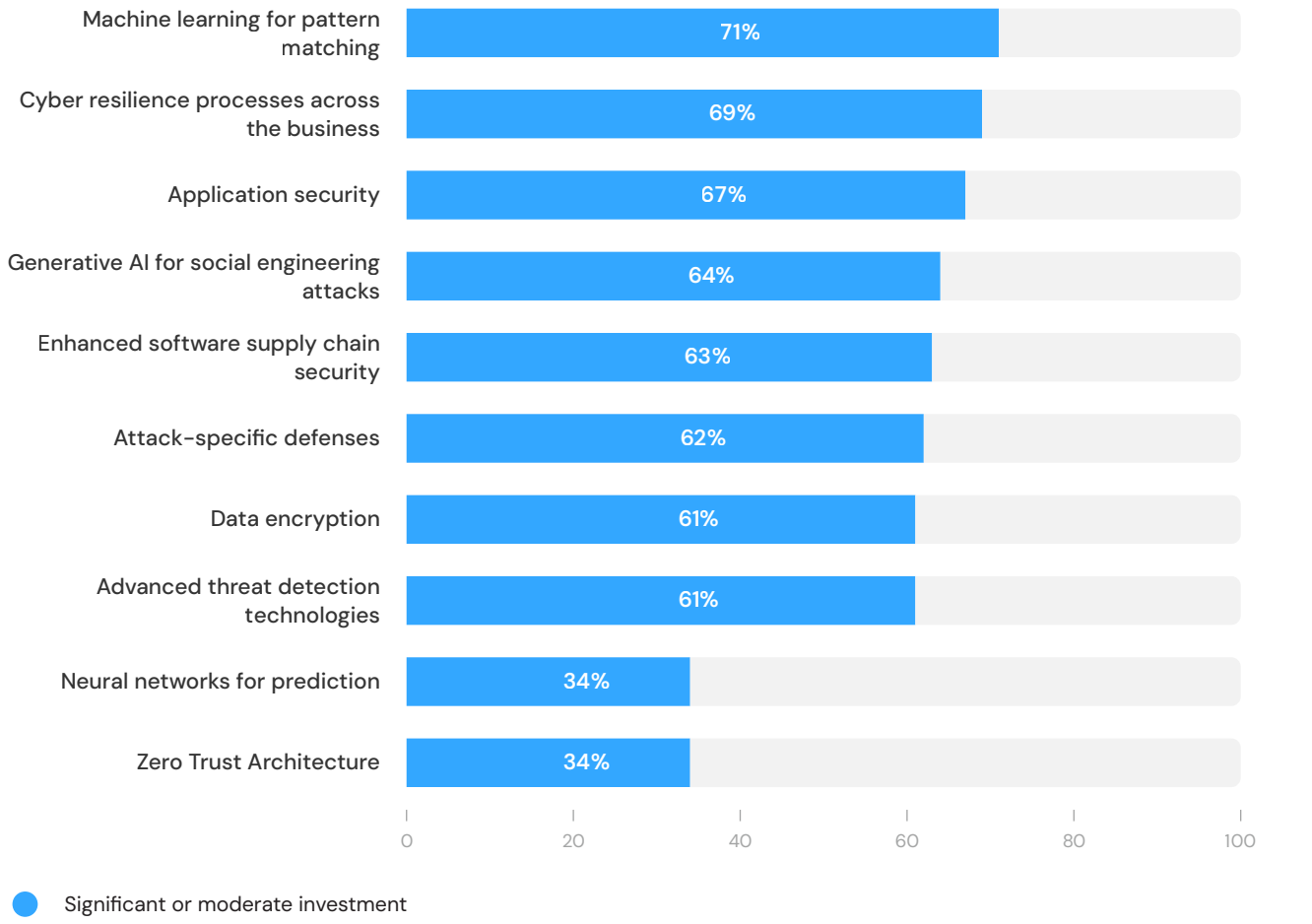
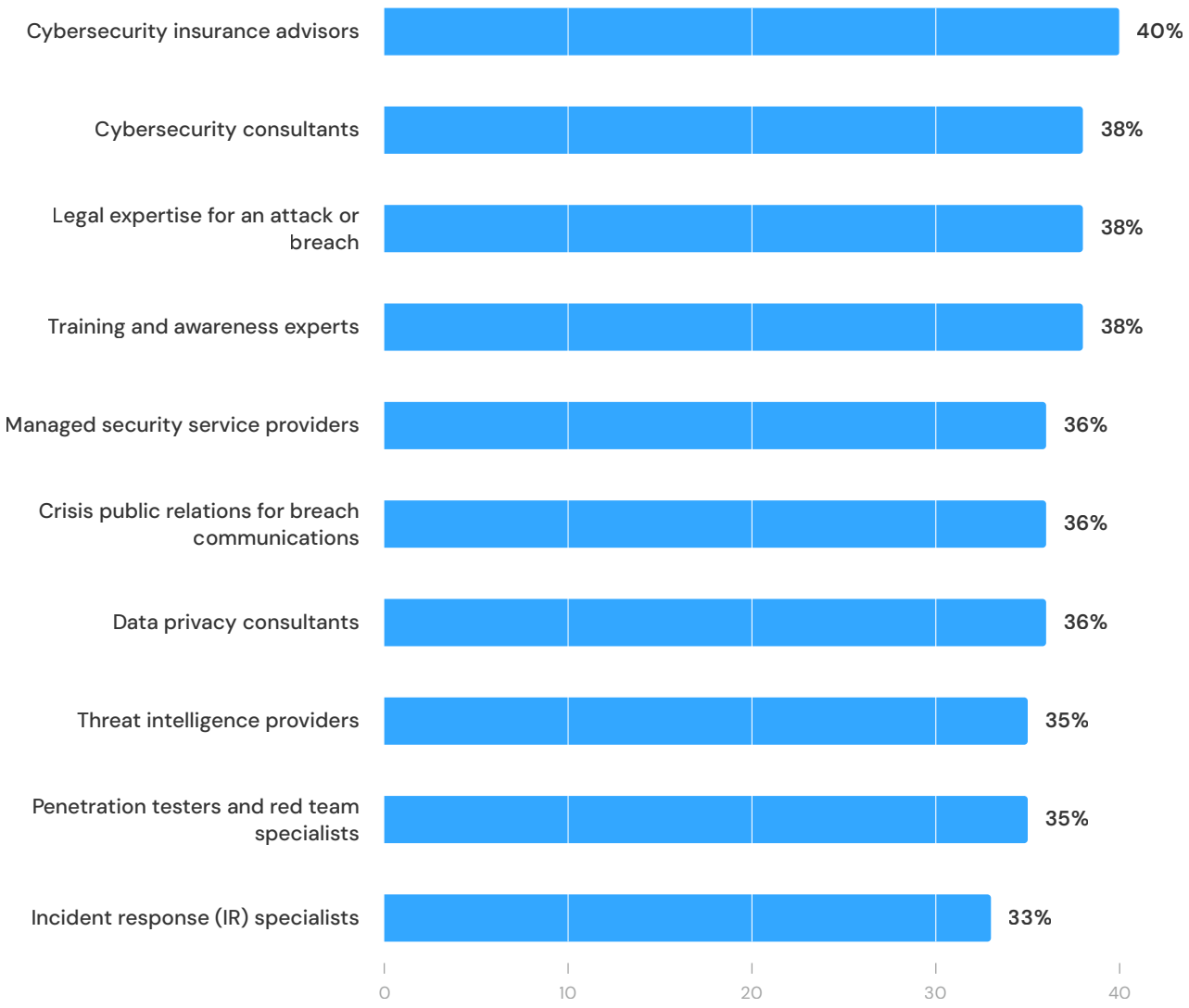


Figure 9

External support will play a bigger role over the next two year

Q: Which of the following external experts are you most likely to engage with over the next two years?

% of respondents
N=220



5. Software Supply Chain: Risks and Resilience in Manufacturing Organizations

If they are not properly secured, vulnerabilities in the software supply chain can provide entry points for threat actors. Once in, hackers can move deeper into a network, stealing credentials, gaining control of valuable systems, and pushing out malware, potentially to thousands of victims. And attacks like this can often go undetected until compromised software has been widely distributed.

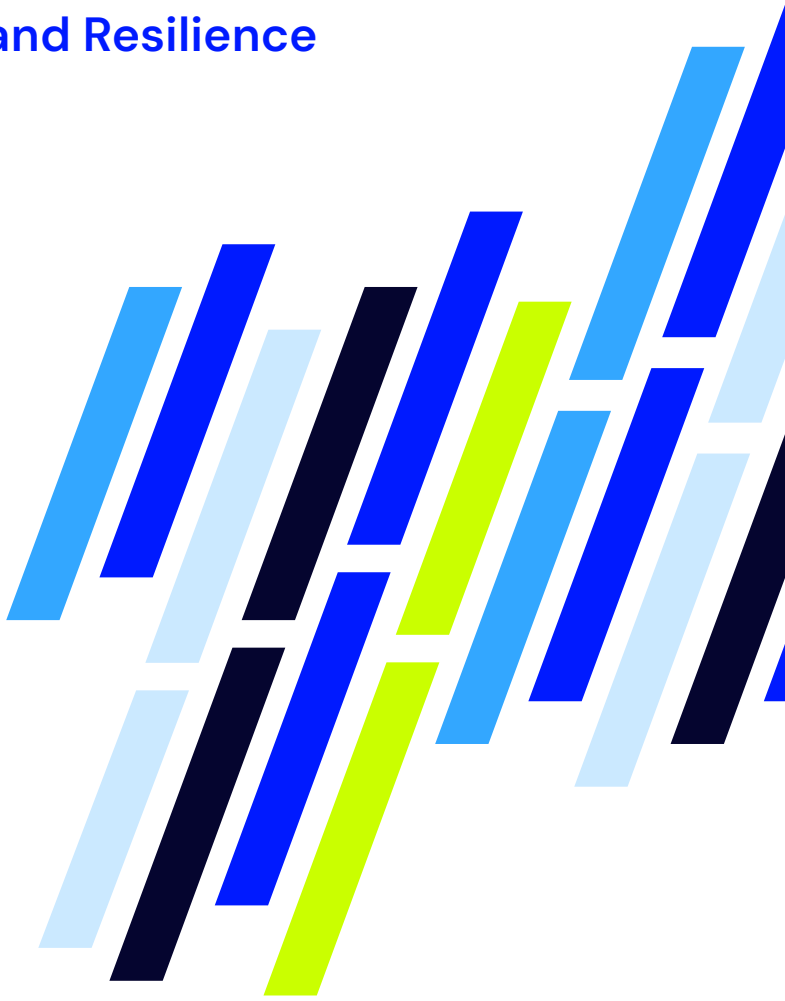
Many manufacturing executives do not see the risk

Our research finds that more than half (54%) of manufacturing organizations have very low to moderate visibility of the software supply chain and only a minority see any part of the ecosystem as high-risk. Only 19% consider insufficient visibility to conduct security assessments to be a very high risk, 18% see unsupported software as very high risk; and only 13% rate open-source code, libraries, and frameworks as very high risk.

Manufacturing organizations are building a robust view of source code, but more progress is needed

Of the factors driving better software supply chain visibility (Figure 10), the highest percentage (39%) of organizations cited visibility of source code integration quality and 37% cited understanding of the origins of source code.

Only 27% say awareness of known vulnerabilities in source code and assigning or creating a confidence level of suppliers (21%) are top drivers of better visibility.



Manufacturing organizations need to commit more investment: only 26% say they are investing significantly in software supply chain security.

Are organizations paying enough attention to software supply chain threats?

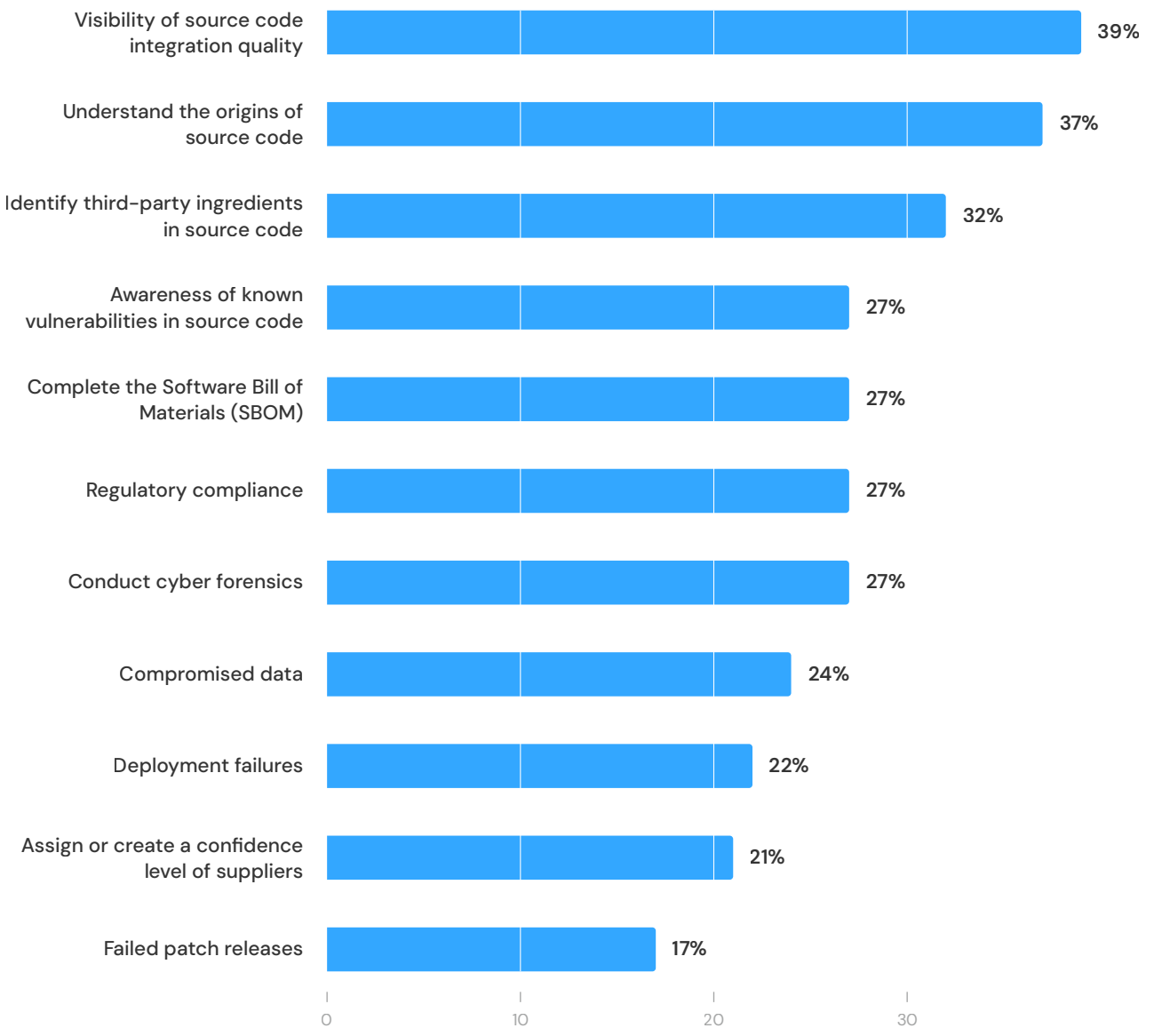
Overall, manufacturing executives do not seem to be taking software supply chain threats as seriously as they should in the current technology and risk environment: 30% say that the biggest risk they face today is from within their software supply chain, but only 26% say that engaging with software suppliers about their security credentials is a priority for the next 12 months.

Figure 10

Source code is a core focus for manufacturing organizations as they seek to secure their software supply chains

Q: What are the most important factors driving a need for better software supply chain visibility within your organization?

% of respondents
N=220



6. Four Steps to Cyber Resilience in Manufacturing

Manufacturing organizations are at a turning point with AI: it might be more mainstream, but it is still relatively new and unregulated. Threats can easily slip through the cracks and bad actors can take advantage. The way decision-makers respond in 2025 will be critical for the future of their businesses.

Elevate cyber resilience

- Increase engagement throughout leadership, including the board, to make cyber resilience a core business requirement
- Align cyber-resilience considerations with business decisions at the highest level
- Measure leadership roles against cybersecurity KPIs

Foster a cyber-resilient culture

- Practice safe online behaviors at every level
- Encourage everyone to report potential threats and make it easy to do so
- Implement regular cybersecurity training programs highlighting emerging threats and best practices

Be proactive and intentional

- Invest in cybersecurity measures to get ahead of risks, such as advanced threat detection and response, and exposure and vulnerability management technologies
- Engage external providers to enhance cybersecurity measures, advise on strategy, and provide you with training
- Move to a Zero Trust Architecture as a foundation for a multi-layered approach to network security

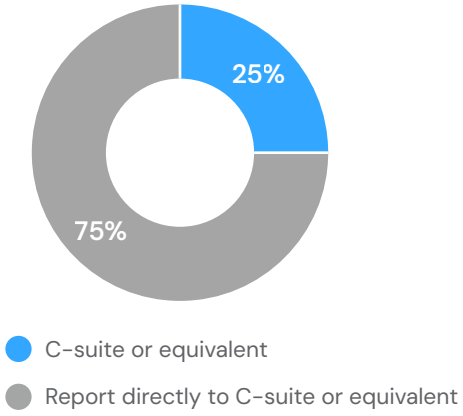
Prioritize software supply chain resilience

- Verify suppliers' cybersecurity credentials to help identify potential vulnerabilities in your software supply chain
- Create a confidence level of suppliers to improve supply chain visibility
- Carry out regular assessments to maintain resilience

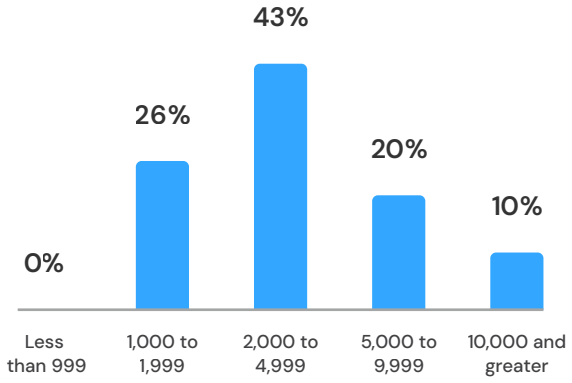
Manufacturing Demographics

Survey Sample Sizes
Total sample N=1500
Manufacturing respondents N=220

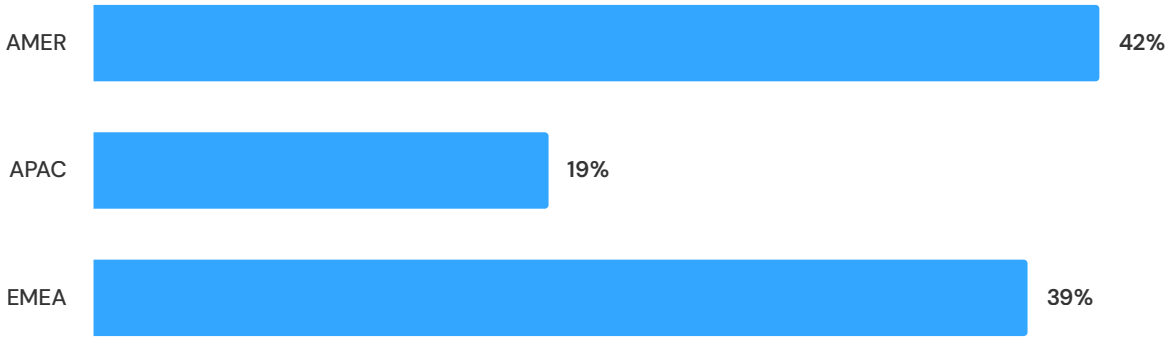
Respondent Seniority



Organization Size



Respondent Location



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About LevelBlue

We simplify cybersecurity through award-winning managed security services, experienced strategic consulting, threat intelligence and renowned research. Our team is a seamless extension of yours, providing transparency and visibility into security posture and continuously working to strengthen it.

We harness security data from numerous sources and enrich it with artificial intelligence to deliver real-time threat intelligence—this enables more accurate and precise decision making. With a large, always-on global presence, LevelBlue sets the standard for cybersecurity today and tomorrow. We easily and effectively manage risk, so you can focus on your business.

Cybersecurity. Simplified.

Contact us today to learn more about how we can safeguard your organization's future.