SUPPLY CHAIN RISK INDEX™ LEHIGH + CSCMP

Lehigh Business Supply Chain Risk Management Index

Quarterly Report

2nd Quarter / 2025

LEHIGH UNIVERSITY | College of Business

CENTER FOR SUPPLY CHAIN RESEARCH AT LEHIGH

CSCMP™ Council of Supply Chain Management Professionals

Educating and Connecting the World's Supply Chain Professionals.™

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 2nd quarter of 2025 compared to the risk in the 1st 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 2nd quarter is 72.14 which is an increase from the 1st quarter, suggesting a higher level of risk in the 2nd quarter 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 second quarter highlights several notable firsts. Supplier Risk ranked as the highest overall risk this quarter at 87.50—the highest level recorded since the LRMI began in 2020. This reflects growing concerns over sole-source suppliers, geographic concentration, supplier quality issues, and price volatility. Economic Risk showed the largest quarter-over-quarter increase, rising from 67.98 to 84.52. This sharp jump indicates heightened anxiety about rising energy costs, global energy shortages, price instability, and border delays. For the first time, 9 out of the 10 tracked risks increased this quarter, underscoring a broad rise in perceived supply chain threats. Government Intervention Risk also rose significantly to 80.52, suggesting persistent concern over new regulations, tariffs, and trade restrictions. Interestingly, although Cybersecurity Risk increased this quarter, it dropped to the fourth-highest risk, marking a shift since it had held the top spot in four of the past five quarters. Rounding out the top five is Customer Risk, which jumped from 61.24 to 75.63, reflecting growing uncertainty around changing customer demand, loyalty, and behavior. Finally, the average risk score across all categories reached 72.14, the highest recorded in the last four years—signaling a challenging and uncertain environment for supply chain leaders.

Risk Type	1st Quarter 2025 Risk Index	2nd Quarter 2025 Risk Index	Trend
Supplier Risk	74.16	87.50	↑
Economic Risk	67.98	84.42	↑
Government Intervention Risk	74.16	80.52	↑
Cybersecurity and Data Risk	76.97	78.13	↑
Customer Risk	61.24	75.63	↑
Technological or Competitive Risk	66.29	73.75	↑
Transportation Disruption Risk	64.04	72.22	↑
Operational Risk	57.87	59.26	↑
Quality Risk	57.30	58.02	↑
Environmental Risk	61.80	51.95	↓
Average Risk Index	66.18	72.14	↑

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.

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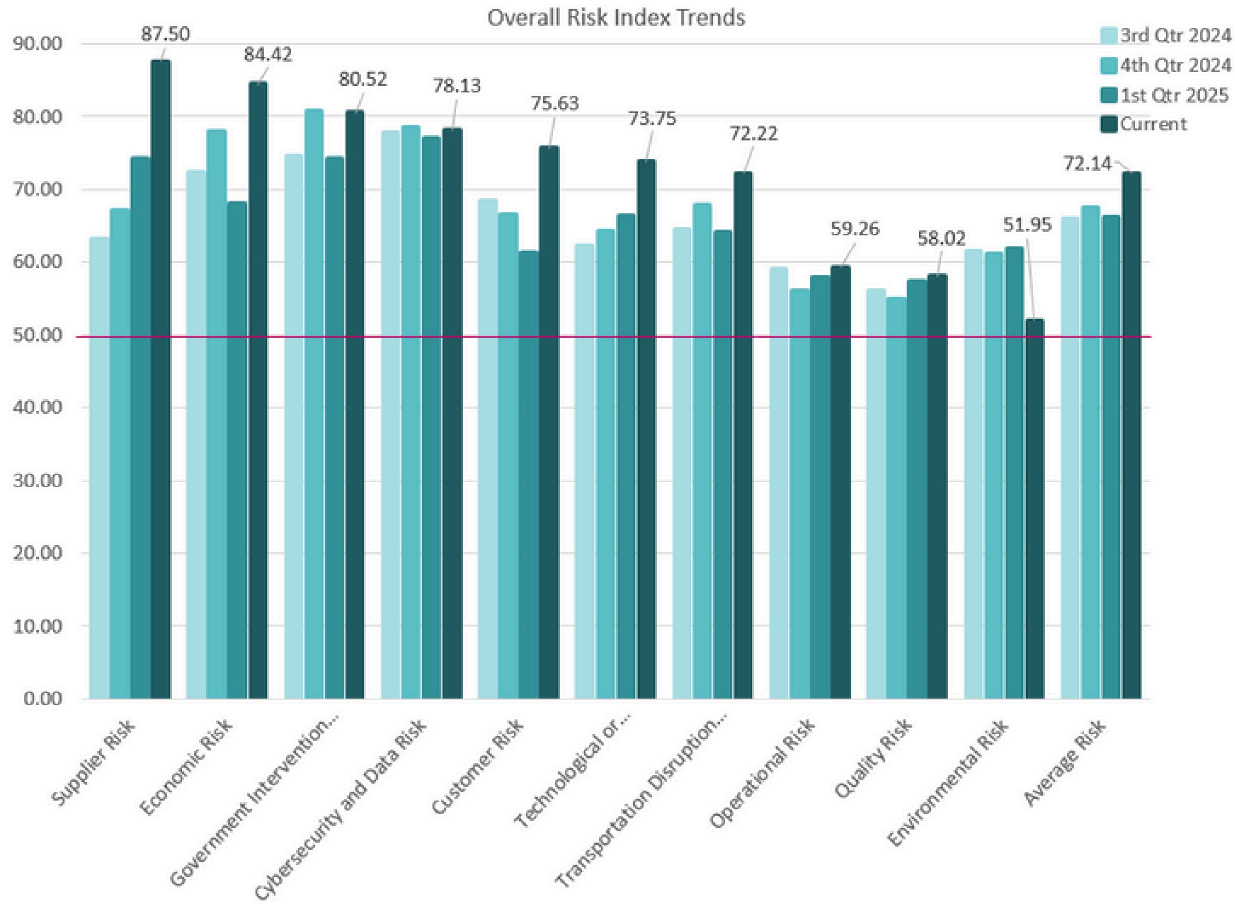
Did You Know?

The Lehigh Business Supply Chain Management Risk Index for the 2nd Quarter in 2025 is

72.14

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 1-year time period.



Four Biggest Risks in Head-to-Head Comparison 2nd Quarter 2025

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

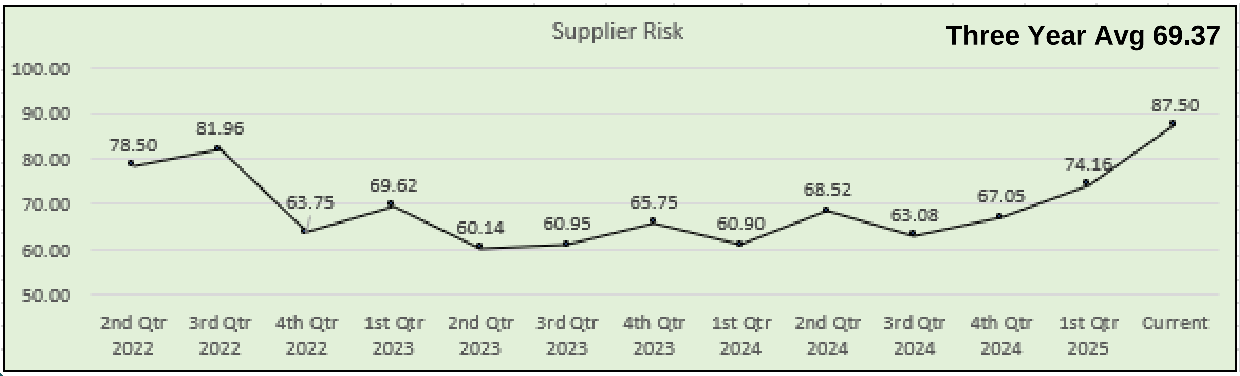
1. Government Intervention Risk
2. Economic Risk
3. Supplier Risk
4. Cybersecurity and Data Risk

01 Supplier Risk

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

Selected Comments:

- We expect an increase in risk, especially in industries like automotive, which are significantly impacted by new high tariffs being quickly rolled out (e.g., Mexico & Canada, 25%).
- Geopolitical issues and tariffs are likely to increase supplier risk.
- Price volatility is going to skyrocket in Q2 as tariffs will impact the movement of material from foreign to domestic. Many stamped metals and fasteners are used in our products, and we will be challenged to find suppliers with better pricing.
- Counterfeit is major problem with China's theft of intellectual property.
- Tariff discussions are leaving suppliers unable to project long terms costs. Uncertainty will drive CYA price increases.
- Four years ago, we obtained 60% of our product from China. By the end of this year, that number will be less than 5% as a result of tariffs and geopolitical issues.
- The USA needs incentives for reshoring. Create factories in every time zone. Increase the capabilities of machinery builders, factory certified industrial automation & controls suppliers, and cyber savvy integrators who can modernize current operations. This will create market competition (good for pricing). Redundancy in supplies. Steady deliveries. American standards and regulations. This should be geographical as well. The EU, Asia, and South America should all do the same. Smaller, smarter, automated manufacturing facilities. Local support, local workers, local pride.
- More items are available in general with shorter lead times, although obsolete items are becoming a bigger concern.
- While we have largely addressed single source and supplier geographic concentration risk, there will be more risk ahead given that tariff / trade wars will make selected supply sources less certain and potentially volatile in terms or our ability to access these.

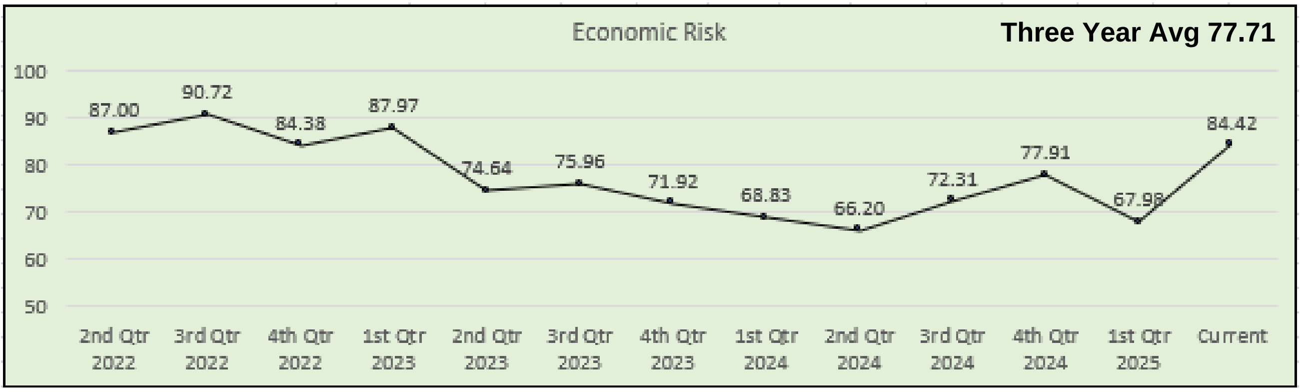


02 Economic Risk

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

Selected Comments:

- Several economic risks are increasing with deportations, border delays, tariffs and severe cuts to many critical government departments as well as most inspectors general. Also, inflation ticked up in Feb and most experts expect this to continue if Trump continues with major broad tariffs.
- We expect a decrease in risk, as fuel is coming down in our market.
- The shift from foreign to domestic may cause a labor shortage as raw materials plants (steel and aluminum) will have to be increased.
- Consumer and the household bank account pressures will increase risk - along with dips in the stock market. This causes buyers to be squirrelly.
- Risk will increase due to energy costs and commodity price volatility.
- I expect that the tariffs will drive up prices and suppress growth. The uncertainty about the next move from the administration will also make business climate very cautious.
- Disruptions at the Federal level, cascading down to the state and local level, have an unknown impact, but the risk is greater for more disruption.
- Despite new actions of the current administration, inflationary pressure hasn't decreased.
- Our business is already soft due to economic uncertainty. There is only one direction for us to go!
- It seems quite likely that we will be entering a recession. This will likely force us to rethink much of our existing investment plans, recruiting and staffing model and, of course, we will continue our current cost takeout plans, albeit with even greater organizational urgency.

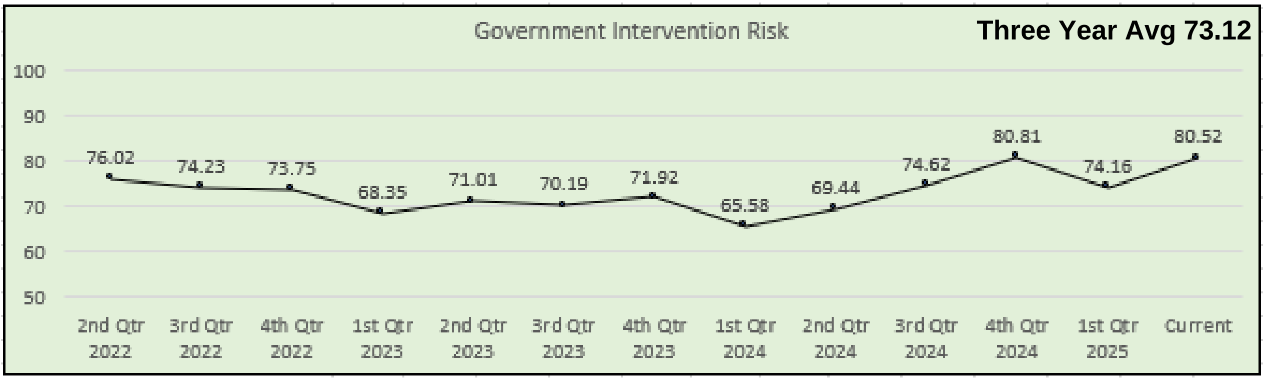


03 Government Intervention Risk

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

Selected Comments:

- Deregulation will decrease risk.
- This is the largest single threat to our forecast for Q2 and 2025. There are too many unknowns due to the pace of changes without all impacts being studied. Tariffs and relationships globally will potentially have short-term impacts on the US economy.
- Major world powers are in direct conflict. This will mean more production and trade risk.
- Tariffs will cause much long-term disruption, as suppliers and customers alike will have to navigate these new price structures.
- Breaking NAFTA, tariffs, destroying supply chains, pissing off Allies, threatening military actions against friendly nations, and so much more…
- Government restrictions on source material and technologies will increase risk.
- Not a large increase in concern, but it's there. Tariffs are, of course, a concern, but we feel we're ahead of the ball. We are also trying to get ahead of any potential disruptions with China sourcing, though believe it's very unlikely that will be an issue in Q2.
- Dropping regulations will help us operate more unencumbered. Still, I am worried about our scrapping of all regulations related to customer and employee safety. The main risk stems from tariffs and trade wars. So far, there seems to be a on-again, off-again posturing regarding which tariffs take effect with which partners, on what commodities, and when would these take effect. It would be better for our business if there were some clear ground rules to follow and we stuck with them. At least then, we would know clearly how to adapt our supply chains to address the global trade environment.
- Some business regulations may be eased, but the government appears to be gaining more power than ever. There is great risk that our government will not continue to operate within the current framework of laws and justice.

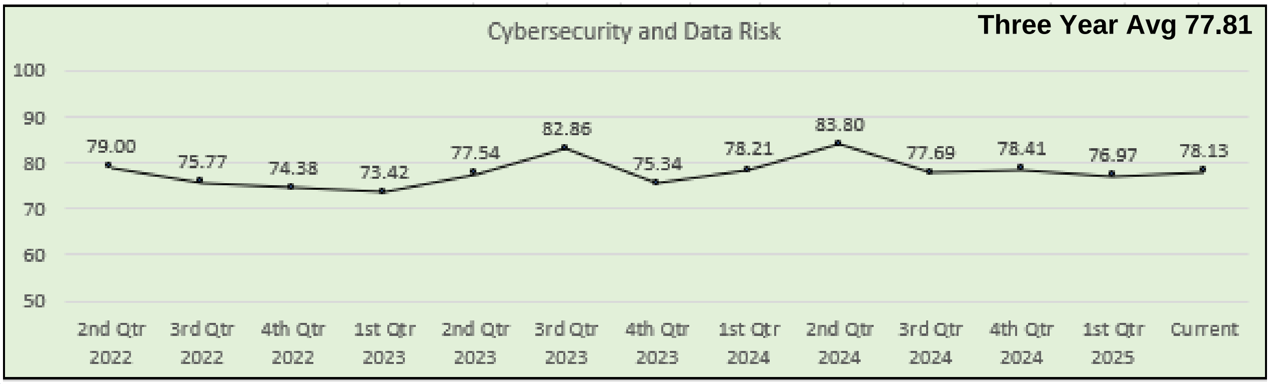


04 Cybersecurity and Data Risk

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

Selected Comments:

- Risk is increased as the evolution of Artificial Intelligence increases exposure.
- We expect a slight increase in risk due to criminals' use of AI and heightened geopolitical tensions as USA's "America First" policy creates more dissatisfaction globally, including with allies.
- We expect these risks to remain the same; we trust out IT provider and have a company wide awareness programme.
- Too many C-level management people do nothing to mitigate cyber security risks for many reasons - costs, unaware of the risks, do not understand that it is more than the PC on their desk. Initiatives must be instated to drive proper policies and procedures from the manufacturing floor through to the C-Level.
- These risks are increasing given the following: 1) AI is making it easier for hackers to be more successful, efficient and effective. Ransomware attacks and IP theft will be ripe targets with these new tools at hackers' disposals. 2) The new postures taken by the current US Administration seems to be opening up US businesses for more attacks. The tactics that are worrying to me include: a) The cavalier approach to cybersecurity that the US is undertaking to this area - a target for DOGE that has already put some key experts on leave. b) The apparent complete flipping of our approach to foreign affairs (e.g., spurning traditional allegiances like G7, Canada and other democratic societies etc. and favoring authoritarian regimes, in particular, Russia). Russia, Iran and China have been known to be among the most prolific of foreign governments who have infiltrated our US government and business data systems. A question I have - Will these new "friendships" entice them to take more or less advantage of our systems?
- We should take accountability for data protection by compliance with GDPR.

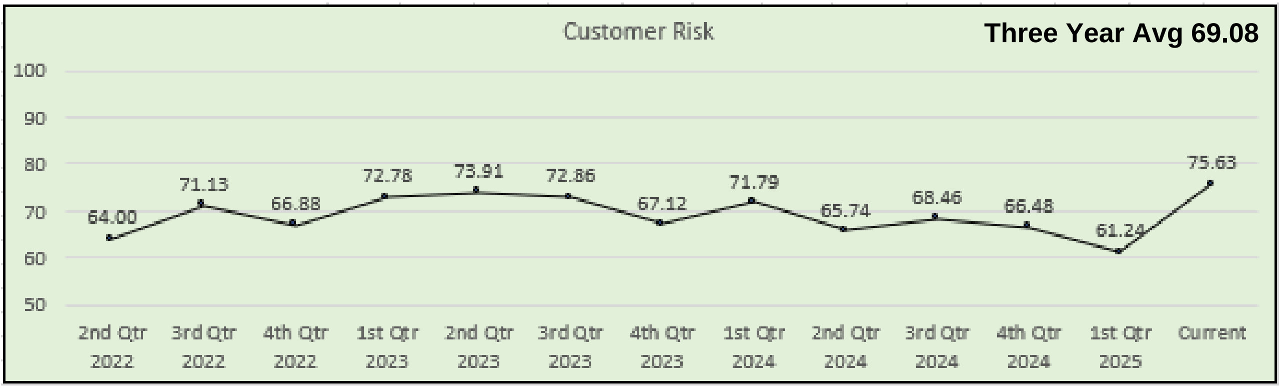


05 Customer Risk

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:

- Risk will increase due to large, near-term USA tariffs and expected counter-tariffs.
- Increased pricing throughout the finished good of our product will have customers considering a lower cost solution in the low to middle income residential market. Commercial and high end residential should not be as affected.
- We are uncertain about the finances, especially of our retail customers. Freight companies are at risk and asking for cash payment in advance.
- Consumer confidence has pulled back; until the situation settles there will be risk.
- The possibility of a USA vs. EU trade war may downgrade our customers' business environment.
- People change behaviors. This has been a simple fact for centuries. People buy from people. Trust is hard to build, but easy to lose. Keep the people happy with a good work / life balance; management must make an effort to do quarterly team building events and open interactions, so everyone feels they are a part of something greater. Keep the team engaged and educated. Smart Adaptive Manufacturing is not a new concept. Modernizing the plant is key to adapting to the needs of the population (locally).
- The US customer base is fickle and driven by price over quality.
- We are a relatively new fulfillment operation serving a captive market of nationwide franchise locations with about 2 years of history to draw from. We have no direct parallel businesses to imitate, so our forecasts involve some "liquor and guessing" at this point. And while we do have a captive market, if we miss our forecast the impact is huge. Due to business softening we are cutting inventory as much as possible, which in turn places more importance on forecast accuracy. It's stressful.

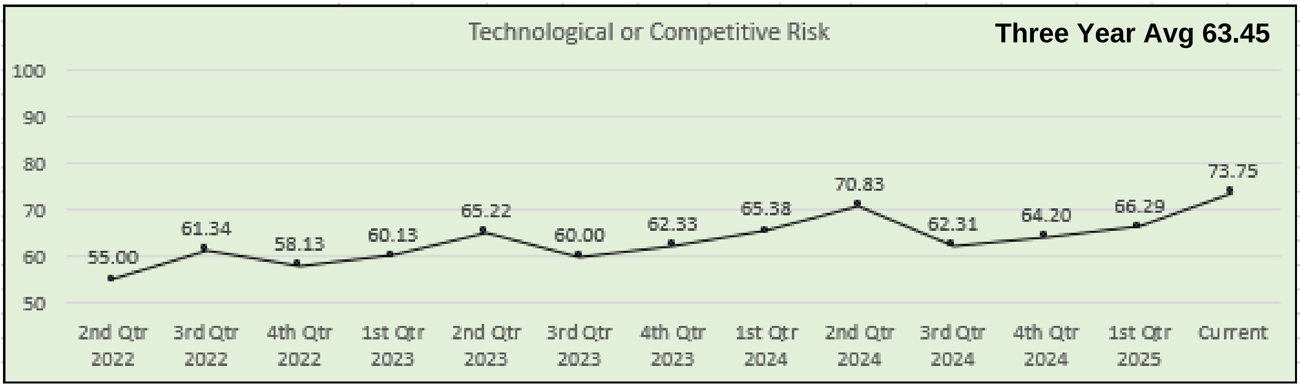


06 Technological or Competitive Risk

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

Selected Comments:

- Some AI tools are becoming a commodity and being cheaply duplicated by China.
- Customer use of AI to model and compare pricing to market is creating a new challenge.
- No change in risk. We are always mindful of potential disruptive technologies.
- Our ability to adapt to the rapid and accelerating developments of Generative AI is adding to our risks. The problems we face include: 1) How do we ensure our data is adequate / ready to take advantage of the full potential of Gen AI? 2) Will we make the right decisions addressing what Gen AI strategy, transformation roadmap and technology selection will best position us for the future? 3) Will our workforce adapt quickly enough to the pace of Gen AI development and change?
- There will be a slight increase in risk as AI accelerates new technical innovations, adding more competition or replacement products.
- As Mike Dastoor, CEO of Jabil said: "AI is not a fad."
- Until there is an awakening to the need for a re-shoring modernization, it will be the same ol' thing. The big box companies will eat up the smaller ones until they are the only option available. You will only have one choice and like it. Stay on your mobile devices, sit in your chair and never look up. Eventually it will play out like the Pixar movie WALL-E.
- Using AI as a disruptive technology and transformative business models can increase the competitive risk.
- More competition will increase risk.

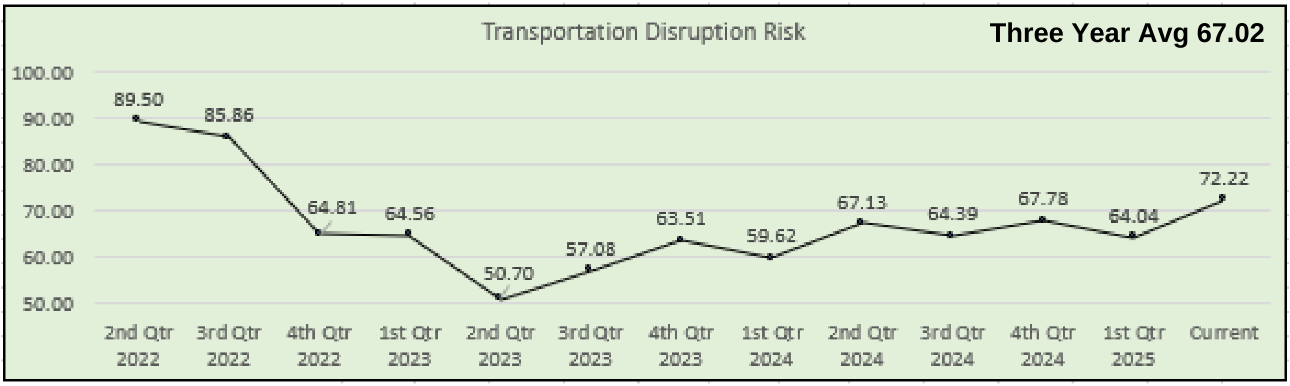


07 Transportation Disruption Risk

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

Selected Comments:

- The continued reduction in fuel costs will lower our transportation costs and risks. Stability with our fleet and transportation workers has been improving since mid-January.
- We rely on UPS primarily for outbound shipping. Inbound can be anything, including dedicated international loads. I don't foresee changes as early as Q2. Longer term? Yes.
- Fuel prices as well as Commercial Auto Insurance cost increases are impactful.
- Fuel prices fluctuate violently. Professional drivers are a dying breed. Our infrastructure is in desperate need of modernization. The just in time delivery / manufacturing idea on a whole needs to be re-engineered. Yes, we all want fresh / just made, but having it delivered from thousands of miles away at a facility that makes over 50% of the world's demand is not acceptable.
- Threats on the Panama canal by the current political regime is creating an environment of impending doom on the supply chains importing through the canal, Mexico, or Canada. It is creating an isolationist view of the USA around the globe.
- The expectation is that fuel prices will decline with the administration's expected drilling goals. However, the impact of tariffs is a wildcard. We expect shipment volumes to increase modestly.
- Some increased risk is expected with major border tightening efforts and USA tariffs on Mexico and Canada (and counter-tariffs).
- I see Transportation Disruption risk increasing for the following reasons: 1) Tariff wars and uncertainty will hinder the typical fluidity of transport flows cross borders. 2) Tariff wars will also create new demand / supply imbalances in ocean and international air shipping. 3) More emphasis on reshoring and nearshoring will open up new pockets of transport demand and force some re-allocation of carrier capacity / supply to other areas.

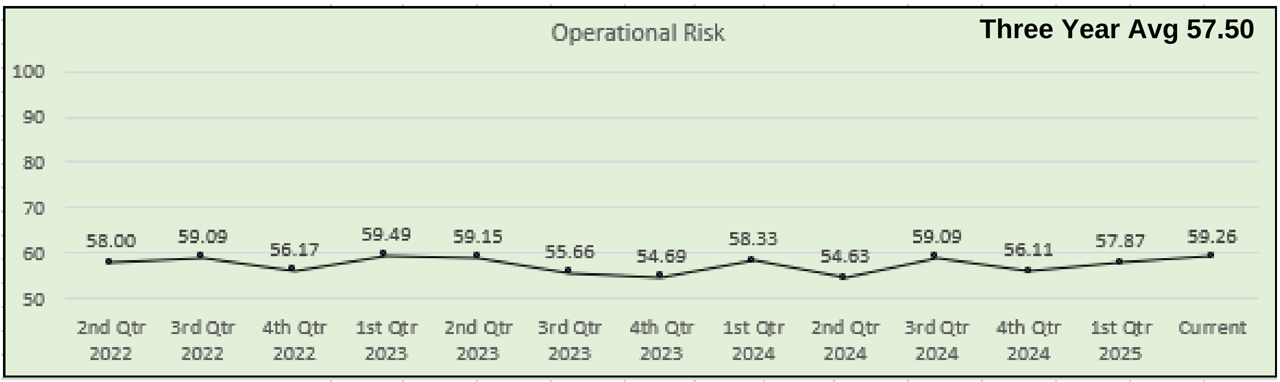


08 Operational Risk

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

Selected Comments:

- Because of climate change and the U.S. Presidency, uncertainty (that is non-measurable risk), is becoming more prevalent.
- Weather related problems seem to be growing, thereby increasing risk.
- Operations have settled. If there is any disruption, it is being underwritten by employees who have been instructed to return to work at the office and they don't because they want to continue working from home.
- The threat of the tariffs and the international issues being created by the current political leadership is already starting to make it more difficult and costly to get repair parts and machinery.
- Nothing to report. Everyone is busy burning Teslas and giving Elon "the business."
- We are conducting a site renovation, so the risk of a disruption has therefore increased.
- Operational risks will rise exponentially due to the availability of spare parts and disruptions to the supply chain given how integrated we are from a global standpoint. In addition, with the unrest in Eastern Europe and the Middle East at this time, there is a chance that a spike in geopolitical issues will increase lead times as well.
- Aging infrastructure and production machinery are increasing the risk of all stated above. The USA needs incentives for reshoring machinery builders, factory certified industrial automation & controls suppliers, and cyber savvy integrators that can modernize current operations.
- We are a small operation and, therefore, very nimble. If something happens to our site, we can relocate or reconfigure with relative ease.
- AI implementing for predicting potential risks and proposing possible solutions has a paradigm in eliminating operational risks.

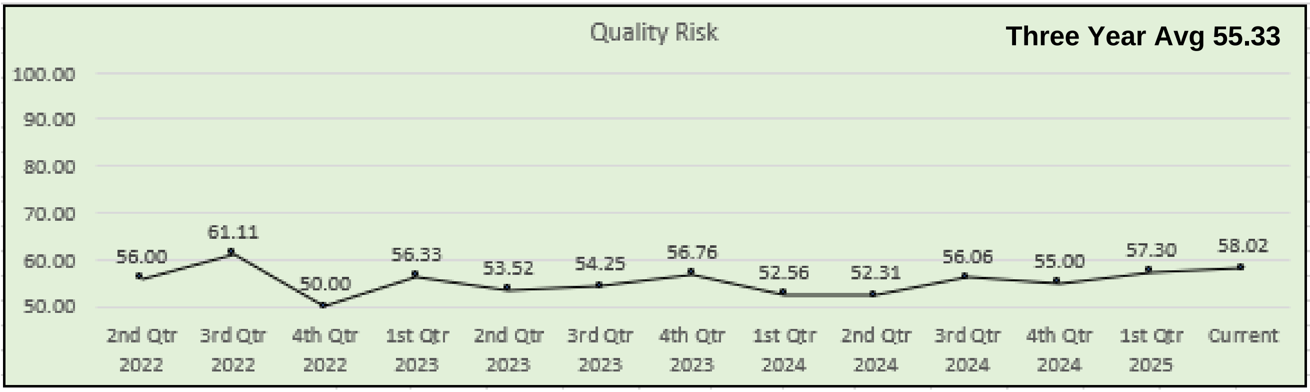


09 Quality Risk

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

Selected Comments:

- This risk is expected to decrease as onshoring manufacturing, due to tariffs, will drive increased testing and quality control. Testing costs will be passed on to the consumer.
- Quality risk will increase based on the reactions to the threats of import duties increasing BOM costs. Seeking less expensive sources or pressuring suppliers to reduce price will impact quality or reliability. It always does.
- We are implementing FSSC 22000 (Food Safety Standard Certification) and expect quality risk to commensurably decrease.
- A major area of quality risk is in the lack of skilled workers.
- Let's face it, as demands for production are increased, no matter if it's true demand or the fact that supplies arrived late and the back log is pressuring the delivery, short cuts are made. Too many facilities are not automated enough to do 100% "inline" quality inspections with audit requirements. Adjustments are made to production and not documented as to what, when, why or who authorized it.
- Assuming our demand increases, that will place additional burden on processes that are currently inadequate. Business is soft right now, so while we are optimistic about Q2, recent softening resulted in a shrink in headcount. That always impacts quality when things turn around since we can't ramp resources back up as quickly.
- The scaling back of US government regulatory bodies and regulations like those at the CDC, FDA, FAA, FCPA, etc. have the potential for some unanticipated consequences in one or more of the following areas: 1) employee or customer safety, 2) product safety issues and recalls and 3) greater potential for bribery, corruption and other scandals that will harm corporate reputation.

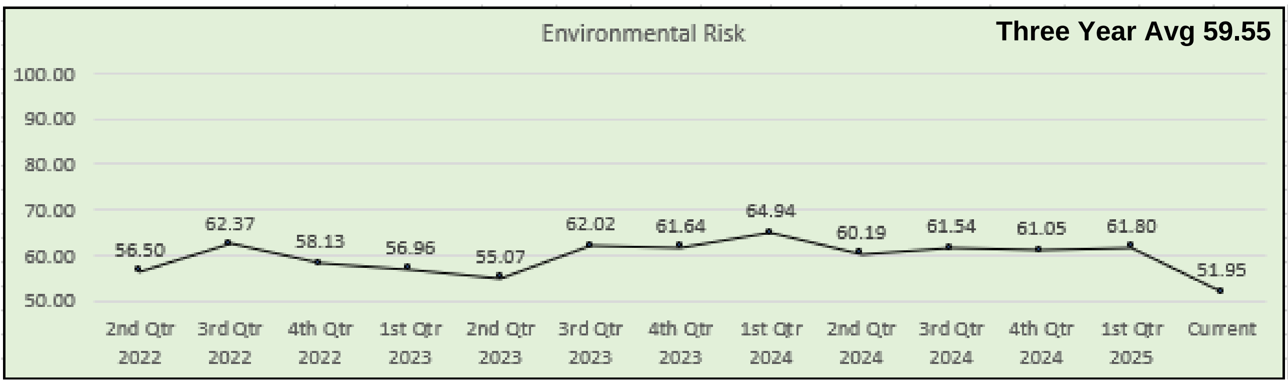


10 Environmental Risk

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

Selected Comments:

- There is a slight increase in risk each quarter. Global warming continues, and may be accelerating, so weather extremes will grow year-over-year. The USA pulled out of the Paris climate accord and is no longer a global leader in this area.
- Weather is becoming more of a factor than ever in our lifetimes. Some of it is caused by humans, but the earth is also going through a chilling cycle.
- Extreme weather events continue to disrupt our supply chains. I don't see this changing anytime soon.
- The current political leadership has said they are going to remove all environmental regulations impeding business, but this will have long-lasting effects on society that may have irrevocable repercussions.
- Nah. Not a worry.
- Over the last two years, these risks have increased. Natural disasters are almost impossible to predict. Year-over-year I anticipate an increase.
- Hope to see less terrorism and warfare being incorrectly labeled as "global warming."
- Given the climate change and increase in violent storms in the last five years, environmental risks are becoming a much larger risk than in the past.
- The impact of environmental threats becomes unpredictable because of dissolving FEMA and handicapping response. This will have a wider and more lasting impact.
- I selected "remain the same" as, ideally, we do not see any environmental risks in Q2. That said, the effects of climate change are now more evident, dramatic and can seem quite random, so I am not entirely certain about my choice.
- Environmental risk is always a factor.



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.

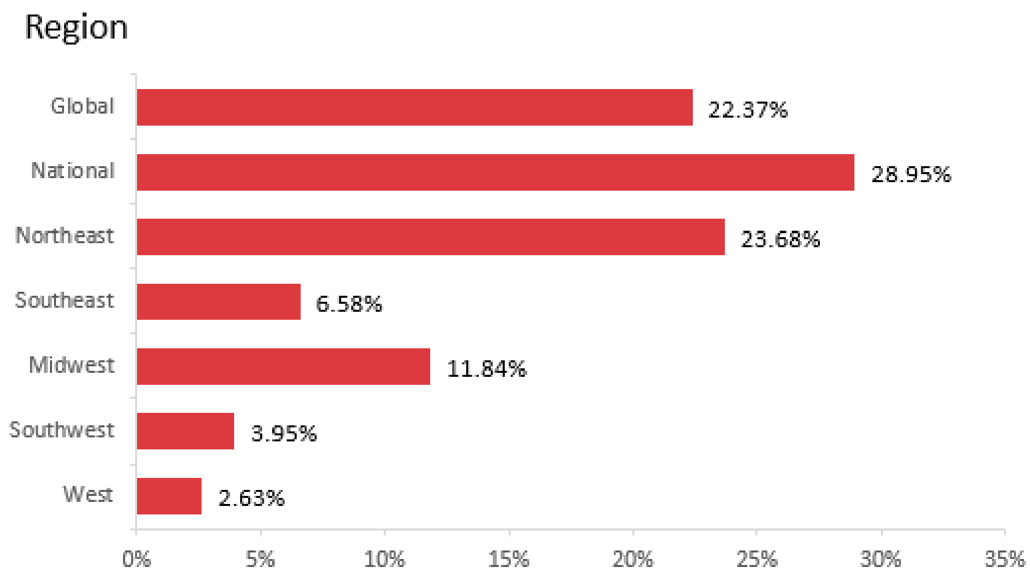
LRMI = (P1 * 1) + (P2 * 0.5) + (P3 * 0)

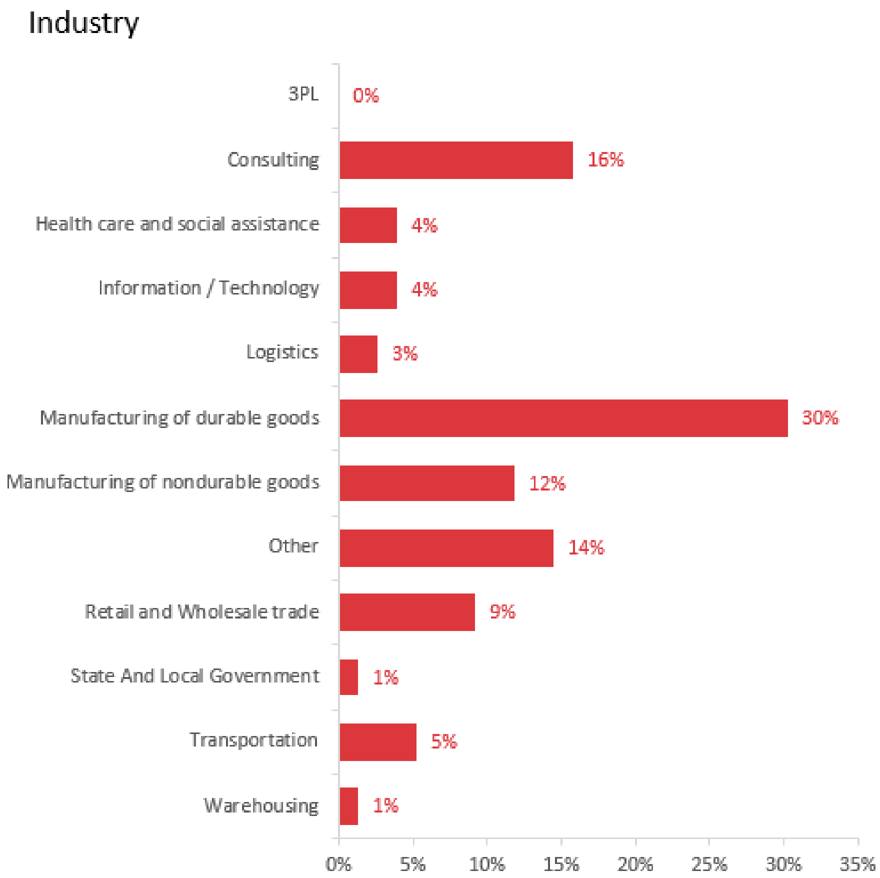
P1 = percentage of answers reporting an improvement

P2 = percentage of answers reporting no change

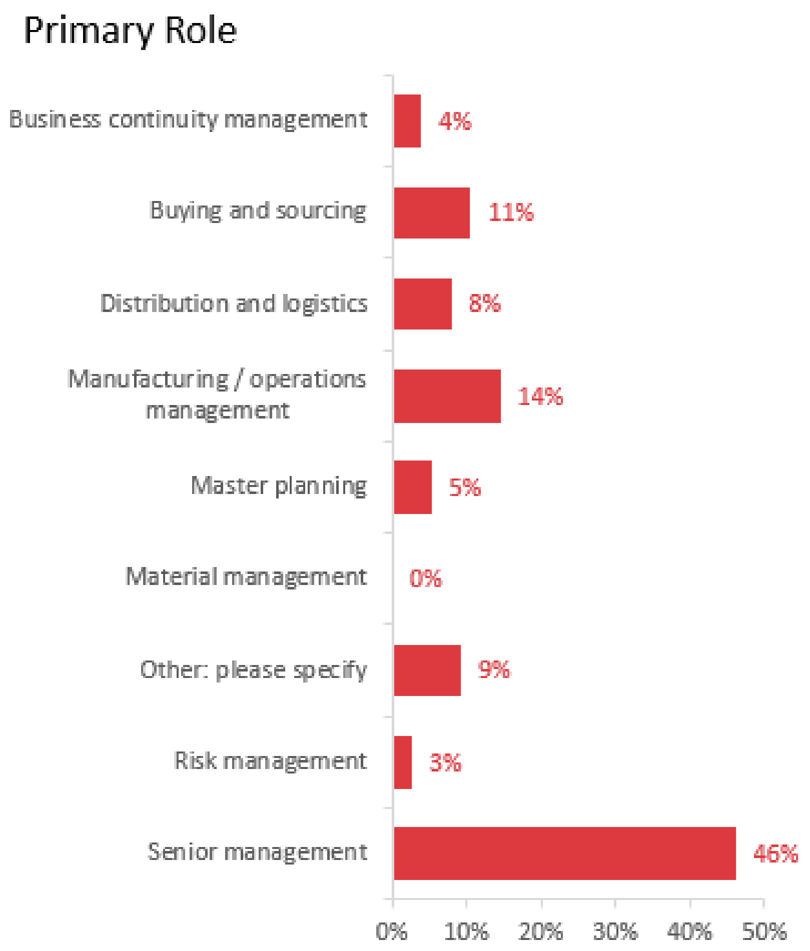
P3 = percentage of answers reporting a deterioration

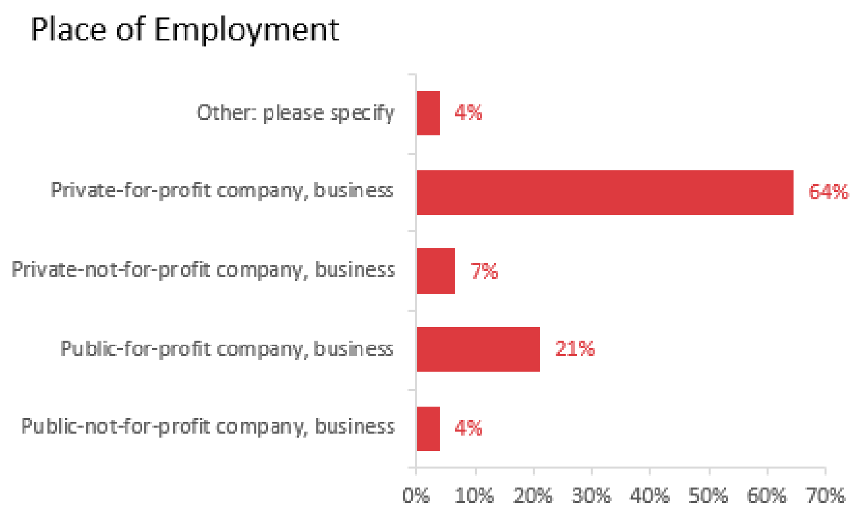
Appendix B
Survey Demographics





Appendix B
Demographics (continued)





Appendix B
Demographics (continued)