Lehigh Business Supply Chain Risk Management Index

Quarterly Report

3rd Quarter / 2025

LEHIGH UNIVERSITY | College of Business

CENTER FOR SUPPLY CHAIN RESEARCH AT LEHIGH

CSCMP™ Council of Supply Chain Management Professionals

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LEHIGH BUSINESS SUPPLY CHAIN RISK MANAGEMENT INDEX

Welcome to the **Lehigh Business Supply Chain Risk Management Index Report** developed by the Center for Supply Chain Research at Lehigh University and the Council of Supply Chain Management Professionals.

We launched this index in August of 2020 to better understand the different kinds of supply chain risks businesses face. **Supply chain professionals rated the likelihood that the risk in the 3rd quarter of 2025 compared to the risk in the 2nd quarter of 2025 would likely increase, remain the same or decrease for 10 different supply chain categories.**

The Lehigh Business Supply Chain Risk Management Index (LRMI) value is a number between 0 – 100, where greater than 50 suggests increased risk, equal to 50 suggests the same risk and less than 50 suggests decreased risk. **The average LRMI for the 3rd quarter is 70.32, which is a decrease from the 2nd quarter, suggesting a lower level of risk in the 3rd quarter of 2025.**

The table below reflects the 10 categories of risk from highest risk to lowest risk when evaluated independently as perceived by supply chain professionals.

If you would like to have additional information about the survey or to participate in the survey, please contact Dr. Zach G. Zacharia at zacharia@lehigh.edu.

Executive Summary

The LRMI for the third quarter presents a sharp contrast to the previous quarter. In the second quarter, nine out of ten risk categories increased; instead, in Q3, eight out of ten risks declined, marking a modest easing of overall risk. Supplier Risk remains the highest-ranked risk at 85.48, reflecting continued anxiety over sole-source dependencies, geographic concentration, quality issues, and price volatility. Government Intervention Risk was the only major category to rise, climbing to 83.33, and becoming the second-highest risk, highlighting ongoing unease around regulations, tariffs, and trade restrictions. Economic Risk dropped from 84.42 to 79.44, but remains elevated, signaling persistent challenges related to energy costs, shortages, and border delays. While Cybersecurity and Data Risk declined slightly, it held its position as the fourth-highest risk at 77.42, underscoring the sustained threat of cyberattacks. Rounding out the top five is Customer Risk, which decreased to 70.43, reflecting continued uncertainty around shifting customer behavior and demand patterns. The average risk index decreased from 72.14 to 70.32, indicating a slight improvement in risk; however, the risk landscape remains highly dynamic and challenging for supply chain leaders.

Risk Type	2nd Quarter 2025 Risk Index	3rd Quarter 2025 Risk Index	Trend
Supplier Risk	87.50	85.48	↓
Government Intervention Risk	80.52	83.33	↑
Economic Risk	84.42	79.44	↓
Cybersecurity and Data Risk	78.13	77.42	↓
Customer Risk	75.63	70.43	↓
Transportation Disruption Risk	72.22	68.95	↓
Technological or Competitive Risk	73.75	63.98	↓
Operational Risk	59.26	58.95	↓
Environmental Risk	51.95	58.89	↑
Quality Risk	58.02	56.32	↓
Average Risk Index	72.14	70.32	↓

The Risk Index is a number between 0 – 100.
The further the number is from 50 the greater the level of risk.
The arrow indicates whether the risk is increasing or decreasing in comparison to the previous quarter.

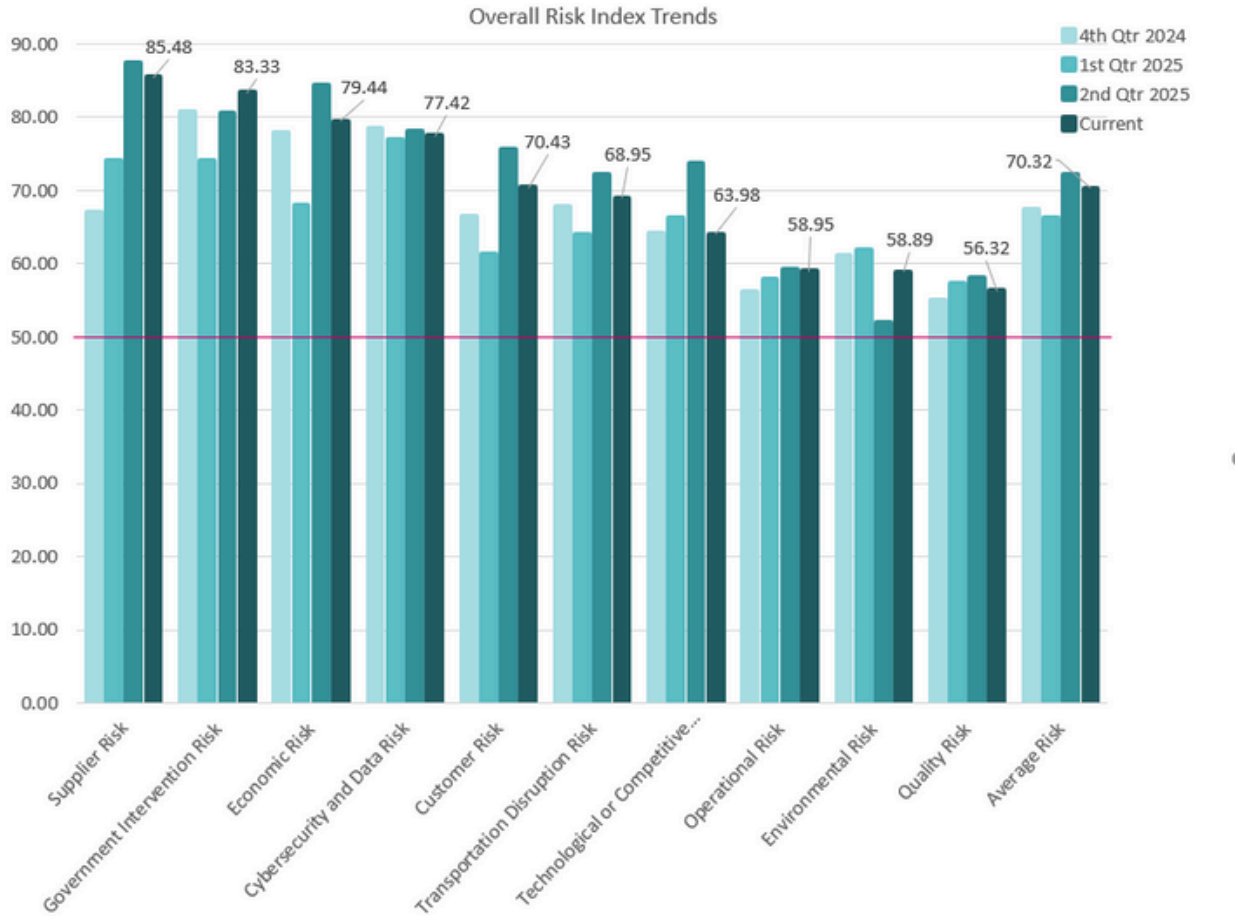
Did You Know?

The Lehigh Business Supply Chain Risk Management Index for the 3rd Quarter in 2025 is

70.32

LRMI Risk Index Over the Last Year

One of the advantages of regularly examining supply chain risk is to consider how these risks change over time. The table below shows the changing levels of risk across the 10 different areas of the supply chain this last year. It is also insightful to see that some areas of the supply chain are consistently seen as high risk and other areas of the supply chain are seen as lower risk over the same one-year time period.



Four Biggest Risks in Head-to-Head Comparison 3rd Quarter 2025

(Respondents are asked to compare across all 10 risks simultaneously, instead of rating one risk at a time.)

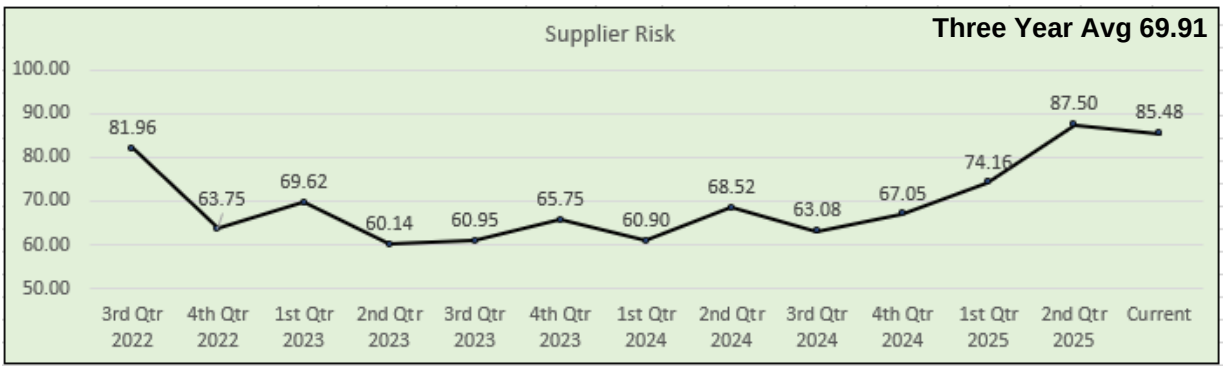
1. Government Intervention Risk
2. Supplier Risk
3. Economic Risk
4. Cybersecurity and Data Risk

01 Supplier Risk

Some examples are: single/sole source supplier, suppliers from one geographic location, supplier quality issues and price volatility.

Selected Comments:

- Tariff price increases are causing massive turmoil.
- Higher import taxes/trade wars will lead to problems for suppliers, especially from certain locations (depending on regional import tax rates). Higher import taxes will lead to price volatility. As ocean carriers reconfigure their global networks and ship rotations based on tariffs and ship taxes, this will lead to delivery schedule inconsistency. Most international suppliers to the U.S. will be exposed to the geopolitical risk of trade wars. Suppliers (and US companies) will face greater legal, financial and regulatory risks.
- A very large pistachio crop expected in California may drive grower prices down.
- All my component suppliers are single sources. Any supplier process problem stops my production. In chemicals, there's no way around this when making proprietary products.
- We have been moving to U.S. suppliers for the past five years, and change does not come without issues. The U.S. steel industry and the casting industry are slim and not the quality we were receiving from China. It's sad to say, but true. We are working with new U.S. partners to improve their quality for future use.
- Risk will increase due to the impact of the ownership/control of the Panama Canal.
- Suppliers are slow to ship. I waited three weeks to make a formulation because I was waiting to receive a $200 chemical.
- Our company continues to experience elevated supplier risk due to several ongoing and emerging issues. To address risks, we are: 1) Expanding our Assured Stock Program to build inventory buffers for high-risk items. 2) Increasing supplier audits and compliance verification. 3) Actively pursuing alternate sourcing strategies and qualifying second sources where feasible. 4) Strengthening partnerships with U.S.-based suppliers to reduce reliance on foreign or high-risk regions.
- All of our essential suppliers are out of the country, and there are no suppliers in the country that can match the quality or quantity.

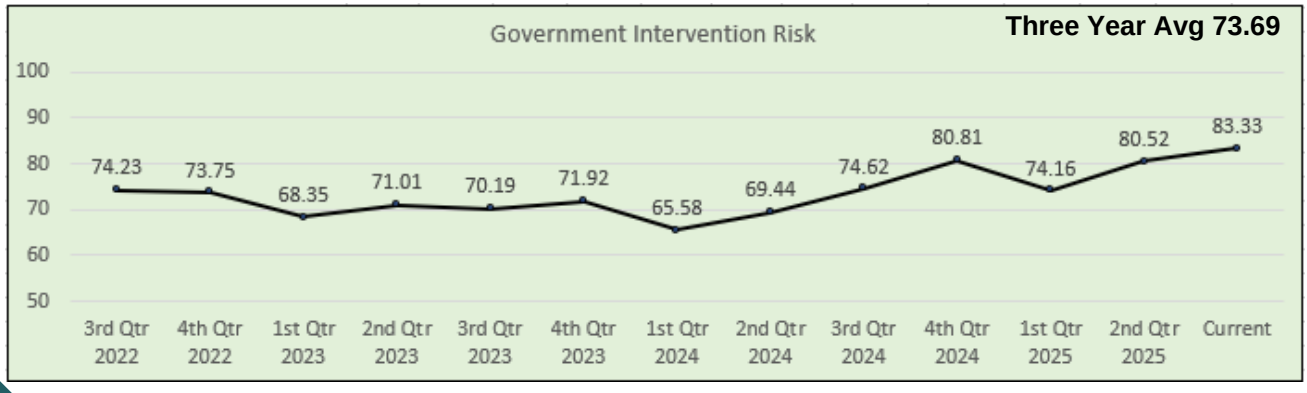


02 Government Intervention Risk

Some examples are: new regulations, tariffs/trade wars and governmental restrictions on source material, methodologies or technologies.

Selected Comments:

- Government is now the number one thing impacting economic and investment markets.
- Government intervention in the marketplace (tariffs) and public companies (Walmart pricing) creates extreme uncertainty, driving confusion for companies as to how to expand and invest.
- This is tricky because tariffs increase risk, but government regulations should decrease; thus, it's a complicated wash.
- Firms that understand the current geopolitical environment will greatly outperform those that don't. We're glad DEI is dead.
- The imposition of idiotic tariffs that hamper competition and global trade increases risk.
- The tariffs are hurting our entire network of customers and suppliers. This will directly impact our business, potentially catastrophically.
- Change is never easy, and the unknown is not good for business. Too many unknowns and no transparency of what is coming makes decision making hard.
- The tariffs are going to increase my sales in the U.S.! The cut to regulations will help my customers.
- The massive change in governmental involvement has impacted bond prices and valuation of the dollar.
- Government regulation is just the cost of doing business.
- The mindset of fear of these items (new regulations, tariffs, etc.) will both impede and lessen the impact of implementation.
- Vendors are trying to increase costs artificially -- the tariffs are a nightmare.

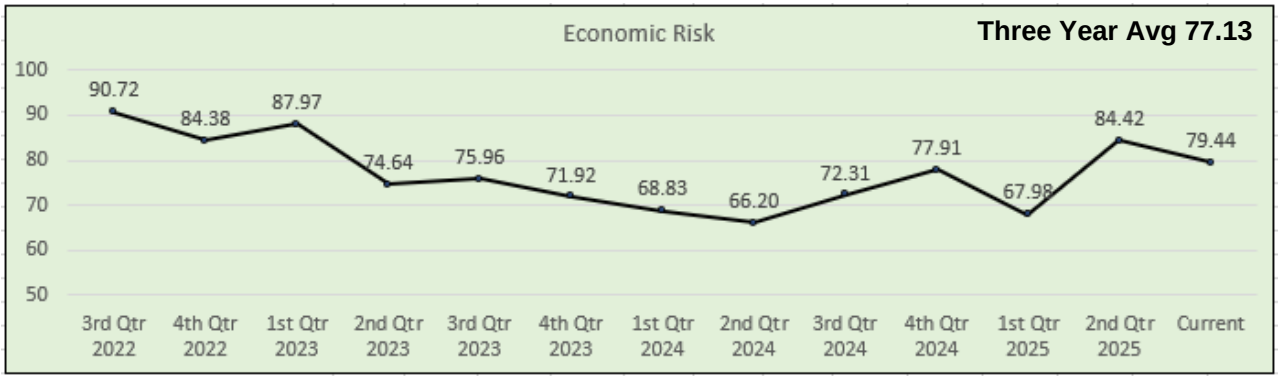


03 Economic Risk

Some examples are: increasing energy costs, commodity price volatility, labor shortages, sudden demand shocks, global energy shortages and border delays.

Selected Comments:

- Economic risk is expected to increase due to inflation and slowing economic growth.
- Economic risk is higher now than in many years due to disruptive trade-related policies.
- Commodity price volatility, demand shocks and border delays will result from trade wars.
- All farming costs are increasing substantially.
- All signs show the economy is ready to boom again.
- Everyone seems to be cutting discretionary spending.
- Energy pricing has gone down and there will be no price volatility for my products. Labor will remain the same and demand only helps my company! There will be no border issues for us since all goods are manufactured in the U.S. with U.S. raw materials.
- We are already experiencing increasing energy costs, commodity price volatility, labor shortages and sudden demand shocks. We expect the level of risk to remain the same.
- High interest rates are stifling capital investment.
- Our company expects economic risk to remain elevated but relatively stable in Q3 2025. Several persistent factors continue to impact our cost structure and operational flexibility: 1) Labor shortages—especially in skilled logistics, compliance, and technical roles—remain a concern. Hiring continues to be competitive, and onboarding timelines are longer than ideal. 2) Energy and shipping costs have not returned to pre-pandemic levels and continue to fluctuate, affecting both our overhead and supplier pricing. 3) We are closely watching commodity price volatility, particularly in raw materials tied to electronic components. While prices have stabilized somewhat, any disruption in global supply could quickly change that. 4) Border and customs delays occasionally disrupt timelines despite proactive planning. 5) Sudden shifts in customer demand—often driven by changing program funding or DoD priorities—can result in resource reallocation and inventory adjustments that carry cost implications.

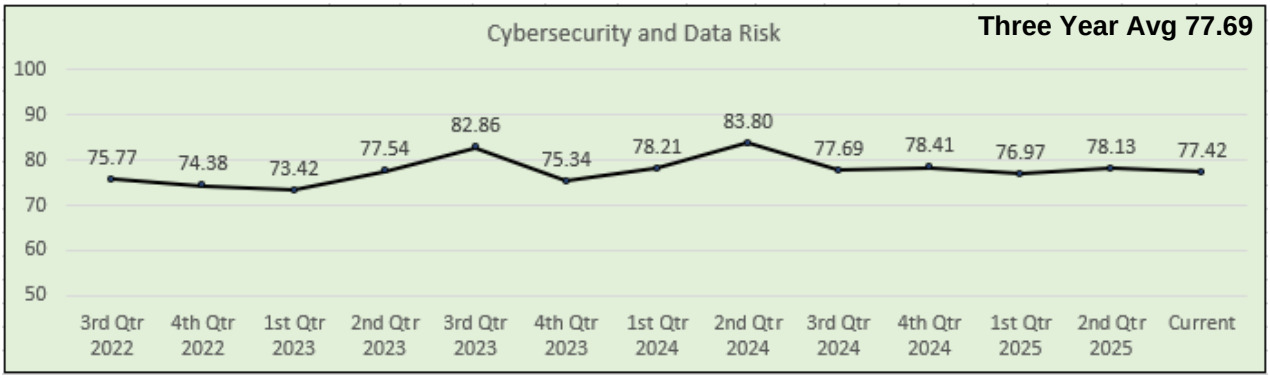


04 Cybersecurity and Data Risk

Some examples are: cyberattacks, data corruption, data theft, system viruses, hardware and software issues and security platform controls.

Selected Comments:

- Uncertainty in foreign relationships may result in an increased number of cyber instances and attacks.
- We've witnessed an increase of foreign actor attacks in the past 90 days.
- Advancements in AI and a continued reliance on digital technology is worrisome.
- We expect risk to remain the same. Too much is made of cybersecurity and data risk concerns. Fraud is the major problem, and physical shipment piracy, including hijacking of the shipment out on the road, is a problem even in proprietary shipments.
- We are working towards being Cybersecurity Maturity Model Certification (CMMC) Level 2 compliant based on customer requirements.
- We have improved our levels of cybersecurity across the board and see higher levels of cyber protection from DHS and other government entities.
- The gutting of security, and putting fools in charge of defense and homeland, only open the nation up to cyber infiltration, and the phishing has increased.
- I think that China and Russia, in particular, will be doing all they can to infiltrate company information and personal information.
- Our company anticipates a moderate increase in cybersecurity and data risk during Q3 2025 due to a few key factors: 1) Elevated threat landscape across the defense supply chain, including more frequent phishing and ransomware attempts targeting small-to-mid-size federal contractors. 2) Transition activities, such as internal system upgrades and integration of new vendor platforms, which temporarily increase exposure if not tightly controlled. 3) Ongoing resource constraints, particularly in staffing and budget, which make it more challenging to implement and monitor robust security controls at scale. To mitigate these risks we are taking several steps, including conducting a third-party audit of our cybersecurity posture in July.

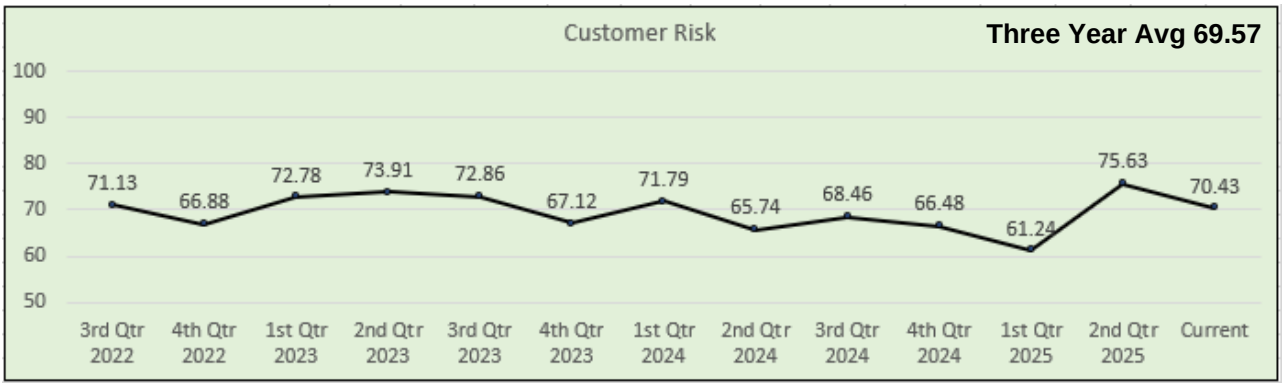


05 Customer Risk

Some examples are: fast changing customer demand, easy to lose customer loyalty, changing customer base demographics, hard to predict customer behavior and hard to service customers.

Selected Comments:

- Increased pricing, driving negative consumer sentiment, will increase risk.
- Customers are unsure about spending due to economic risks.
- Customers are not understanding, and are not forecasting, demand. They just expect immediate Amazon effect shipments for proprietary produced products.
- The tariffs may help in some ways but our customers are marine and genset - around the world. We already fight counterfeiting, and fear this will drive them to non-U.S. made products. Our quality is renowned, but that will only go so far.
- I expect a decrease in risk due to more consistent sources of supply, better quality of products made in the U.S., fewer regulations regarding sustainability, and better return on ROI for my customers.
- The loss of customers and customer base, particularly in Canada and Mexico, will lead to increased risk.
- The rising debt funding of performance shortfalls from consumer-caused business failures will suddenly impact. When consumers have lost hope in a financial recovery, a recession will hit quickly and businesses will hasten the decline with layoffs and negative forecasts.
- The customer base in oil and gas is changing due to the change in administration. Overseas it is very dependent upon a secure political situation in the importing country, especially with regard to countries in Africa and South America.
- While we do not anticipate a significant increase in customer risk (in Q3 2025), we remain alert to subtle shifts that could impact demand predictability and service expectations.
- We are worried about our European and Asian customers.
- Overall volatility is expected to translate in customer demand, thereby increasing risk.

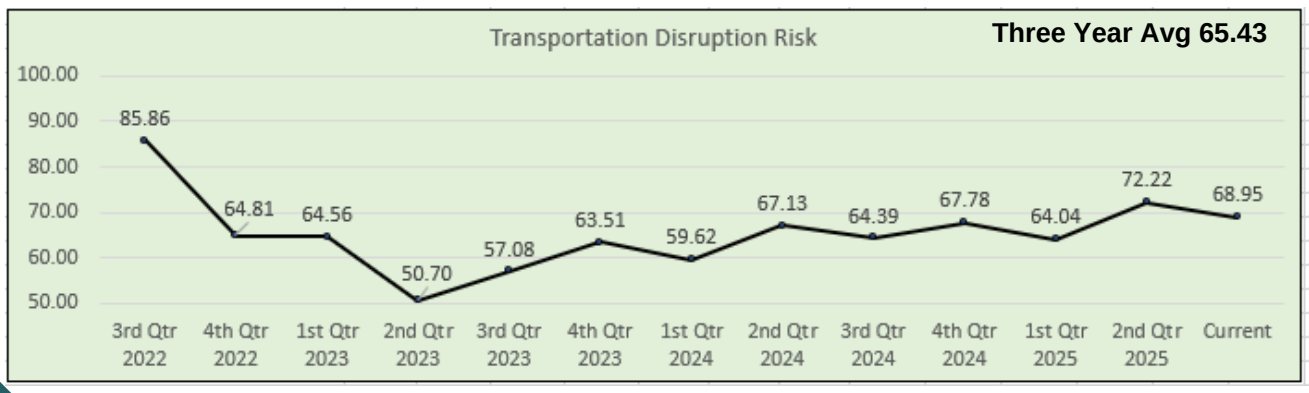


06 Transportation Disruption Risk

Some examples are: fuel prices, driver shortage, infrastructure and demand volatility.

Selected Comments:

- Transportation disruption risk will increase, driven primarily by "mid-tech" level component manufacturing sourced from Asia without alternative sources.
- Overseas shipments will be delayed, as China and other countries will slow with production due to tariff implications.
- Trade wars will lead to demand volatility, both for imports and exports. The average age of the American truck driver is getting older, and younger people are not as likely to want to be truck drivers. This will probably lead to driver shortages.
- With fuel prices going down, and employment and demand going up, all signs are good that transportation disruption risk will decrease.
- Fuel prices and freight have been astronomical, and I will only be selling U.S.-made goods from now on! The price of fuel in the U.S. will stay consistent.
- Based on the current price of oil and the significant decrease in the last two weeks, we see gasoline and diesel continuing to fall during the balance of this year.
- Another transportation disruption risk is weather. Logistics companies are consistently talking about it.
- Tariffs are an incredibly stupid tool on which to base a restructuring of the economy. It is already hard to find workers, and immigrants who work for us are now afraid, making it harder to fill slots.
- Fuel prices for shipping and shipping in general are going up. Even the post office is hustling for ground shipping business. Overnight business is not really guaranteed overnight anymore - at least 2-3 days.



07 Technological or Competitive Risk

Some examples are: disruptive or replacement technologies, introduction of new competitor firms and ineffective or non-existent regulation for competitors.

Selected Comments:

- Higher tariffs overseas for American exporters will lead, inevitably, to the introduction of new competitor firms. We're not sure about replacement technologies.
- AI is adding to this risk, even as we find ways to benefit from it.
- It remains to be seen what AI will do to change legacy processes.
- I expect a decrease in risk as I currently have high technology products that my competitors do not have.
- None of our competitors can compete with our technology; therefore, we expect a decrease in risk.
- Again, incompetency at homeland and the laying off of so many federal workers has removed a layer of safety from the process. We expect an increase in risk.
- Environmental restrictions are causing our entire industry to reformulate its products.
- We expect technological and competitive risk to remain steady in Q3 2025, with no major shifts anticipated in the short term. However, there are a few areas we're actively monitoring: 1) The entry of niche technology startups into the defense sustainment space continues, especially those leveraging AI, blockchain, and digital thread platforms. While many are still in early stages, some are gaining traction with agencies seeking faster procurement or more automated traceability. 2) We do not currently view these firms as direct competitors, as our company differentiates through deep domain knowledge, compliance expertise, and certified sourcing capabilities that are difficult to replicate quickly. 3) Regulatory inconsistencies remain a concern. Some newer or offshore suppliers operate with limited oversight, potentially undercutting pricing without meeting required AS9120, AS6081, or DFARS standards. This creates uneven competitive conditions.

08 Operational Risk

Some examples are: site disasters, product counterfeiting, damage or disruption to physical assets and machine breakdown.

Selected Comments:

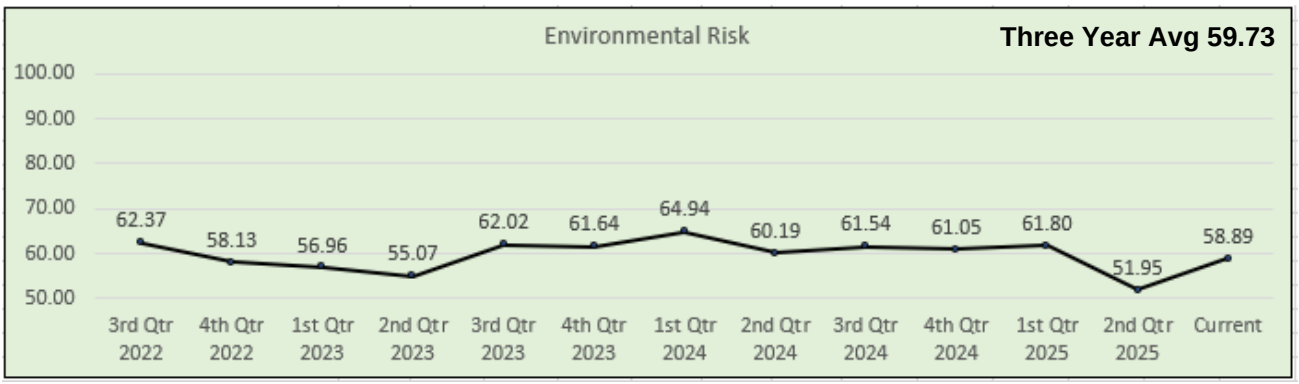
- Disrupted supply chains from tariff starts/stops will effect the ability to get parts/equipment.
- With the new administration, the risks are that local municipal resources become un-funded, or that targeted disruption attacks will be higher than they were in 2024. This is, in part, due to our company being located in DC.
- Hurricane season is an added risk at this time of year.
- Companies' business processes in the office have been damaged by COVID, as well as the absence of people handling the business in manufacturing companies. Companies are losing control of manual payment and shipping processes. Questionable delivery of goods results as communications in the operation break down.
- Even Preventive Maintenance (PM) can't keep some of our older machines from breakdowns - by necessity, not growth, they are being replaced in 2025. All else remains the same.
- Most of the larger equipment on site was built outside the U.S. and, if we have any breakdowns, procuring repair components or maintenance items may be difficult given this most recent round of tariffs and foreign trade disruptions.
- We see consolidation of the supply chain into the U.S., which is improving our options in terms of suppliers and delivery metrics.
- Disruption in the supply chain between top markets can also affect transport costs and lead time to buyers located in small markets due to a reduction in trip frequency.
- Tariff unknowns, meaning the need to move to different suppliers and reallocate amounts spent on dual-sourced items, will increase operational risk.
- Cost cutting will likely increase risks during the initial transition period, after which things should stabilize.

09 Environmental Risk

Some examples are: lack of sufficient quality testing, changing quality standards, informal quality control documentation, customer safety issues and product recalls.

Selected Comments:

- Too little attention is focused on potable water worldwide.
- More rain really hurts our construction industry.
- Water scarcity and climate warming will lead to an increase in environmental risk.
- Hurricane season is upon us in the Southeast, which increases risk.
- We expect the level of environmental risk to remain the same. We have an excellent safety program. Additionally, you can't control the weather.
- We expect risk to decrease as we are installing a generator to provide backup power.
- No one can predict an environmental force majeure event!
- Regulations for environmental reporting, and corrective actions to remain compliant, are needed.
- We continue to expect extreme weather, with risk amplified by the lack of federal response and support.
- Weather seems to be playing a bigger role in the problem than in the past.
- Stripped EPA, FDA, and other regulatory checks will allow bad actors to kill people, the environment and, possibly, each other.
- Climate change will continue to cause more extreme weather and natural disasters.
- Much will depend on hurricane season. There is a lot of volcanic activity around the globe. We expect widespread devastation in places with volcanoes erupting.



10 Quality Risk

Some examples are: natural disasters, extreme weather, industrial accidents and pandemics.

Selected Comments:

- Companies are changing suppliers due to tariffs and having quality issues with the new parts.
- Cost cutting will likely increase risks during the initial transition period, after which things should stabilize.
- Higher import taxes could make the best, safest parts unaffordable. Lesser products might then be substituted. This could lead to lower safety standards.
- We expect quality risk to increase due to a USDA shortage of personnel and funding.
- Quality risk will decrease, as we will soon see the fruits of our labor in preparation for tariffs and the like.
- We are anticipating additional issues with suppliers as we continue to change from long partnerships overseas to local distributors for materials and metal castings. New suppliers mean new issues.
- We expect a decrease in risk; we spend a lot of time with our engineering team, ensuring that our defect rate is less than 3%.
- The risks will be the same, but more work will be required due to changes from operational risks.
- The pricing risk that suppliers are facing will force them to compromise the quality of what they supply to their customers. The users may not be aware of the hidden risks within the new supplies and materials.
- Lack of sufficient quality testing and changing quality standards will increase risk.
- A chaotic environment will lead to increased risk in this area.
- Risk will increase with limited staff for incoming inspections; alternates will not be fully tested as viable replacements.

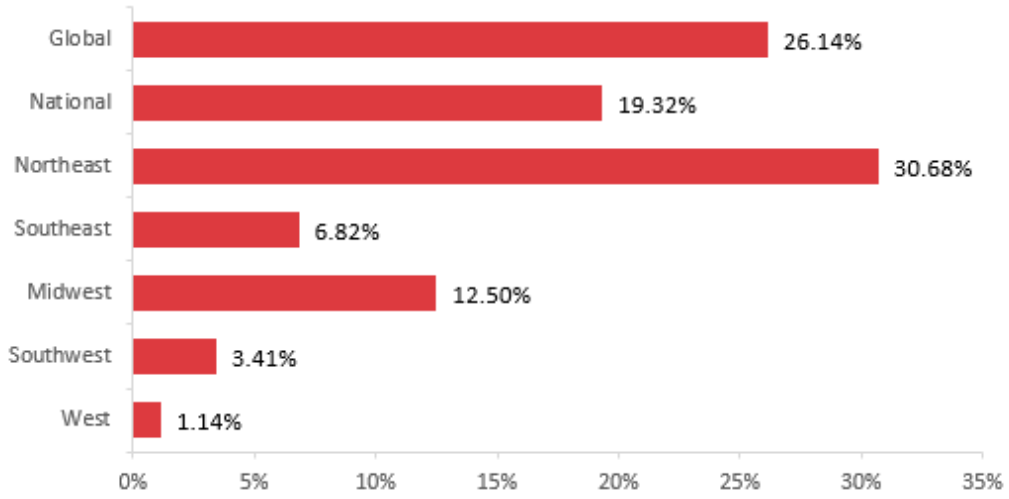
Appendix A
Risk Index Summary

The Risk Index is a number between 0 – 100.
Risk Index ≤ 49 suggests less risk
Risk Index = 50 indicates no change in risk
Risk Index ≥ 51 suggests greater risk

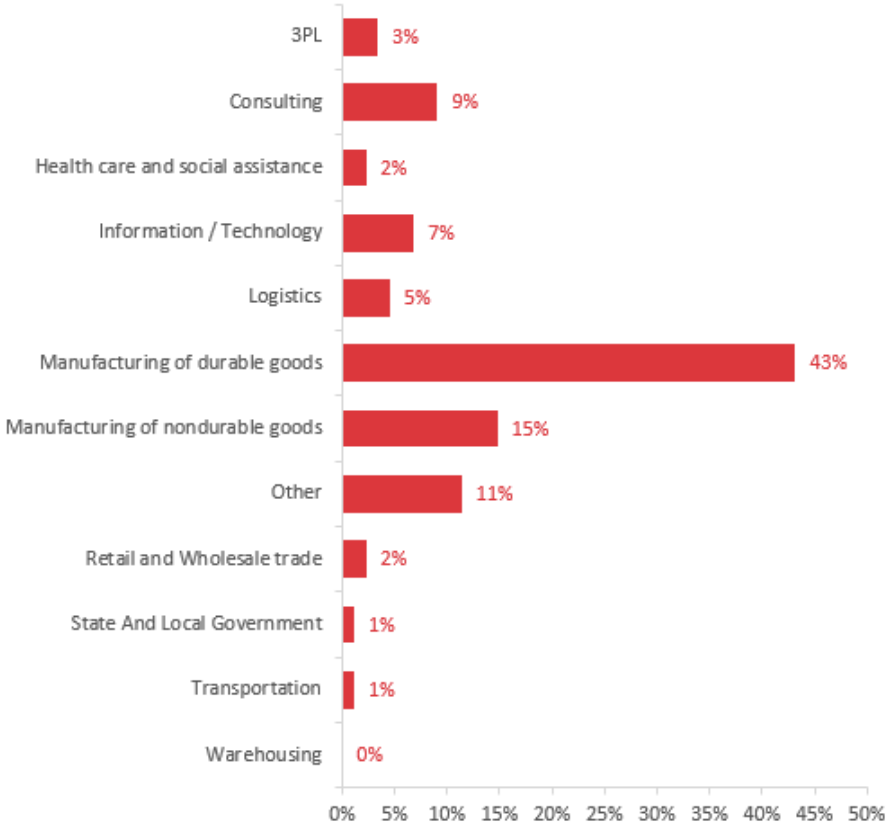
The further the number is from 50 the greater the level of risk.
LRMI = (P1 * 1) + (P2 * 0.5) + (P3 * 0)
P1 = percentage of answers reporting an improvement
P2 = percentage of answers reporting no change
P3 = percentage of answers reporting a deterioration

Appendix B
Survey Demographics

Region



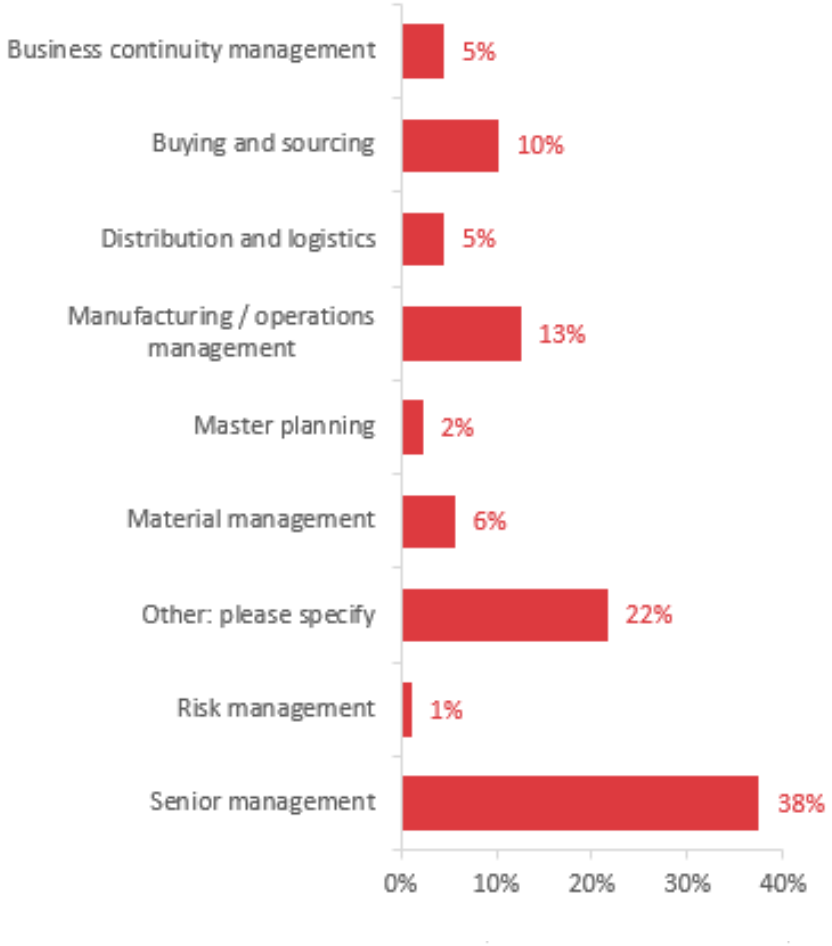
Industry



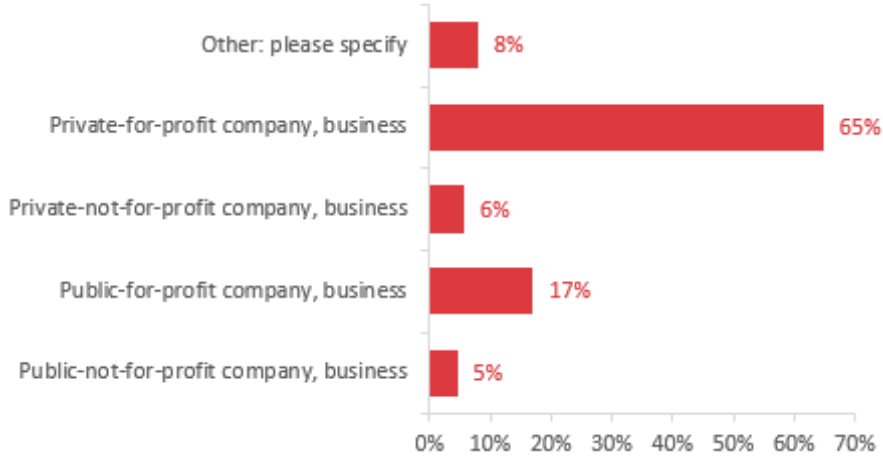
Appendix B

Demographics (continued)

Primary Role



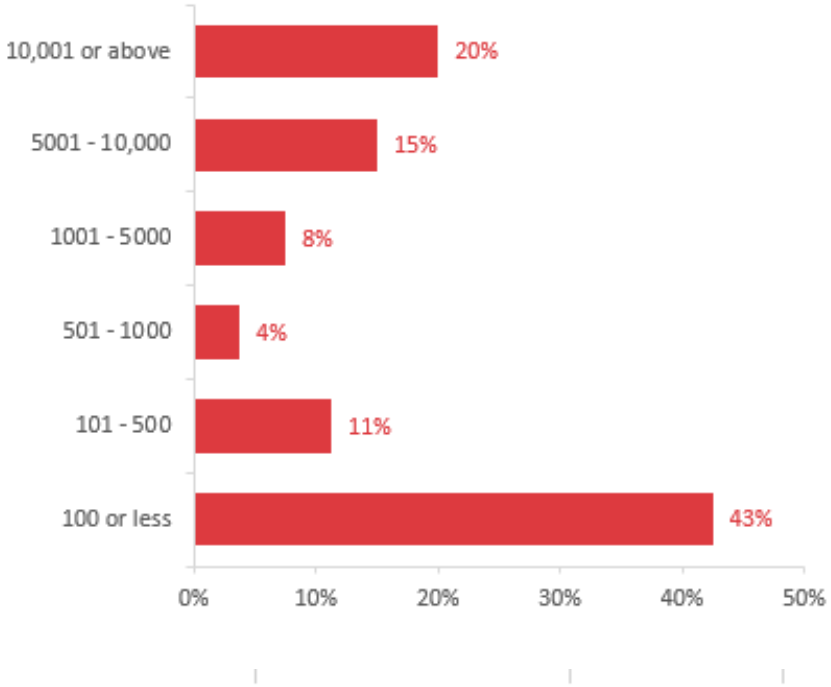
Place of Employment



Appendix B

Demographics (continued)

Company Employee Amount



Work Experience