UNIVERSITY OF APPLIED SCIENCES UPPER AUSTRIA

Quarterly Report

1st Quarter 2026

European Supply Chain Risk Indicator (ESCRI)

Veit Kohnhauser, Logistikum, UAS Upper Austria

EUROPEAN LOGISTICS ASSOCIATION

LEHIGH UNIVERSITY

LOGISTIKUM CHALLENGE ACCEPTED

Welcome to the European Supply Chain Risk Indicator

As an initiative of the **European Logistics Association (ELA)**, this report contributes to a broader European effort to improve transparency and resilience within logistics and supply networks. The underlying survey and the report itself are conducted by the Logistics and Supply Chain Management Institute (Logistikum) of the UAS Upper Austria.

A successful European single market and stable international trade depend on reliable networks. However, recent geopolitical tensions and economic shifts have highlighted the vulnerability of these global systems.

Strengthening supply chain security is now a strategic priority for Europe. This report provides a data-driven perspective on risks, allowing for clear comparisons across European countries, regions and beyond. By providing these insights, we support evidence-based decision-making for policymakers and industry leaders, fostering a deeper understanding of systemic risks.

Because the global landscape changes rapidly, this report is published quarterly. This continuous monitoring helps identify emerging threats early, enabling proactive and adaptive risk management.

As a federation of national associations, ELA represents approximately 55,000 professionals across Europe. We serve as an international platform for networking, innovation, and the exchange of best practices. This report reinforces our commitment to providing the analytical depth needed to navigate today's complex logistics environment.

Markus Mau

President, ELA - European Logistics Association

Comparing SC Risk: Europe and the United States

Since 2020, Lehigh University has developed and administered the **Lehigh Business Supply Chain Risk Management Index (LRMI)**. This structured, data-driven instrument captures how supply chain professionals in the United States assess evolving risk levels across core risk categories.

I am delighted to see this concept now extended to Europe. The introduction of the European Supply Chain Risk Indicator (ESCRI) represents a significant milestone for both research and practice. Europe's economic strength and competitiveness, as well as its close integration with global markets, depend heavily on resilient, reliable supply chains. This is especially true for transatlantic supply chains, which form a critical backbone of trade, industrial cooperation, and value creation between Europe and the United States.

The quarterly European application builds directly on the methodological foundations tested and refined over several years in the United States. It enables tracking risks over time, identifying changes in risk perception at an early stage and consistently assessing emerging trends.

This development would not have been possible without strong institutional and personal support. Special thanks go to Veit Kohnhauser and Markus Mau for their commitment, trust and cooperation in bringing the index to Europe and establishing it within the European supply chain community.

The European ESCRI represents a significant step toward greater transparency, comparability and resilience, reflecting a shared commitment to evidence-based risk assessment in an increasingly volatile global environment.

Zach G. Zacharia
Associate Professor of Supply Chain Management
Director, Center for Supply Chain Research
Lehigh University

Strengthening Supply Chain Resilience Across Europe

The **European Supply Chain Risk Indicator (ESCRI)** is a joint initiative developed by leading European and international institutions in logistics and supply chain management. In an era of increasing global volatility, the ESCRI serves as a vital tool for professionals to monitor, analyse, and mitigate risks across European supply networks.

By combining academic rigor with industry expertise, this indicator provides actionable insights into the evolving risk landscape, helping organizations build more resilient and agile supply chains.

This strategic partnership unites the expertise of the ELA – European Logistics Association, the Lehigh University – College of Business, and the Institute for Logistics & Supply Chain Management - Logistikum at the University of Applied Sciences Upper Austria.

Within the framework of the European Supply Chain Risk Indicator (ESCRI), leading supply chain experts across Europe assess the probability that risk will increase, remain the same, or decrease in ten different categories compared to the previous quarter.

The index value is represented on a scale from 0 to 100: a value above 50 indicates an increasing risk, a value of exactly 50 a constant risk level and a value below 50 a decreasing risk.

We invite you to become part of our SCM community. If you would like to receive additional information about the methodology of this survey or if you are interested in participating in future editions of the European Supply Chain Risk Indicator, please reach out to veit.kohnhauser@fh-steyr.at.

Veit Kohnhauser

Professor Logistics & Supply Chain Management
Logistikum, UAS Upper Austria

Executive Summary

Supply chain risks are expected to rise in the first quarter of 2026 as reflected by a high average ESCRI of 70.31.

Geopolitical tensions, especially between the US, China and the EU, as well as ongoing trade and tariff disputes, remain key sources of uncertainty. They increase regulatory complexity, weaken predictability and raise costs along the entire value chain. At the same time, increasing regulatory requirements — for example, from sustainability, supply chain, and customs regimes — act as a persistent burden on operational efficiency and competitiveness.

At the operational level, labour shortages, particularly of lorry drivers and skilled personnel, as well as infrastructure bottlenecks, remain significant risk drivers. These are worsened by volatile energy prices, high-cost structures in Europe and an overall fragile economic climate. Overcapacity and intense competition are further increasing margin pressure.

Technologically, cyber risks and the dependence on secure IT systems are gaining in importance. The increasing use of AI increases both efficiency potential and the attack surface, while the maturity level of many organizations is not yet keeping pace with the speed of technological development. At the same time, the economic viability of AI remains uncertain in many application areas.

On the market and demand side, high volatility, declining forecast accuracy and a decrease in long-term customer loyalty dominate. Short-term, price-driven procurement decisions and increasing insolvency risks on the customer and supplier side are increasing systemic fragility.

Overall, no acute increase in risk is expected for Q1 2026, but a continuation of the high level of complexity and uncertainty. Resilience, diversification, governance, cyber and regulatory competence, as well as proactive risk management, remain crucial success factors at the C-level and supply chain levels.

TOP 4 – Supply Chain Risks

Our SCM-Experts across Europe compared ten different risks to see which ones are the most serious right now. They didn't worry about the past or future; they just ranked them by importance. This results in the four biggest Supply Chain challenges we are facing today.

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

ESCRI – Supply Chain Risk Development

The ESCRI Indicator does not show an absolute level of risk but rather the perceived change in risk. The Risk Indicator shows, on a scale of 0 to 100, whether overall risks are decreasing, remaining the same, or increasing. A value below 49 indicates decreasing risk, 50 represents no change, and values above 51 indicate increasing risk. The further the value is from 50, the greater the perceived change in risk.

Rank.	Risk Type	Risk Index
01	Economic Risk	80,49
02	Cybersecurity and Data Risk	79,76
03	Government Intervention Risk	78,75
04	Transportation Disruption Risk	74,80
05	Customer Risk	73,37
06	Supplier Risk	72,83
07	Technological or Competitive Risk	69,43
08	Environmental Risk	60,98
09	Operational Risk	56,60
10	Quality Risk	56,06
	Average Risk Index	**70,31**

01 Economic Risk

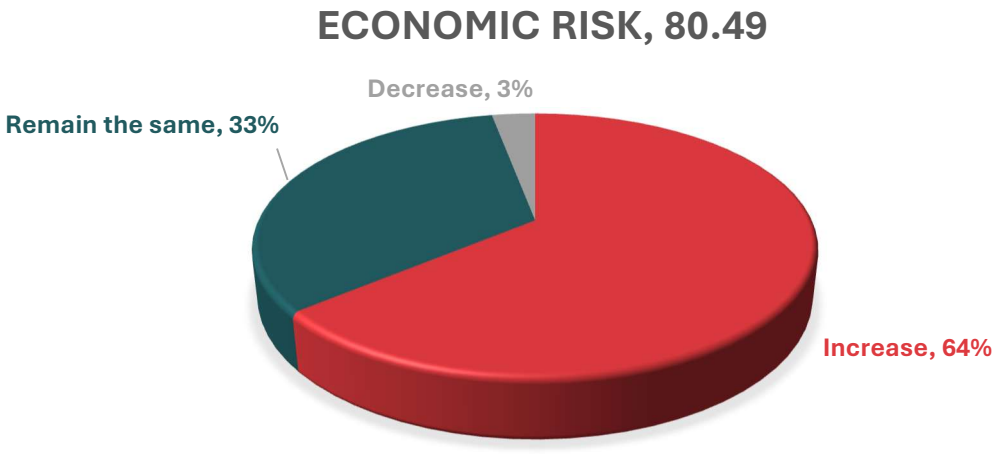
80.49

very sharp increase

The economic risk environment is characterized by a cumulative effect of structural cost factors, persistent uncertainty and increasing competitive pressure. The labour shortage remains a key structural risk, limiting operational and strategic performance, even though regional differences exist. At the same time, sharply rising energy prices are a major cost driver, weakening the international competitiveness of energy-intensive industries. Energy dependency further increases exposure to price and supply fluctuations.

Regulatory and fiscal burdens, volatile raw material prices and rising costs for electronic components and semiconductors are further increasing cost pressures. Combined with a global economic slowdown, this is leading to declining or stagnant demand in the logistics and industrial sectors. Overcapacities are intensifying price competition, squeezing margins and reducing the financial flexibility for investment and innovation. Overall, the concurrent occurrence of several stress factors is increasing the overall economic risk.

Nevertheless, no acute economic shock is expected in the short term. However, volatility remains high and stability is fragile. Strategies for in-house energy production, particularly from renewable sources, as well as targeted measures for employee retention and recruitment, mitigate risks. Nevertheless, it must be noted that persistent energy inflation, rising costs and labour shortages continue to challenge Europe's economic resilience and will necessitate structural adjustments in the medium term.



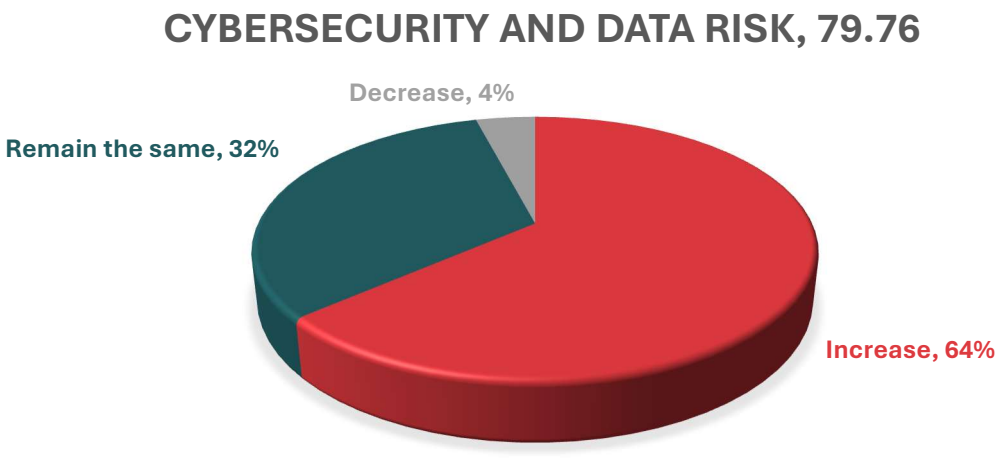
02 Cybersecurity and Data Risk

79.76
sharp increase

The cyber risk landscape is characterized by a significant increase in the frequency, intensity and complexity of attacks. Progressive digitalization and the use of artificial intelligence (AI) considerably expand the attack surface, while AI-supported attack methods increasingly undermine the effectiveness of traditional protective mechanisms. State-driven cyber activities and geopolitical tensions further intensify this trend and sustainably increase uncertainty. Cyber risks evolve faster than organizational, technical and financial countermeasures, making complete mitigation virtually impossible.

Key vulnerabilities lie in inadequate network architecture, dependencies on external IT service providers and deficits in AI expertise. The growing reliance on IT systems simultaneously increases the potential extent of damage from data loss, data corruption, or system failures. Phishing and data-related crimes remain dominant threats and serious incidents have already occurred.

Risk mitigation measures include continuous system updates, regular IT audits, improved access and security protocols and targeted awareness and training initiatives. Despite significant investments and generally adequate hardware and software security levels, cybersecurity remains a constant management concern. No fundamental easing of the situation is expected in the short term; rather, further increases in uncertainty and a persistently high level of risk are to be anticipated.



03 Government Intervention Risk

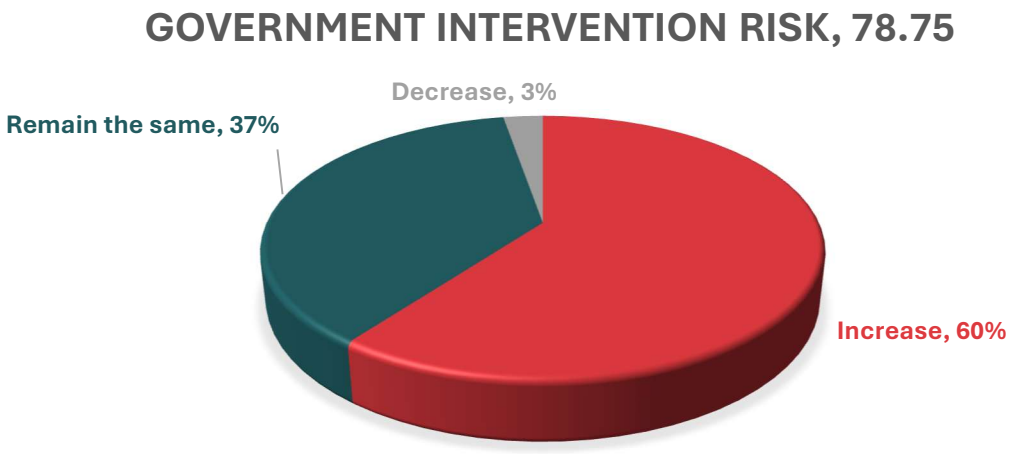
78.75

sharp increase

The risk of government intervention and regulatory frameworks remains persistently high and directly impacts demand, cost structures and operational stability. Unpredictable political decisions, along with an increasing density of laws, regulations and reporting requirements, complicate planning and increase operational complexity along the entire value chain. Administrative interventions and new regulatory instruments, particularly on the customer side, lead to extraneous influences and impair processes, investment decisions and market access.

Trade and customs policies, sustainability and climate regulations and export controls represent key risk drivers. Measures such as carbon-related border adjustment schemes, deforestation regulations and supply chain laws cause significant additional administrative burdens and increased costs, which cannot be fully passed on to the market. At the same time, tariffs, anti-dumping measures and trade disputes threaten the competitiveness of production sites, especially in export-oriented economies.

Geopolitical developments act as an overarching uncertainty factor. Tensions between major economic blocs, particularly the US, China and the EU, are increasing volatility in tariff and trade policy and reinforcing systemic dependencies, for example, in energy, raw materials and key technologies. Even if no further escalation is expected in the short term, the structural risk of intervention remains high. Government intervention is increasingly limiting operational flexibility and requires a sustained high degree of regulatory adaptability and strategic resilience.



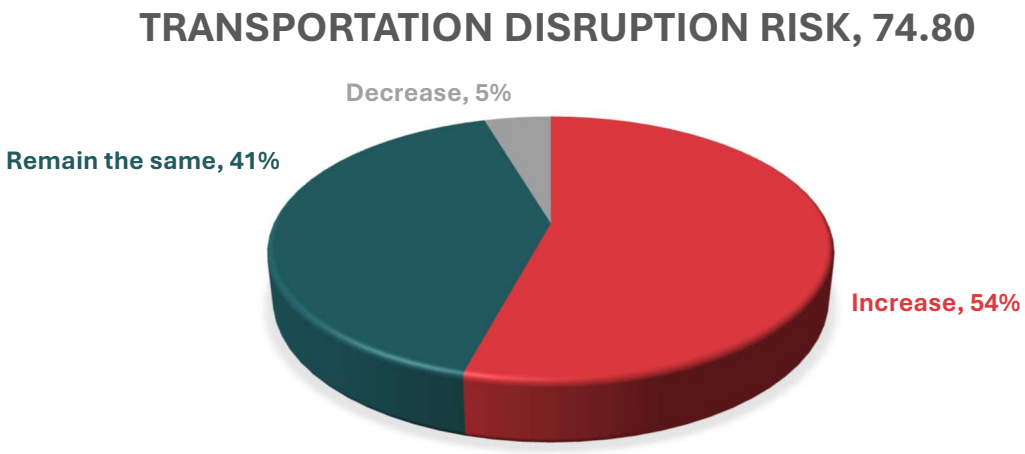
04 Transportation Disruption Risk

74.80
sharp increase

The current transport situation is characterized by structural bottlenecks, regulatory constraints and geopolitical uncertainty. The ongoing driver shortage is the central risk factor and is further worsened by restrictive visa regulations, demographic effects, and the low attractiveness of the profession. At the same time, volatile fuel prices, inadequate transport infrastructure and increasing construction activity — particularly on the German rail and road network — are impacting the reliability and punctuality of transport services. These factors lead to recurring bottlenecks, rising costs and increased operational instability.

Regulatory interventions, fiscal measures, strikes and rapidly changing trade and customs policy decisions further amplify risks and have a short-term impact on transport processes. Geopolitical developments, especially the war in Ukraine, increase uncertainty regarding transport routes, demand trends and cost structures. While there are modal differences in the risk profile — sea freight remains generally manageable, while rail and land transport are more severely affected — the overall risk level remains elevated but controllable.

Risk mitigation is achieved through stable, long-term partnerships with transport service providers, diversification of transport options and preventive management measures. Nevertheless, it must be noted that structural labour market problems, infrastructural weaknesses and demand volatility reinforce each other and pose a sustained challenge to the medium-term resilience of transport chains.



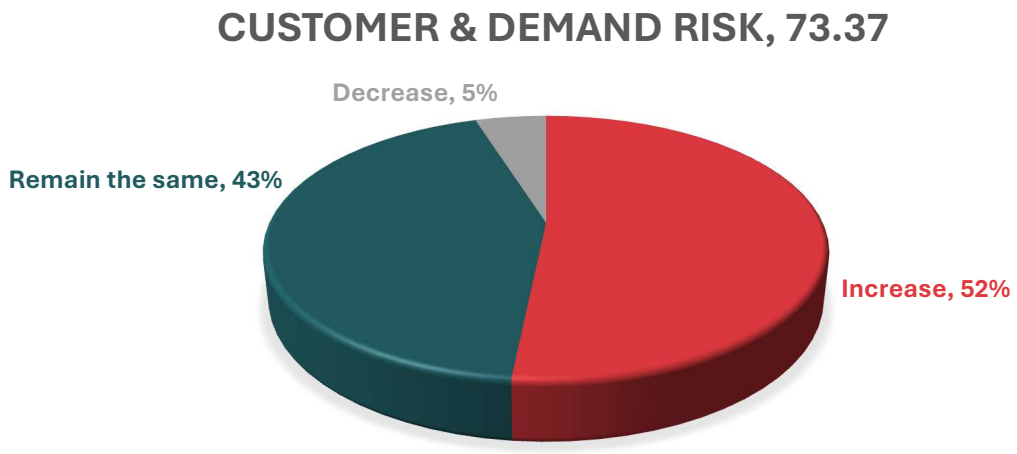
05 Customer and Demand Risk

73.37
sharp increase

Current customer and demand risks are heavily influenced by macroeconomic cycles, geopolitical developments and trade policy interventions. Tariffs, regulatory changes, and international tensions directly impact customer demand, willingness to pay and investment decisions. At the same time, intense competition, overcapacity and shortened market cycles are intensifying price pressure and leading to a significant decline in long-term customer loyalty. Price-driven procurement decisions and short-term awarding practices are increasingly dominant.

Overall, demand is highly volatile and difficult to predict. Since the pandemic, forecast accuracy has deteriorated significantly, as external shocks, changing consumer habits, promotions, supply disruptions and logistical constraints strongly influence sales performance. Customers are demanding shorter delivery times, greater flexibility and customized services, while simultaneously decreasing their willingness to accept rising costs. Margin pressure, increased customer insolvency rates and payment risks further exacerbate the overall risk.

Structural market changes, such as consolidations, platform models, and sectoral shifts, are fundamentally altering customer behaviour and increasing the complexity of order processing. Improved integration of sales channels, systematic customer feedback and stable service processes, which contribute to customer loyalty, have a positive impact. Overall, demand risk remains high, with persistent uncertainty and no clear signs of short-term relief.



06 Supplier Risk

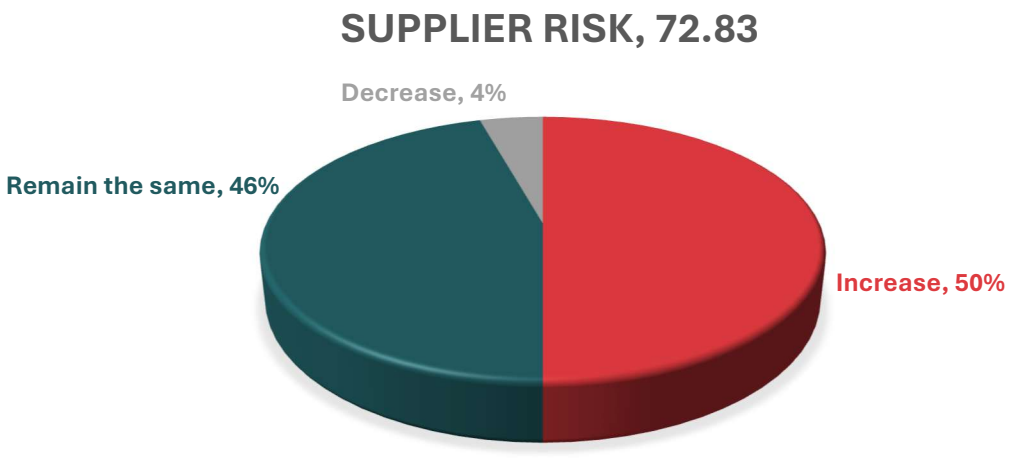
72.83

sharp increase

The current procurement and supplier risk profile is characterized by structural, regulatory and geopolitical uncertainties. Strategic relocations, make-or-buy decisions, and bureaucratic decision-making processes slow down supply chain responsiveness and increase exposure to external shocks. At the same time, some market participants lack a clear strategic direction, which further exacerbates the risk situation. Even though no acute supply disruptions are currently expected, the overall risk level remains high.

Key risk drivers include rising insolvencies, supplier financial instability, volatile prices and capacity bottlenecks in certain segments. Regulatory complexity, particularly in international trade and high volatility in customs and trade policies significantly increase planning uncertainty. Production relocations lead to single-source dependencies in some sectors, while market concentration reduces competition and reinforces dependencies. Geopolitical tensions, trade conflicts and macroeconomic downturns act as overarching risk factors with effects that are difficult to predict.

Risk mitigation is achieved through consistent supplier evaluation, diversification, portfolio expansion and clear governance structures. Vertical integration specifically reduces external dependencies but cannot compensate for all external risks. Overall, further increases in complexity and volatility are to be expected, making proactive, forward-looking supplier and risk management increasingly strategically relevant.



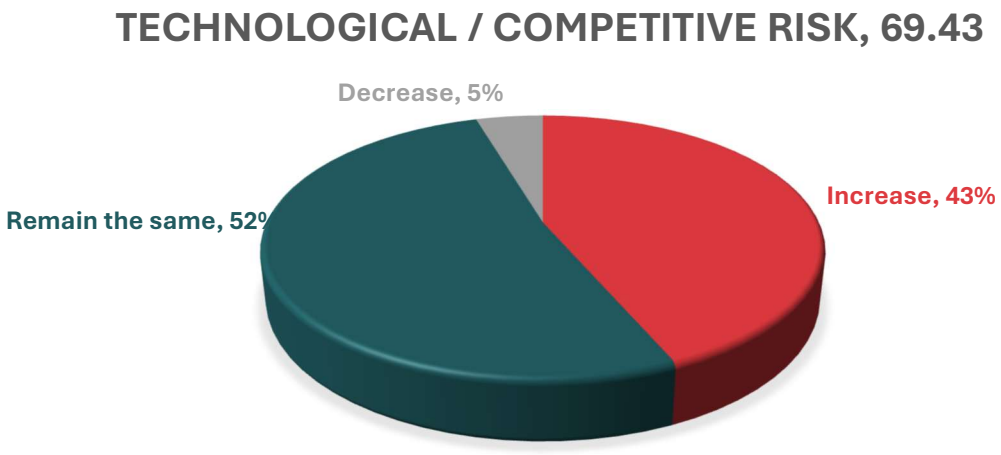
07 Technological or Competitive Risk

69.43
moderately increase

The competitive and technological risk is characterized by a combination of regulatory imbalances, high market dynamics and accelerated technological change. Inconsistent or non-existent regulation — particularly with respect to non-European competitors — leads to distortions of competition and favours providers with fewer regulatory burdens. At the same time, overcapacity, market saturation and aggressive pricing strategies, especially from Asia, intensify competitive pressure and increasingly lead to price competition rather than differentiation.

Technological progress, especially in the areas of digitalization and artificial intelligence, acts as a key disruptor. The speed of technology cycles increases uncertainty, while the economic effects of AI, although significant, remain unclear in many use cases. Nevertheless, the use of AI is increasingly becoming a competitive necessity, as AI-powered services create new market offerings and put existing business models under pressure. However, a lack of funding and rising regulatory development costs limit innovation capacity, especially for smaller market players and lead to further market consolidation.

Risk mitigation is achieved through continuous technological adaptation, service excellence and targeted investments in sustainable, low-carbon solutions that offer differentiation potential. Despite a currently sufficient technological foundation, it must be noted that continuous adaptation only reduces, but does not eliminate, competitive risks. Future competitiveness will depend significantly on the speed of technology adoption and the ability to strategically position oneself in increasingly commoditized markets.



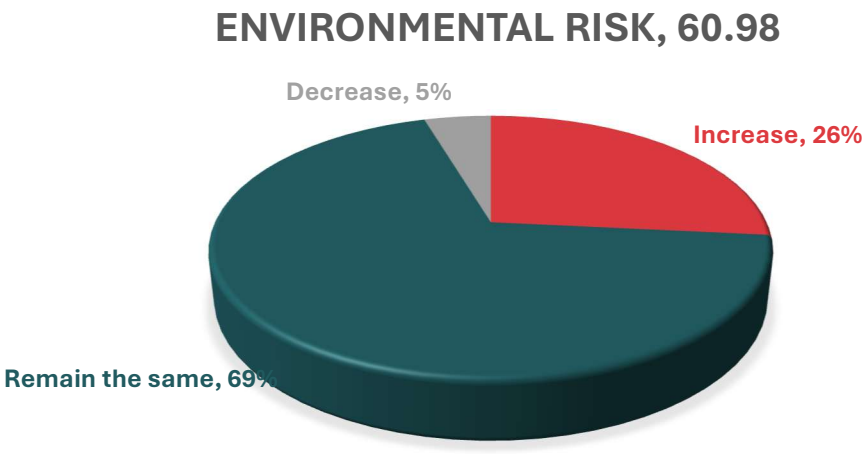
08 Environmental Risk

60.98

slightly increasing

Environmental risk is significantly shaped by progressive climate change, which is leading to an increasing frequency and intensity of natural disasters and extreme weather events. Floods, extreme weather conditions and climate-related disruptions are becoming increasingly noticeable and, in the long term, are increasing the volatility of operational conditions. Pollution, emissions and potential industrial accidents represent additional, ongoing risk factors. At the same time, stricter environmental and climate regulations are tightening compliance requirements and increasing administrative burdens.

Certified and regularly audited processes, technological solutions for monitoring and forecasting and established emergency and prevention plans mitigate risks. Site selection partially limits exposure to environmental hazards. Overall, current environmental risk is considered manageable but requires continuous preparation for extreme events. With increasing climate volatility, rising environmental and adaptation pressures are to be expected in the long term.



09 Operational Risk

56.60

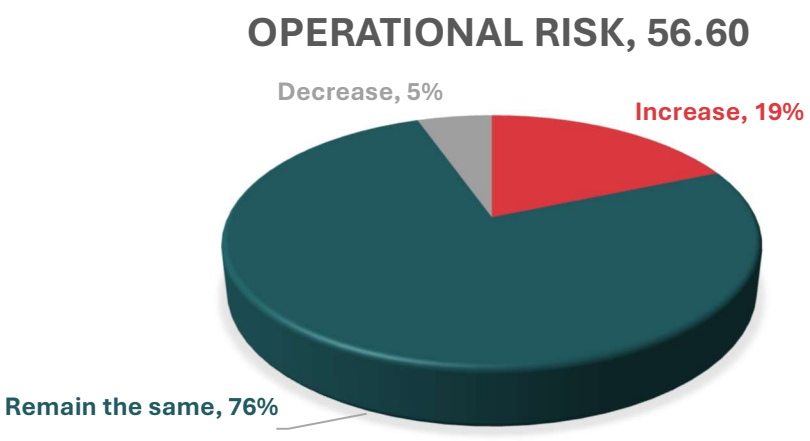
slightly increasing

The operational risk landscape for Q1 2026 reflects a structurally raised complexity in global supply chains resulting from the interaction of operational, technological, regulatory and geopolitical factors.

Internally, risk exposure is intensified by instable project governance, aging infrastructure, limited maintainability and deficits in planning end-to-end processes. These weaknesses reduce execution reliability and increase sensitivity to operational disruptions. In parallel, product availability constraints, extended lead times, driver shortages and the growing dependence on IT systems and cyber resilience represent critical risk drivers with direct implications for service performance and cost efficiency.

Externally, the risk profile is shaped by increasing regulatory and customs complexity, geopolitical tensions and sector-specific pressures, particularly the continued uncertainty in the electronics sector following the Nexperia crisis. Additional operational friction arises from visa and permit requirements as well as border congestion, for example in cross-border transport involving Turkish-registered vehicles. In several regions, political instability and limited legal certainty further constrain operational predictability.

Risk mitigation priorities include targeted investments in safety, modernization of logistics assets, structured maintenance management and capability development through training. The overall risk level is expected to remain broadly stable in the short term, requiring robust resilience measures and business contingency plans across the supply chain.



10 Quality Risk

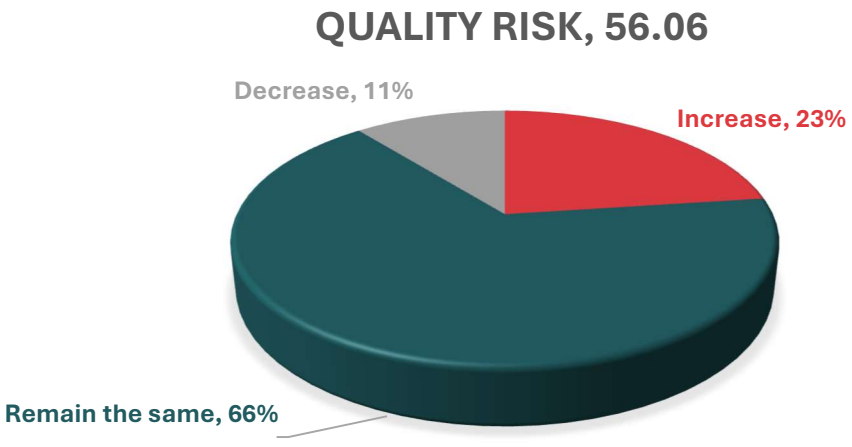
56.06

slightly increasing

The current quality landscape is shaped by rising regulatory and customer requirements, increasing product complexity and sustained cost pressure across the value chain. Regulatory volatility and frequent changes significantly increase administrative workload, compliance effort and quality-related costs, while also elevating operational and quality risks. At the same time, market expectations regarding quality continue to rise, even though current performance levels remain stable and, in some areas, above market standards.

Key quality risks originate from insufficient data quality, documentation gaps, communication deficiencies, scheduling issues and varying supplier qualification levels. Workforce shortages, higher fluctuation and demographic trends further intensify these risks. Planned project launches and production ramp-up phases represent additional short-term risk drivers, whereas new standards and competitive pressure are expected to increase quality risk over time. Economic pressure encourages aggressive optimization and cost reduction initiatives, which may threaten investments in quality assurance if not carefully managed.

Mitigating factors include dedicated quality governance, strengthened procedures and controls, supplier diversification, contractual safeguards and continuous improvement initiatives. However, despite structured improvement efforts and stable overall quality levels, fully meeting increasingly demanding customer expectations remains challenging. Emerging risks, such as the uncontrolled use of generative AI, require proactive governance to prevent negative quality impacts.



Appendix A: Risk Indicator 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 greater the level of risk

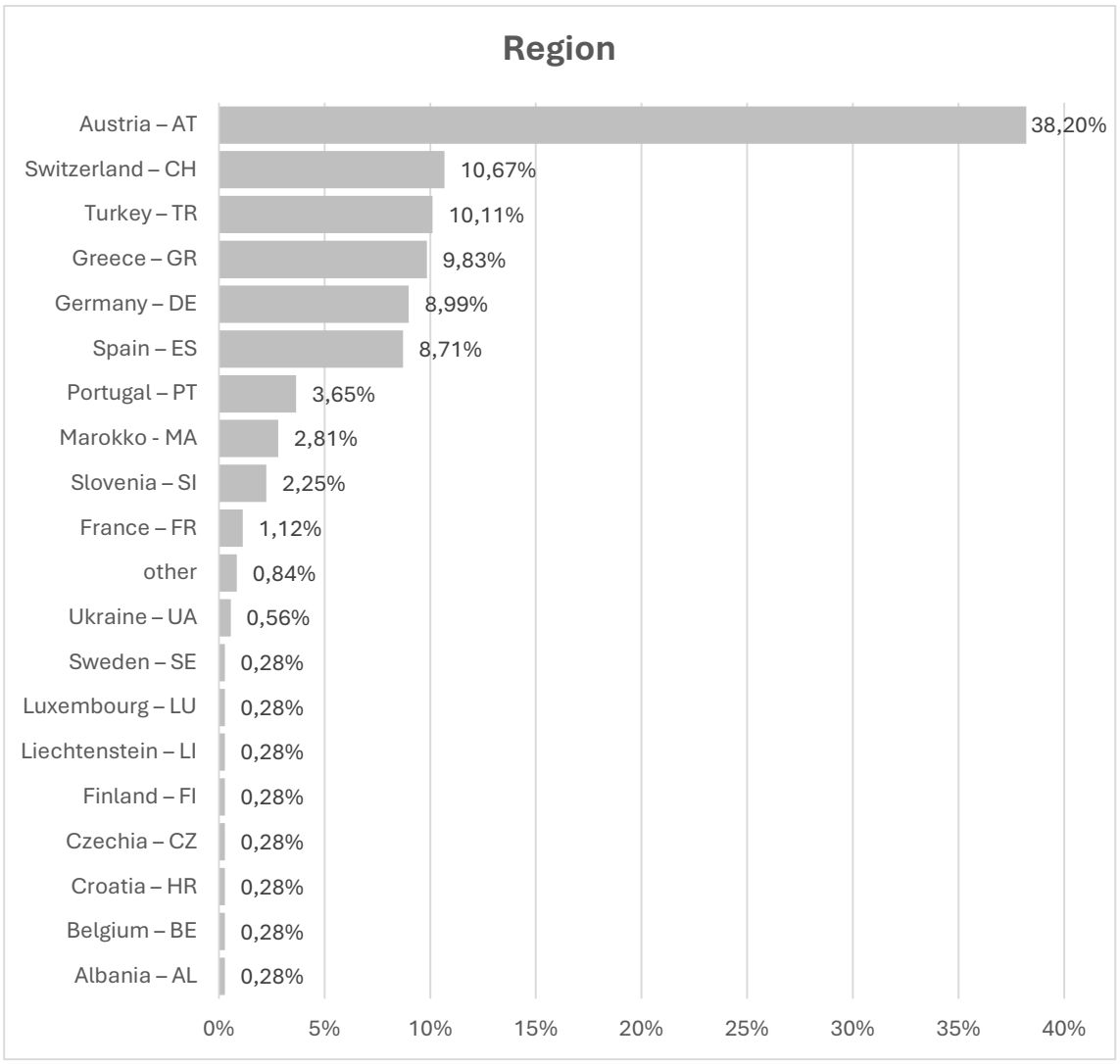
LBRI = (P1 * 1) + (P2 * 0.5) + (P3 * 0)

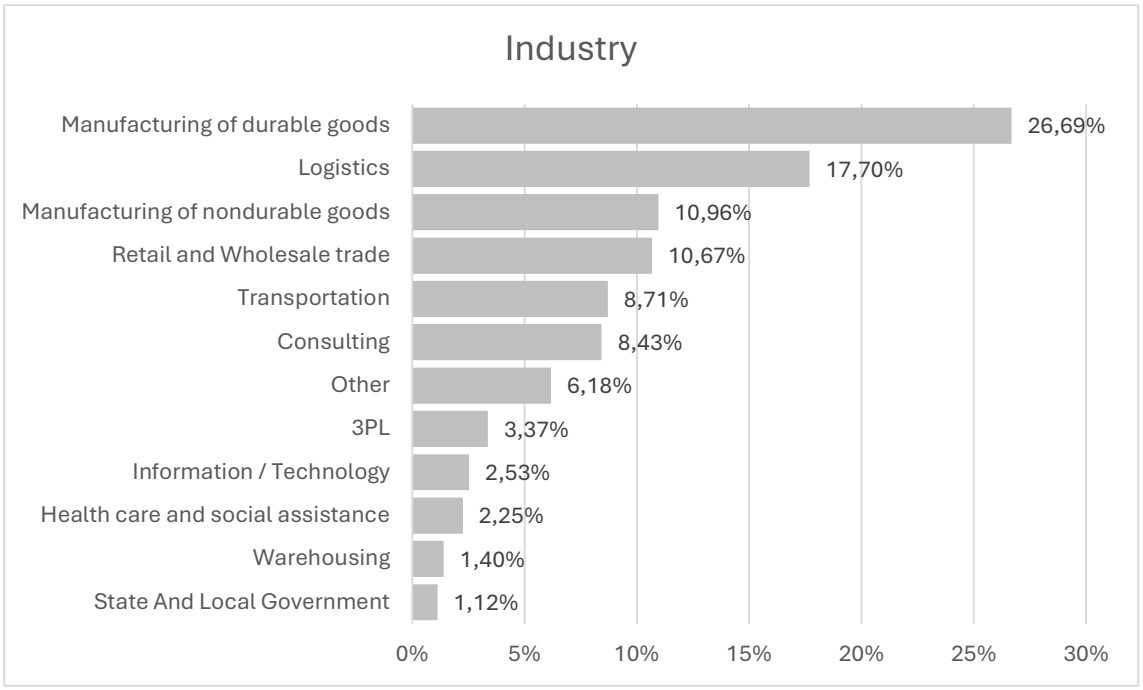
P1 = percentage of answers reporting an improvement

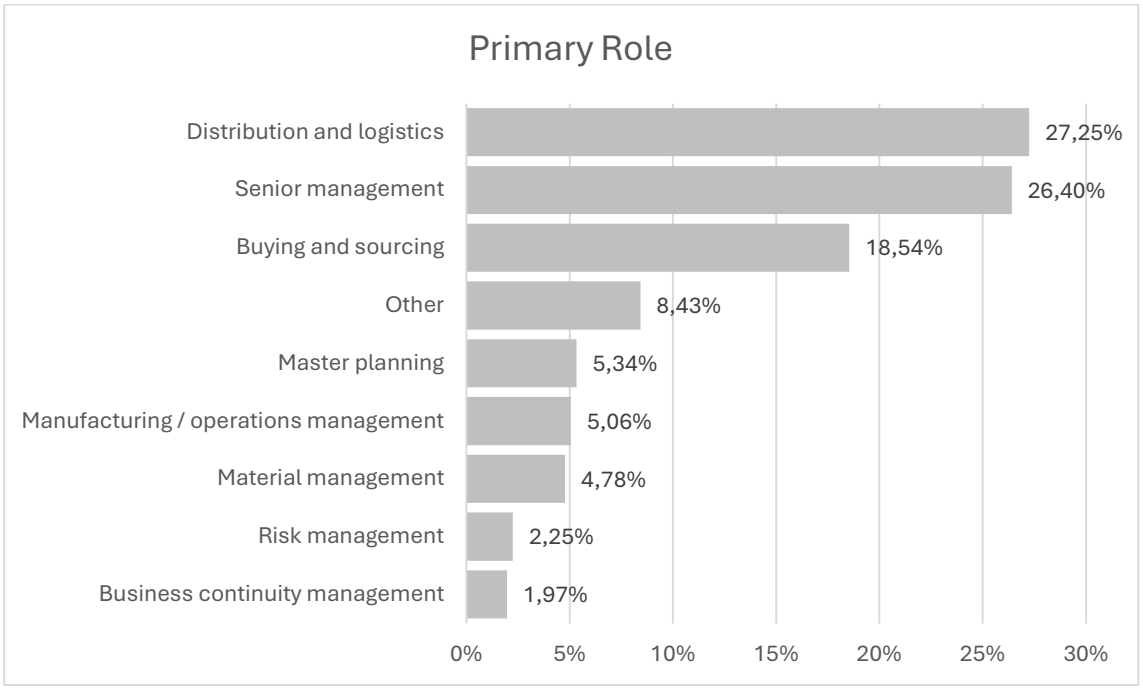
P2 = percentage of answers reporting no change

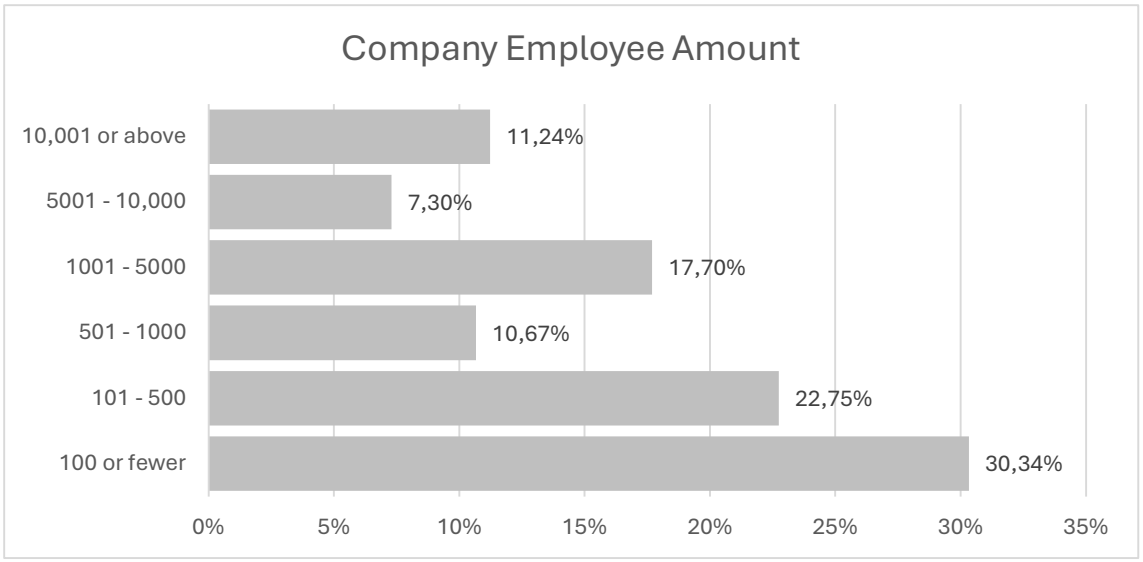
P3 = percentage of answers reporting a deterioration

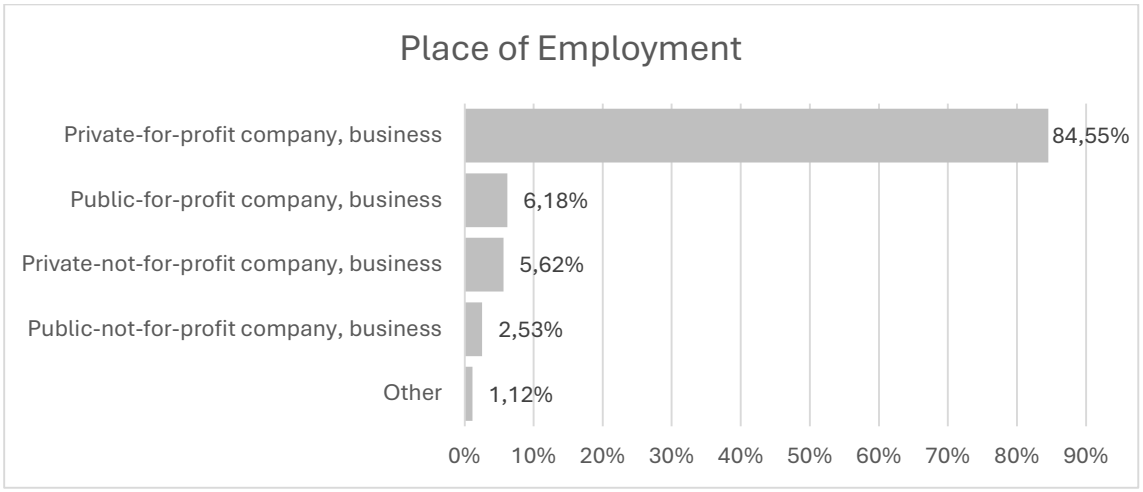
Appendix B: Demographics

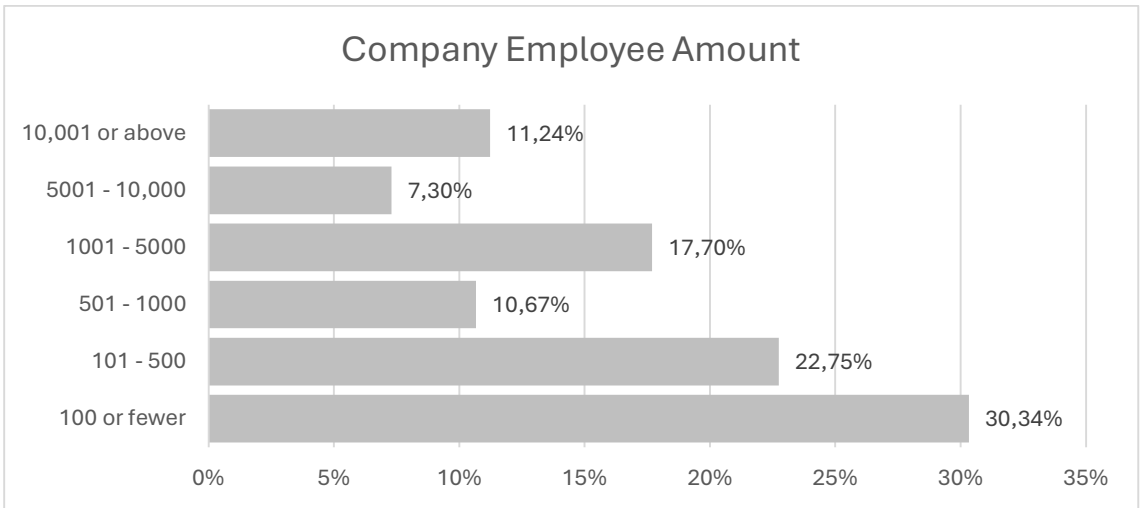



Industry
Manufacturing of durable goods
Logistics
Manufacturing of nondurable goods
Retail and Wholesale trade
Transportation
Consulting
Other
3PL
Information / Technology
Health care and social assistance
Warehousing
State And Local Government
26,69%
17,70%
10,96%
10,67%
8,71%
8,43%
6,18%
3,37%
2,53%
2,25%
1,40%
1,12%
0%
5%
10%
15%
20%
25%
30%


Primary Role
Distribution and logistics
Senior management
Buying and sourcing
Other
Master planning
Manufacturing / operations management
Material management
Risk management
Business continuity management
27,25%
26,40%
18,54%
8,43%
5,34%
5,06%
4,78%
2,25%
1,97%
0%
5%
10%
15%
20%
25%
30%


Company Employee Amount
10,001 or above
5001 - 10,000
1001 - 5000
501 - 1000
101 - 500
100 or fewer
11,24%
7,30%
17,70%
10,67%
22,75%
30,34%
0%
5%
10%
15%
20%
25%
30%
35%


Place of Employment
Private-for-profit company, business
Public-for-profit company, business
Private-not-for-profit company, business
Public-not-for-profit company, business
Other
84,55%
6,18%
5,62%
2,53%
1,12%
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%


Company Employee Amount
10,001 or above
5001 - 10,000
1001 - 5000
501 - 1000
101 - 500
100 or fewer
11,24%
7,30%
17,70%
10,67%
22,75%
30,34%
0%
5%
10%
15%
20%
25%
30%
35%

Imprint

Publisher

Prof. (FH) DI Dr. Veit Kohnhauser

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