



Unpacking supply chain complexity

SUSTAINABLE BUSINESS
RESEARCH STUDY





Supply chain transparency is a strategic business imperative

Supply chain visibility is becoming a necessity in today's interconnected marketplace, rising to the third most strategic business priority in 2017, up from the sixth in 2015, according to GEODIS' 2017 Supply Chain Worldwide Survey.

While growing market complexity and the scattered nature of today's supply chains make achieving transparency a challenge, consumer expectations and legal and regulatory scrutiny also make understanding and gaining control of the supply chain a business imperative.

Social media continues to spread awareness of upstream risks along the supply chain to downstream stakeholders. Companies that desire to make strategic sustainability a core component of their operations require transparency to effectively achieve and communicate their efforts with authenticity. When sustainability claims are valid, businesses are rewarded with customer loyalty and trust as consumers are willing to pay a premium for products from companies that share their values and keep their promises.

According to a recent survey, 87% of consumers stated they would purchase a product based on values, because the company advocated for an issue they cared about.¹ Likewise, 73% of buyers said they would be willing to pay more for a product that offers complete transparency in all attributes.²

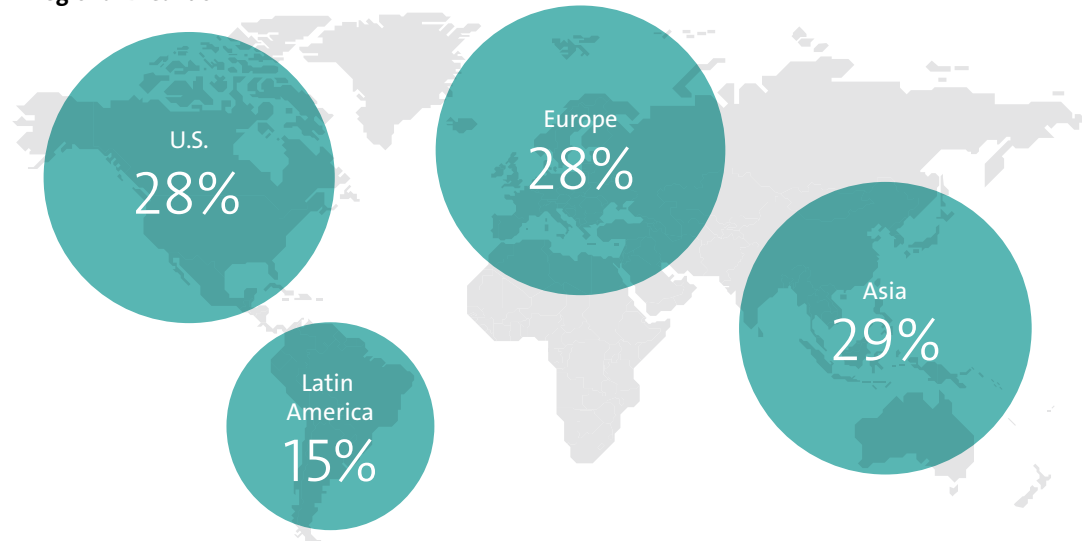
But, achieving transparency can seem like a daunting task, when businesses must collect and consolidate data from disparate sources, align players across the entire supply chain, and configure information from multiple stakeholders to report in ways that meet governance, regulatory and marketing needs.

Investigating the challenge of complexity

To gain a deeper understanding of the current state of supply chains and evaluate how companies are addressing growing complexity and visibility challenges, UL teamed up with Bloomberg to conduct a survey of executives and senior managers across key industry sectors. The study targeted primary decision-makers and team members with oversight of supply chain transparency practices and initiatives within their respective global operations.

This study uncovers fresh insights on the various challenges global organizations are facing in their quest to achieve transparency and the solutions they are employing to mitigate supply chain risks.

Regional Breakdown



10-minute
online survey



Number of
interviews
N=351



Senior managers/
directors and above
connected to supply
chain within their
organizations



\$50 million+ global
annual revenue



Supply chain responsibilities as part of their job:

- Oversight of company's supply chain or supply chain transparency/visibility practices and initiatives
- Primary decision-maker for supply chain needs or supply chain transparency/visibility practices and initiatives
- Part of a team that coordinates company's supply chain or supply chain transparency/visibility practices and initiatives

Investing in transparency offers multiple benefits

Transparency provides business leaders with the critical information they need to help alleviate supply chain risks and prevent disruptions. Achieving supply chain transparency requires the use of top-tier digital technology, as transparency depends on the availability and management of a wide range of accurate data. For instance, data about a product's chemical make-up, environmental impact and social ramifications may be required to support strategic sustainability aims.

Transparency also requires the investment of leadership and committed employees throughout the organization, working together to prioritize transparency as a central goal and a focus of management.

Although it takes effort and investment to attain, organizations who achieve high levels of visibility across their supply chain reap multiple benefits. Companies with supply chain transparency are better equipped to:



Meet customer expectations

Consumers are increasingly empowered, through social media and e-commerce, to engage with brands and make informed buying decisions. Consumer trust is earned through transparency and disclosure, made possible when businesses maintain a confident grasp of their supply chain — from sourcing materials to finished goods.



Increase efficiency

When businesses gain insight into materials, inventory and shipping, efficiencies appear and wastefulness is alleviated. Anticipating capacity limits due to pipeline obstructions or near end-of-life parts can also diminish risks and reduce costs.



Manage complexity

Even with thousands of interconnected components and suppliers, businesses must develop a comprehensive understanding of their supply chain, assembled from information about each product and its components across every line. Collaborating on the shared goal of visibility with suppliers helps reduce gaps in business transparency, which lowers exposure to risk from supply chain disruptions, product recalls and legal and regulatory penalties. Improved communication between each contact along the chain strengthens relationships and increases efficiencies.



Comply with regulations

Adopting a globalized supply chain requires compliance with the regulations and laws of multiple markets. When the correct sourcing framework to track changing government regulations is utilized, compliance is simplified, helping lower risks and penalties.



Mitigate risk

A lack of information, or inaccurate data, can result in heightened risk. By implementing digital technologies to aid in transparency, businesses can minimize missed deadlines and damaged deliveries. Addressing issues along the supply chain before they affect consumers amounts to modern-day brand protection.

Transparency reduces the risks of complexity

Barriers to supply chain sustainability

With more companies expanding their sustainability initiatives to include supply chain partners, many are challenged with effective implementation. Full visibility of the supply chain is one of the top three supply chain priorities, but only 6% of companies have reached this target.³

Some of the biggest obstacles to implementing sustainability are:



Globalization

Time, distance and communication issues pose a logistical challenge.



Tiered supply structure

Multiple suppliers make achieving clarity a challenge.



Outdated technology

Older systems lack the ability to provide insight into modern supply chains.



Siloed processes and functions

Sourcing and compliance teams are often unaware of what other departments are doing.

Even for the most organized companies, realizing a transparent supply chain proves to be a daunting task. Some brands have thousands of products on the market, with hundreds of supplying factories and thousands of employees playing a part in their creation. Add to that countless shifting labor laws and regulations, and the multifaceted journey a product takes to market is far more complicated than a matter of transportation.

As supply chains grow in complexity, risks also expand. External pressures like globalization, heightened consumer expectations and regulatory trends force the growth of supply chains. For every added link in the chain, there is an associated risk. Transparency helps mitigate these risks by lessening the disruptions that can impact return on investment (ROI), such as product quality issues and network outages, among others.

As supply chains become increasingly complex, simple errors that occur upstream can lead to substantial problems downstream. Failures that occur due to product malfunction, unforeseen delivery delays, labor unrest, factory conditions and more can result in negative press and social media, directly impacting brand reputation.

Definitions for companies with low versus high complexity supply chains and low versus high visibility supply chains were determined based on survey results.



Low complexity supply chains

Companies with only one to two parameters in their supply chain



High complexity supply chains

Companies with three to six parameters in their supply chain



Low visibility supply chains

Companies in the bottom tercile of average current visibility

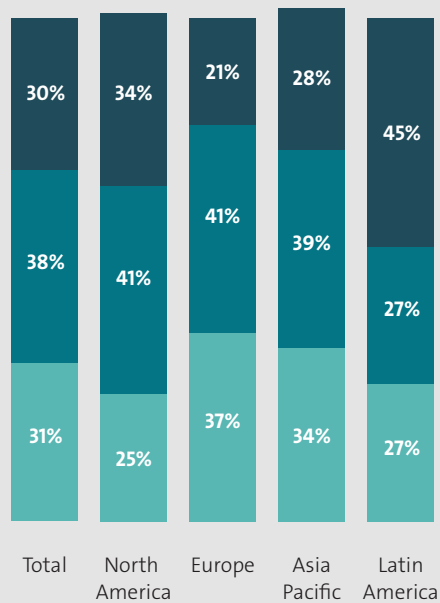


High visibility supply chains

Companies in the top tercile of average current visibility

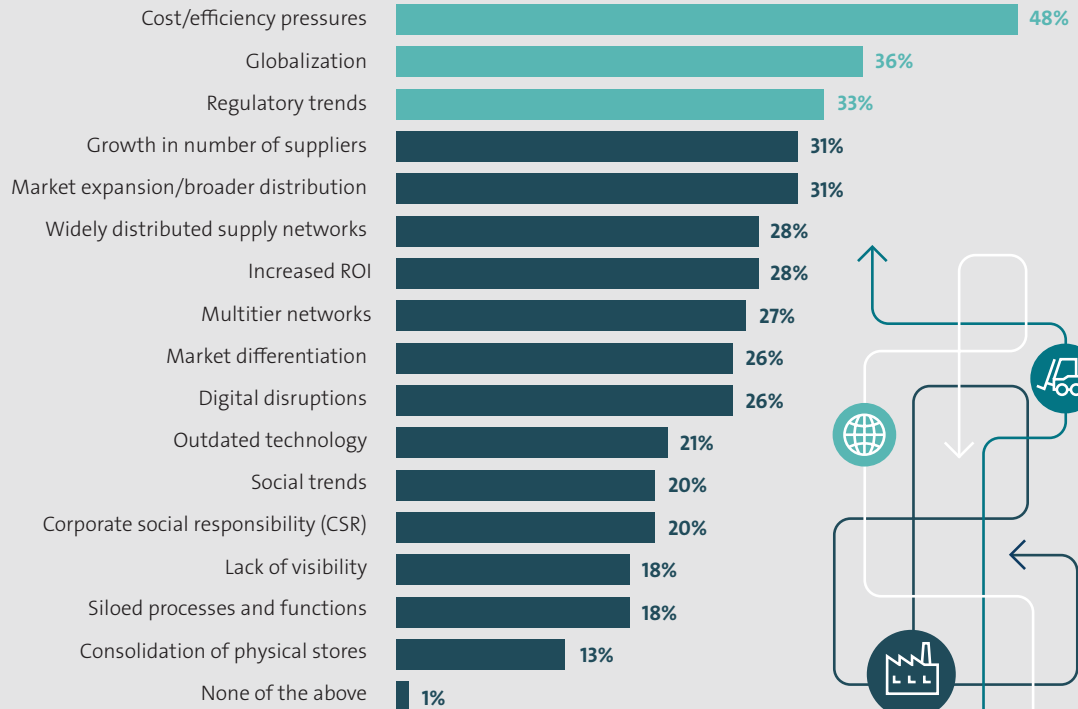
Perceived complexity by region

- Complex/very complex
- Somewhat complex
- Not at all complex/a little complex



When asked to rate the complexity of their company's supply chain, 30% of respondents overall rated their supply chain as complex or very complex.

Reasons for supply chain complexity



In outlining the reasons for supply chain complexity within their organizations, respondents cited cost/efficiency measures as the top reason, followed by globalization and regulatory trends.

Supply chain complexity is fueled by:



Faster lead times
Quick turnaround times and made-to-order manufacturing demands have drastically reduced lead times.



Precise delivery expectations
Real-time tracking and tight delivery windows are operating directives.



Globalization
Businesses have increased their global reach to serve a larger, online customer base.



Expanded products and services
Mass customization trends have increased the product lists for many shippers.

Different levels of leadership see different obstacles

A supply chain may have thousands of interconnected components and suppliers. To ensure the uninterrupted flow of operations, managers need visibility into what's going on, what's most critical, what decisions they need to make, and the impact these decisions will have up and down the extended supply chain. While transparency is a top priority for companies worldwide, there are reported hurdles that impede access to supply chain visibility.

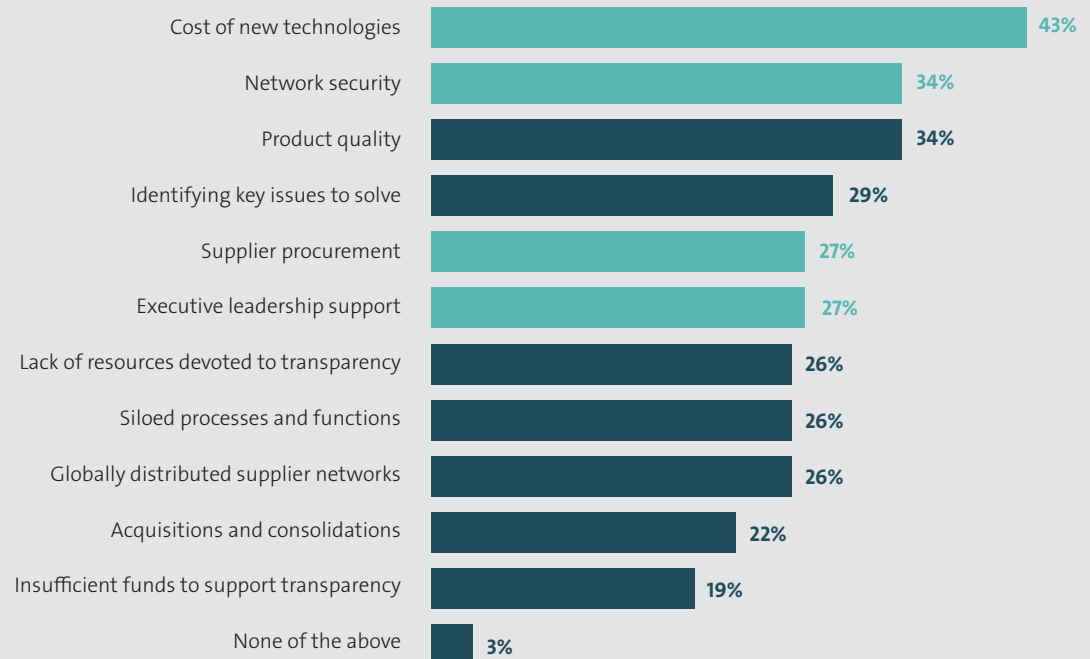


PurViewSM Platform is helping to push the industry toward consensus on what sustainable standards should be and create incentives for innovation in this highly competitive space, ultimately broadening the sustainable product selection for consumers. PurViewSM Platform is a highly customizable sourcing platform, using science and technology to assess product qualities against set criteria.

The cost of new technologies is the greatest concern for companies, followed by network security and product quality.



Hurdles to transparency

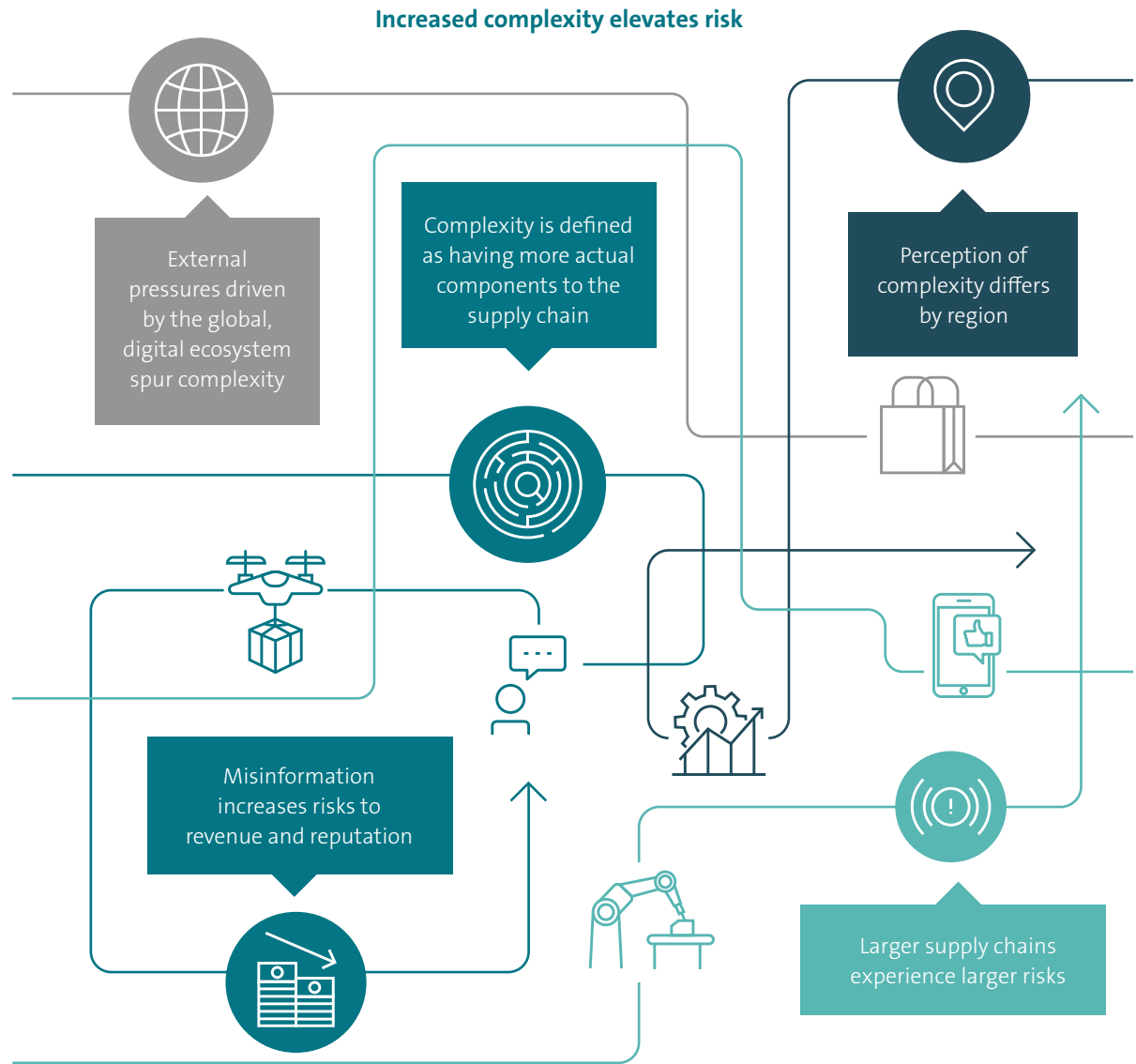


Insufficient data enhances risk

Transparency appears to be the only way to address the complicated nature of modern supply chains. Technology is a vital component to achieving transparency, but considerable personnel investment is also critical.

Modern supply chains have grown to address global operations, custom delivery and multiple product lines. These larger supply chains are susceptible to larger risks through loss of quality, efficiency and revenue. Disruptions can result in negative feedback from end users, resulting in loss of revenue and reputation. Network security issues, security breaches and network infrastructure obstacles also pose risks.

As companies expand and global supply chains grow, operational decisions must be made, even when decision-makers are unsure if the right information is available to them. If effective communication and information systems are not embedded throughout an organization, this reliance on incomplete or unreliable data directly correlates to increased risk. When organizations lack the clarity to make informed decisions, the chance for undesirable outcomes occurs with increased frequency.



Transparency is a growing priority

Supply chain transparency is among the top areas of importance for companies globally, especially in Latin America, and is increasing as a strategic priority for the majority of respondents. All aim for greater visibility overall. Current visibility perceptions are consistently lower than desired across supply chain components.

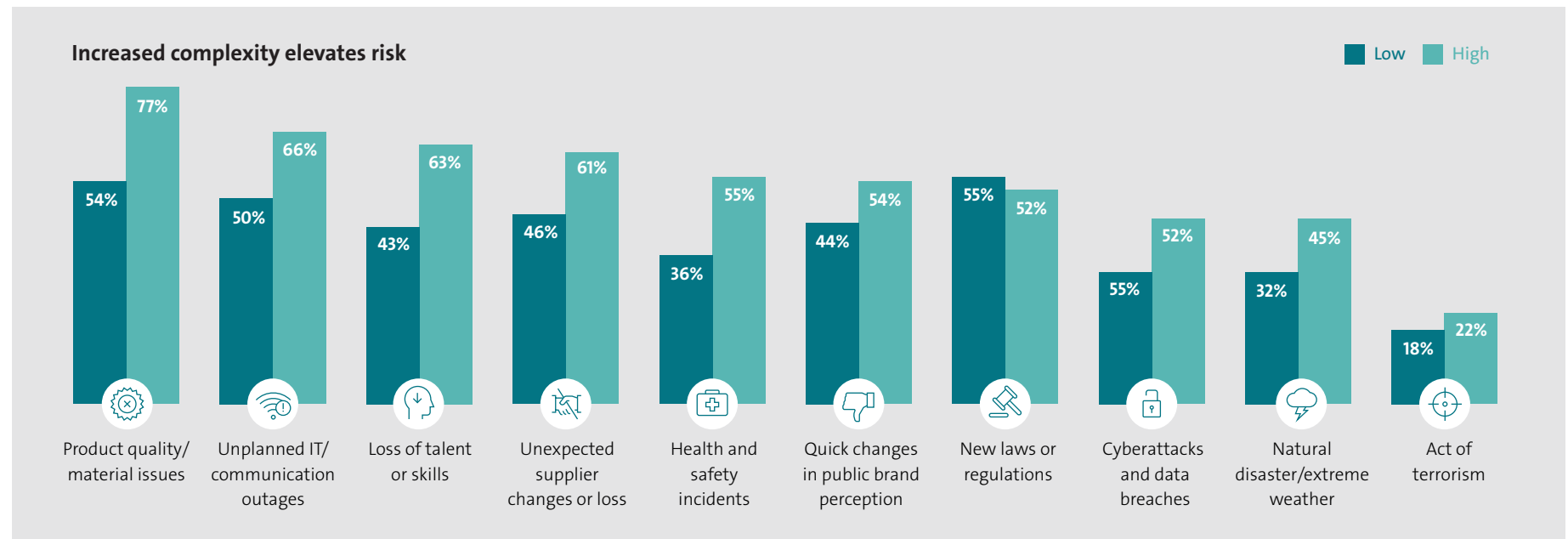
Transparency helps protect against disruptions

Companies with increased transparency are less likely to experience frequent cyberattacks, unplanned IT outages, product quality and material issues, health and safety incidents, and unexpected loss of suppliers.

Companies with higher visibility supply chains are also less likely to experience disruptions due to employee experience, including loss of talent or skills.

Due to globalization, the likelihood that companies will be adversely impacted by events such as natural disasters, political and economic instability, supply disruptions, and economic volatility, increases. Operating in more markets with more partners raises the odds of facing such disruptions.

Our survey measured the frequency for different types of supply chain disruptions.





Achieving transparency

Technology is the key to transparency

Technology is becoming the key driver of an organization's success, innovation and competitive edge in today's supply chain landscape. Companies with highly transparent supply chains are proactive in improving network infrastructure and strengthening network security, as well as increasing connected devices and supplier analysis tools.

Successful supply chain executives across industries have increased digital and data acumen throughout their organizations. They are aggressively addressing integrated technologies, including the Internet of Things (IoT) on mobile, collaborative and cloud-based platforms.

Complex supply chains prioritize transparency

Companies with more complex supply chains are more likely to have highly transparent ones. To manage the multitude of components, understanding connections at a granular level is important.

The right technology combats complexity

While technology plays an important role in reshaping supply chain management, the complexity of supply chain management and transparency requires more than minor operational tweaks. Businesses need tools and capabilities that can have a transformative impact on supply chain sustainability and performance, including:

- Systems and processes to acquire, manage and extract actionable insights across multiple lines simultaneously
- Methods to securely share data between suppliers and third parties
- The ability to control and manage disparate data from offline processes and multitiered suppliers
- Enterprisewide data analysis and collaboration tools to replace isolated functions and processes

Companies that rise to meet the demands of their complex supply chains adopt technology and processes to continue to improve operations.



They leverage high-tech tools such as data analytics, the cloud, IoT, smart devices, automation/robotics and even directional increases in blockchain and chipping.



They tend to consult a broader range of knowledge resources including attending conferences and events, trade publications, case studies, business media articles and webinars.



They take critical steps to improve network infrastructure and security.



They integrate supplier analysis software and data mapping.



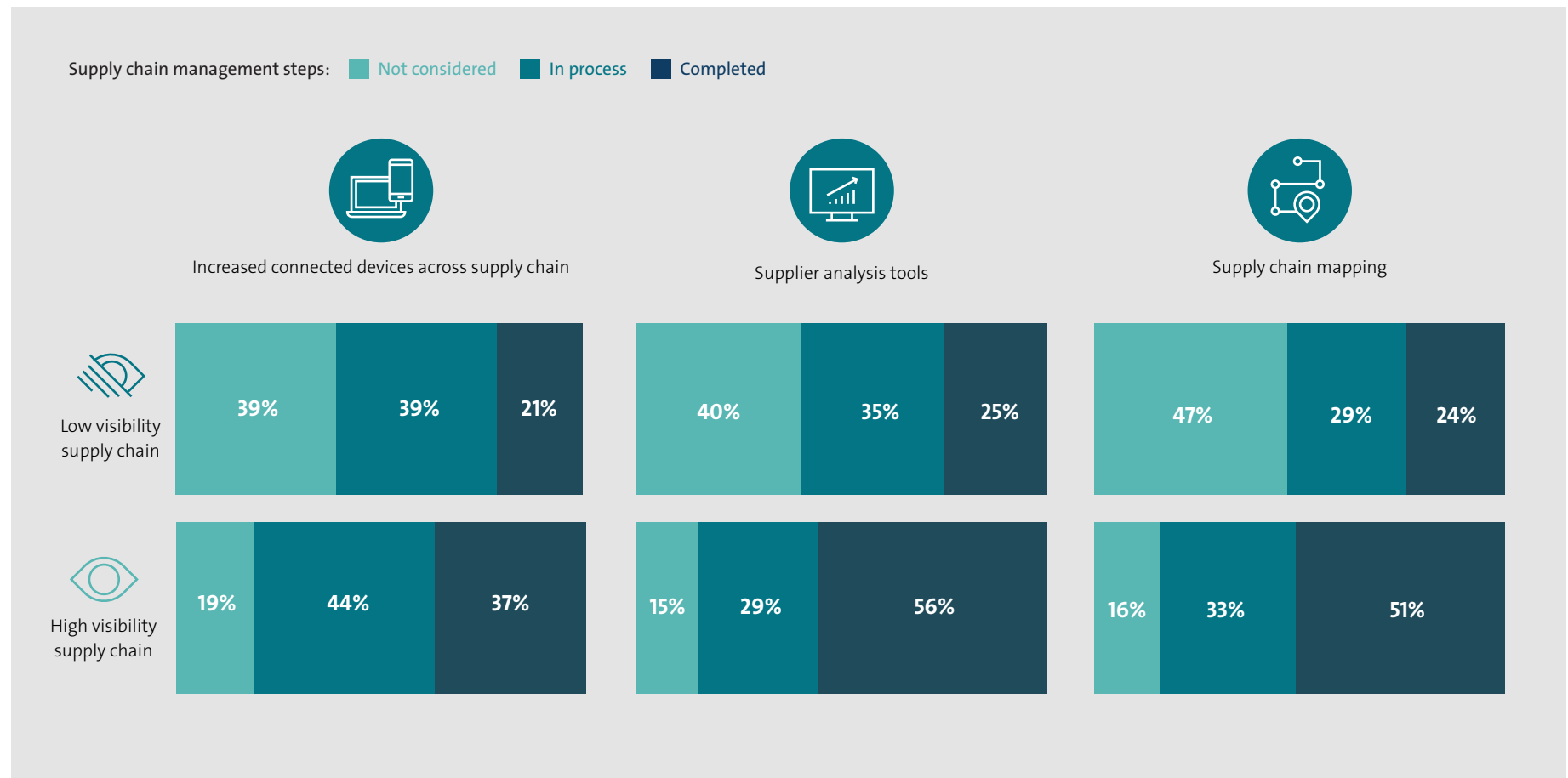
Their C-suite executives and leadership are more likely to keep up with industry-supported resources, e.g., advisory/consulting firm websites and trade publications.

Steps to supply chain management

Consumer-driven digital platforms like social media, mobile networks and e-commerce have empowered consumers to become more discerning in their buying decisions. Fortunately, these same leading-edge technologies are also helping to transform traditional supply chain networks into modern digital systems that enable broad visibility, wider collaboration, improved efficiency and faster response times.

Technology can transform supply chain management, making it possible for businesses and stakeholders to establish a more comprehensive understanding of the relationship between an organization's supply chain and its sustainability impact.

So, which tools have companies with highly visible supply chains implemented to improve transparency? Many have strengthened their network security, integrated supplier analysis tools, and improved network infrastructure, as well as having completed supply chain mapping and increased connected devices.



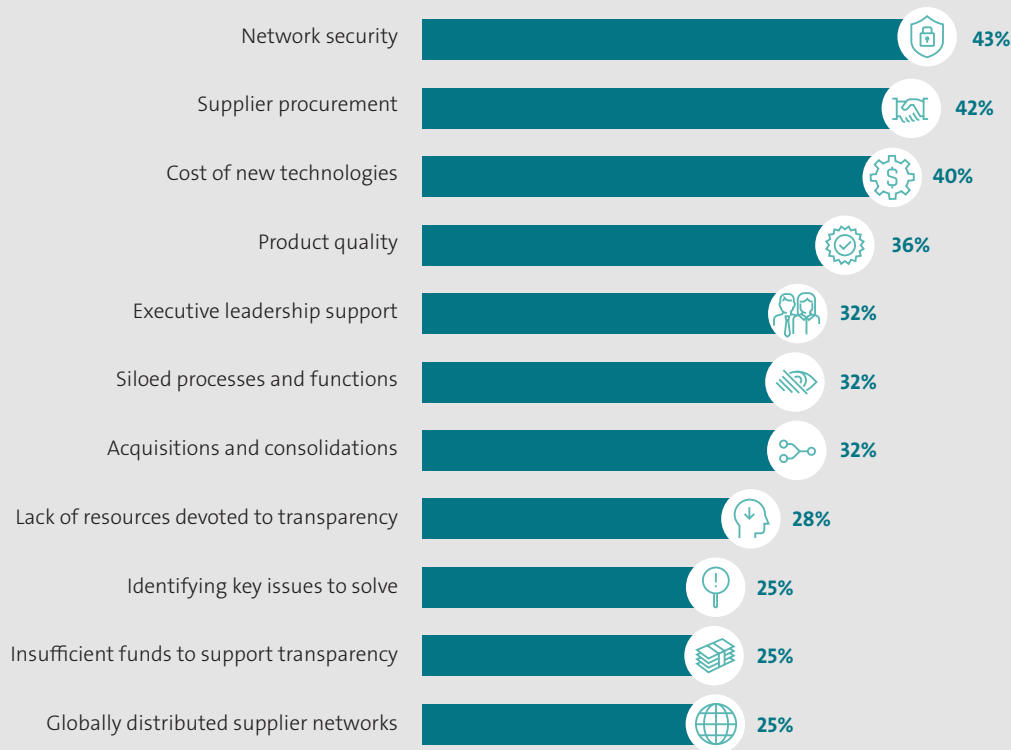
Keeping up with emerging technology

Large deployments of mobile and wireless technology have already been implemented in the logistics and transportation sectors, and with good reason. The need for real-time tracking and accurate delivery systems makes supply chain management ripe for technological innovation. However, keeping up with emerging technologies can be difficult for large companies that have deep investments in older

technology. Although transitions may take time, leveraging new technologies is becoming of key importance in this era of rapid digital change.

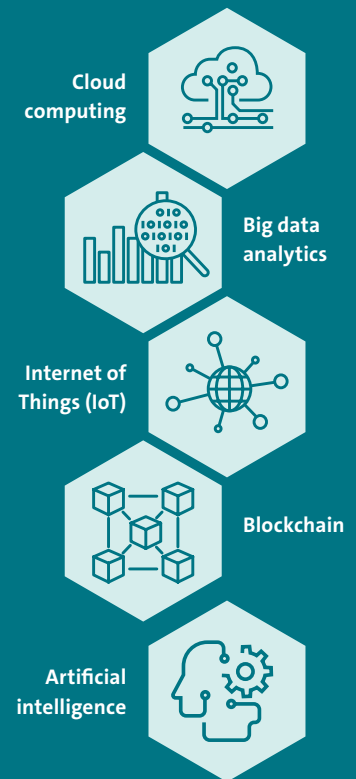
In identifying the biggest hurdles in improving supply chain transparency, respondents indicated network security, the cost of new technologies, product quality and supplier procurement.

Top hurdles of the C-suite



Delivering high-tech answers to pressing needs

A number of game-changing technologies are helping to reshape daily supply chain processes, drive efficiencies, and improve corporate social responsibility performance for organizations across industry sectors. Some of the more prominent examples include:



Want to discover more about these solutions and their impact? Visit [UL.com/insights](https://www.ul.com/insights).



Taking steps toward transparency

Industry research and case history examples show that proactive management of sustainable supply chains helps organizations better protect themselves from operational risks and supply chain interruptions that can arise due to unforeseen governance challenges. While there is no silver bullet for achieving perfect transparency, there are several best practice measures businesses can take to improve sustainable performance and strengthen their competitive position. For example, gathering information from suppliers through a benchmarking survey or self-evaluation will give you a baseline understanding of sustainability performance. From there, an audit program can gauge performance over a period of time.

High-tech tools and employee investment are critical factors

A strong network and data analysis tools are necessary to achieve visibility. When asked what steps their company has taken to increase supply chain transparency, respondents cited strengthening network security and integrating supplier analysis tools most often as in-process or completed.

Improving technical infrastructure

Companies with highly transparent supply chains have better technical infrastructure, having done the following:



Taken steps to improve network infrastructure and security

Leveraged high-tech tools such as IoT, data analytics, and even directional increases in blockchain and chipping



Integrated supplier analysis software and data mapping



70%

According to a recent survey, 70% of businesses that applied supply chain visibility solutions realized a return on that investment within 13 months.⁴ While a transparent supply chain can't completely eliminate risk, it can help cut costs by pinpointing or even anticipating capacity limits due to obstructions in the pipeline or impending end-of-life parts.

Highly transparent companies invest in a hands-on approach

Robust teams at each level of the system benefit from supply chain transparency.

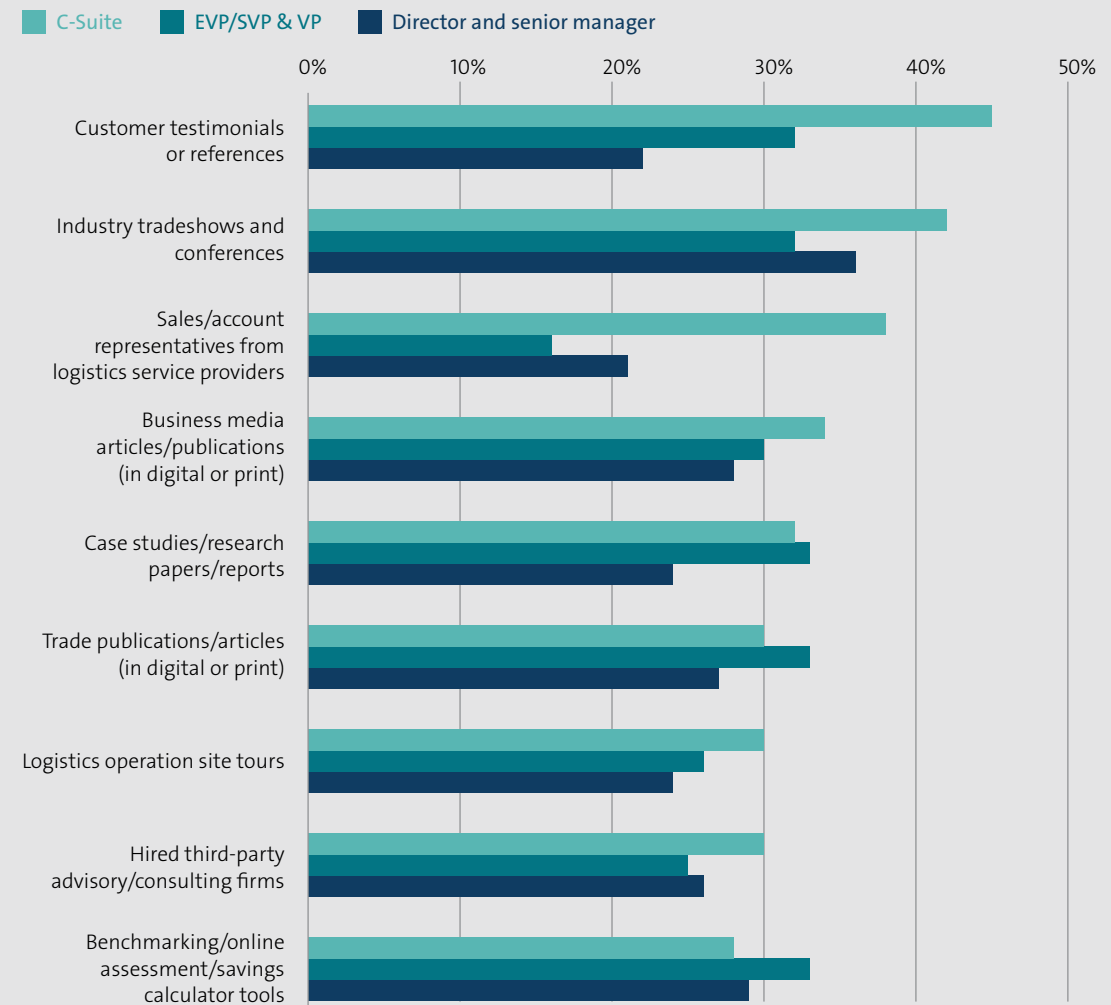
- Internal support from dedicated supply chain committees
- External support, such as engaging third-party support
- Daily, hands-on management of supply chain components and regulatory needs
- Instilling an overall goal of simplicity

The right people – and mindset – are important to keep the pieces moving

- Companies with high transparency supply chains tend to also have a devoted committee for supply chain management and include on-site supplier inspections and CSR initiatives, in addition to hiring third-party support
- Maintaining a mindset of simplicity may help employees manage the supply chain
- Companies that think their supply chain is less complex are equally likely to have supply chains with high visibility

How do companies keep up with supply chain needs and innovation? Many respondents rely on customer testimonials, trade shows and other industry events and conferences.

Top 10 resources for supply chain needs & innovation



Transparency correlates to sustainable business

Companies with highly visible supply chains are more likely to have begun socially responsible initiatives. CSR and sustainability initiatives rank low in added complexity, and there is industry support that both sustainability and CSR initiatives can have positive impacts on overall supply chain efficiency and brand reputation.



81%

of CEOs say that digital technologies are radically increasing transparency, and



62%

say that digitization has made trust a top priority for the companies.⁵



Building a framework for longevity

With advances in technology providing a road map for the future, organizations are beginning to see the full potential of a transparent supply chain. As organizations continue to step up their commitment to sustainable products and practices, transparency will play an increasingly crucial role. But in order to deliver on the sustainability promise, collaborative, well-planned supply chain practices must be in place and effectively executed on a consistent basis.

By looking to technologies and internal processes, companies can begin to move toward internal visibility, ultimately achieving transparency to share with stakeholders across the board.

Turning complexity into clarity



Transparency allows businesses to anticipate and mitigate risks, getting ahead of issues along the supply chain before they proliferate. This is critical in a culture of digitization and increased consumer awareness and influence. Global supply chains are susceptible to faster lead times and environmental, political and economic instability. While the speed of digital transactions and increasing amounts of critical data contribute to the urgency of supply chain management, advancing digital technologies and strategies can also transform supply chain management.

Meeting the demands for transparency in an increasingly complex and rapidly advancing digital global economy is possible. Our research shows

that technology is becoming the key differentiator for businesses finding success in supply chain management. With more data, more solutions are available. Curating this data and identifying opportunities from the wealth of information across supply chains enables businesses and leaders to make the quick, accurate decisions needed to keep their supply chains operating efficiently and sustainably to build brand trust and satisfy consumers.

Achieving transparency requires increasing digital and data acumen throughout organizations. It involves emphasizing communication and collaboration across invested stakeholders and throughout digital core services. As consumer expectations for increased

responsiveness, transparency and sustainability rise, leaders must embrace complexity and invest in the necessary technology and expertise to support the data-driven insights and clarity they require.

With the various global challenges businesses face today, knowing what happens up and down the supply chain is a must to avoid risk and reputational damage. No matter an organization's visibility challenges, leveraging new technologies to analyze information helps leaders manage complex supply chains. Although transition takes time and initial investment, that investment realizes a relatively quick return and may even help cut costs and improve operations, leading to the long-term success of businesses and brands.



About UL

Around the globe, UL works to help customers, purchasers and policymakers navigate market risk and complexity. UL enables trust and vital end-to-end security designed for our interconnected world. We possess a unique expertise in developing security frameworks, structuring security programs for IT and interconnected ecosystems. We enable businesses to implement innovations without compromising on security, helping to maintain customer trust while increasing market access.

As an IT industry partner and collaborator, UL aims to create Standards and policies that will help ensure the safe and secure adoption of new connected technologies. UL is prepared to deliver services, solutions and education to help enterprises strengthen their brands. We invite you to take advantage of our leading-edge insights and domain experts to position your brand for long-term, sustainable success.

For more information, visit [UL.com/Insights](https://www.ul.com/insights).

Sources

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