

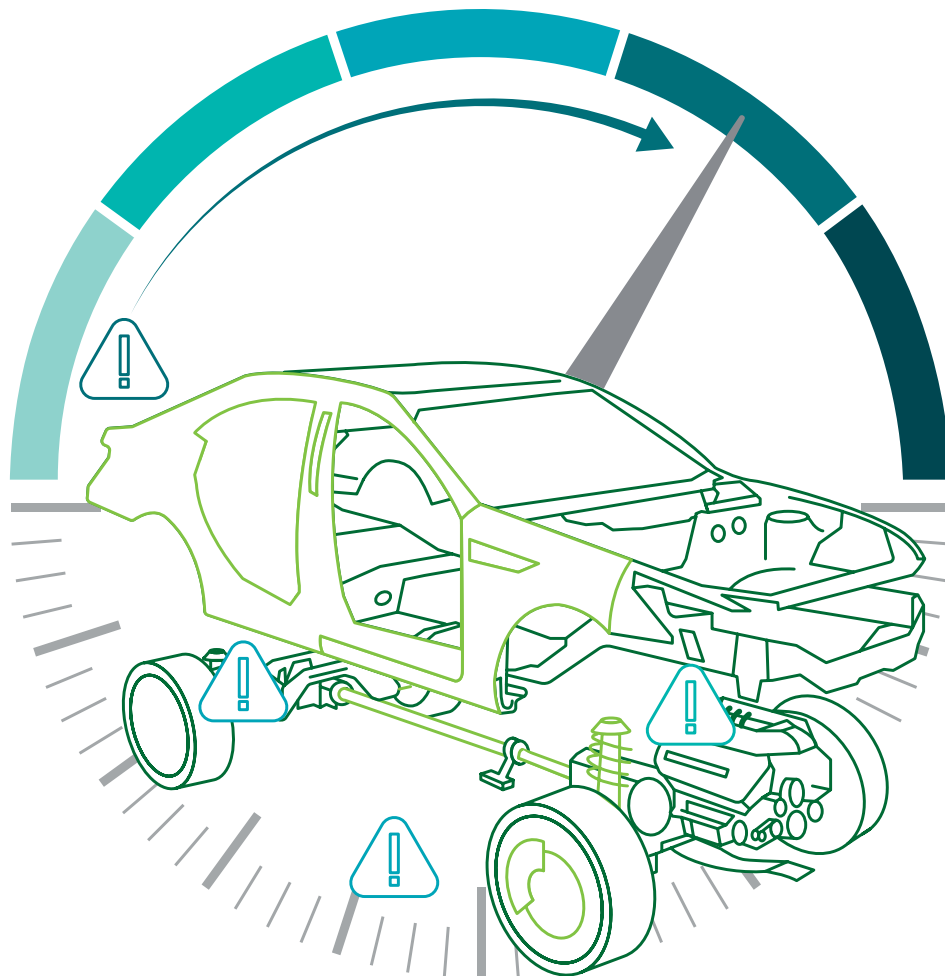


The Future of the
Automotive Value Chain
Global Supplier Risk Monitor 2021

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Preface

The COVID-19 pandemic has hit the car industry head-on. Suppliers across the sector are struggling to cope with the impacts of the crisis at the same time they are trying to move forward with the transformation of the automotive value chain.



Even without an extreme one-off event like the pandemic, taking the time to systematically evaluate and manage the industry's key risks is a sensible thing to do. There is no doubt that the transformation taking place in the industry poses enormous risks for many suppliers: businesses that are too slow to implement the latest in technological and consumer-driven trends – or to follow new regulations – could fail. In the end, we may credit the pandemic as the accelerator for change, but in fact it has simply revealed the risk factors and structural trends that were already facing the automotive supplier industry.

It was our assessment – even before the COVID-19 pandemic – that after years of positive growth¹ the industry would be facing a wide range of risk factors in the future.

¹Deloitte, *The Future of the Automotive Value Chain – The Supplier Financial Transformation Model*, 2018.

“Our research highlights the strategic challenges for the clusters most affected by the industry’s transformation. Setting a clear strategic direction, preparing proactive action plans and showing a willingness to make profound changes – even in this highly uncertain climate – are critical factors for suppliers eager to master the fundamental challenges in today’s automotive industry.”

Dr. Harald Proff, Deloitte Global Automotive Lead

These included, among other things, cluster-specific challenges (e.g., internal combustion engine (ICE)-related products) stemming from the digitalization and electrification trend. Recognizing and preparing for risk has become a more pressing concern. We believe that scenario-based thinking and strategizing can provide valuable support, enabling companies and financing partners to proactively detect areas of risk and to assess a prioritized set of countermeasures that mitigate possible threats to their business.

So far, we still have no secured idea what the full magnitude of the global crisis will be. There is growing evidence that even in the best-case scenario of a full economic recovery, the global shutdowns have left with their financial reserves

seriously depleted. This is likely to lead to a volume shift between the different product clusters (e.g., ICE vs. electric drivetrain) and a decrease in sales volume overall. The transformation of the industry's value-chain demands serious attention on its own, but if our experience is any indication, other risk factors and weak capital safety buffers will further aggravate the situation. Even in this period of high uncertainty, there is no time for trial runs: the automotive supplier industry has to get its transformation right the first time.

We have developed the *Deloitte Global Supplier Risk Monitor* to assist suppliers in their strategy formulation process. Using the same approach as our *Future of the Automotive Value Chain* study series, we have split the automotive supplier market into 19 vehicle component clusters to

highlight the cluster-specific risks, outline the potential impact of these expected changes and recommend possible actions to take. Our goal is to raise awareness about current market trends and give automotive suppliers and key stakeholders from original equipment manufacturers (OEMs) to capital providers the support they need to manage and mitigate today's risks.

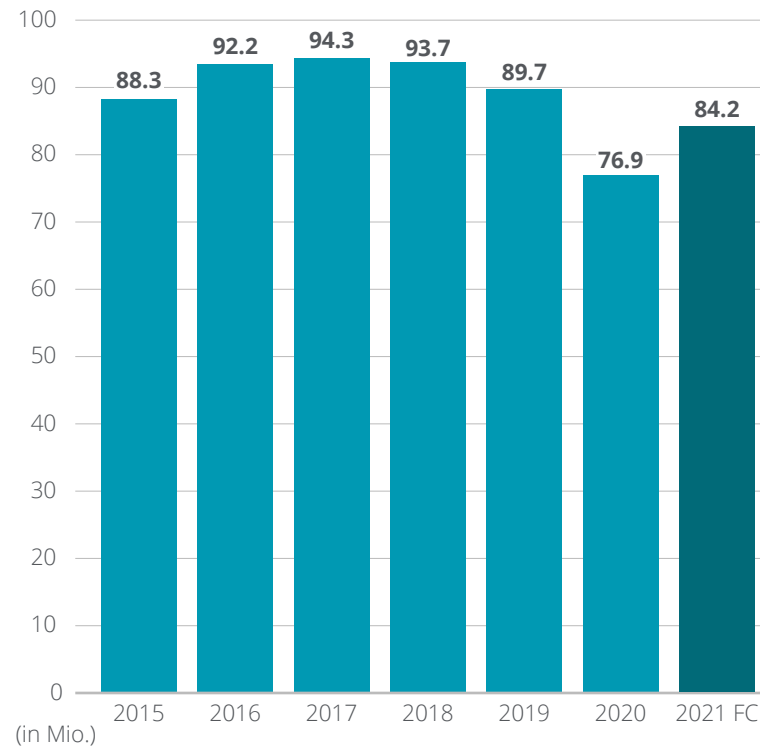
We hope that our study and our presentation of apparent risks, challenges and reactive scenarios in the automotive supplier market will be of interest to you.

The need for transformation across the automotive industry

We have seen a serious drop in light-vehicle sales, a decline only exacerbated by COVID-19. At the same time, the share of passenger cars with alternative drivetrains is on the rise. This has caused share prices of legacy OEMs to decrease dramatically while newcomers such as Tesla see their share prices soar to new, previously unheard-of heights.

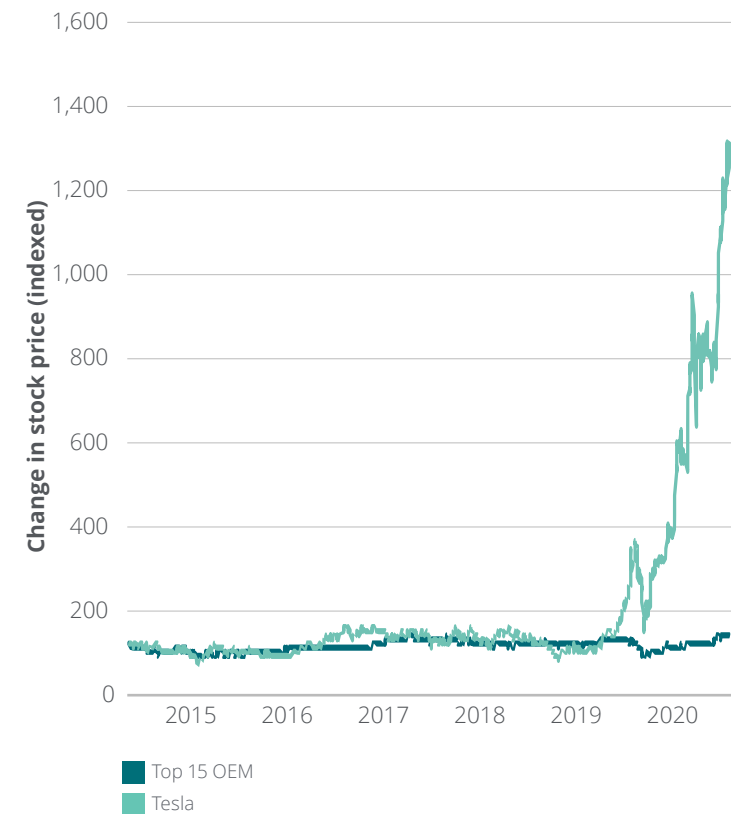
On a subjective level, it often feels as if there is a new story every day about present or future shake-ups in the automotive industry and impending structural change. Media reports on so-called megatrends such as electric mobility, autonomous driving, vehicle digitalization and car-sharing in particular increase uncertainty within the industry. Of course, the evergreens Google, Facebook, Uber and Tesla are behind these trends as well, ushering in fundamental changes to established business models as well as markets. Advances in electrification and digitalization are moving at a rapid pace. By contrast, the once bold statements on mass-market autonomous driving have become noticeably reserved, due to delays caused by technical and legal challenges as well as high costs. The same holds true for the car sharing space, where building a sustainable business model does not appear to be as easy as originally thought.

Fig. 2 – Global light vehicle sales



Source: IHS Markit.

Fig. 3 – Change in stock price (January 2015 = 100)



Source: Yahoo Finance.

What may be a subjective impression is easy to objectively confirm, given the urgent need for transformation in the automotive industry. It is notable, however, how this view has gained traction among politicians and manufacturers across the globe, as evidenced by a growing number of publications, public statements and explicit warnings in management reports and in public.

The COVID-19 crisis is limiting the room to manoeuvre for auto suppliers

Many automotive companies were already moving forward with their transformation process when the COVID-19 pandemic hit. The global shutdown of economic activity that followed has, among other calamities, precipitated a slump in global economic output that is likely to persist for years to come. As of the publication of this study, the sales forecasts and consequently the share prices of most global automotive OEMs and suppliers are under serious pressure. Debates among political leaders, calls for immediate emergency relief as well as government-funded incentive and stimulus schemes demonstrate just how existential the pandemic is for much of the world population. Beyond creating a gloomy mid to long-term outlook, the crisis measures introduced by most companies have also depleted their financial reserves. And now with the savings

earmarked for transformation considerably diminished, suppliers find that their room to manoeuvre is seriously limited.

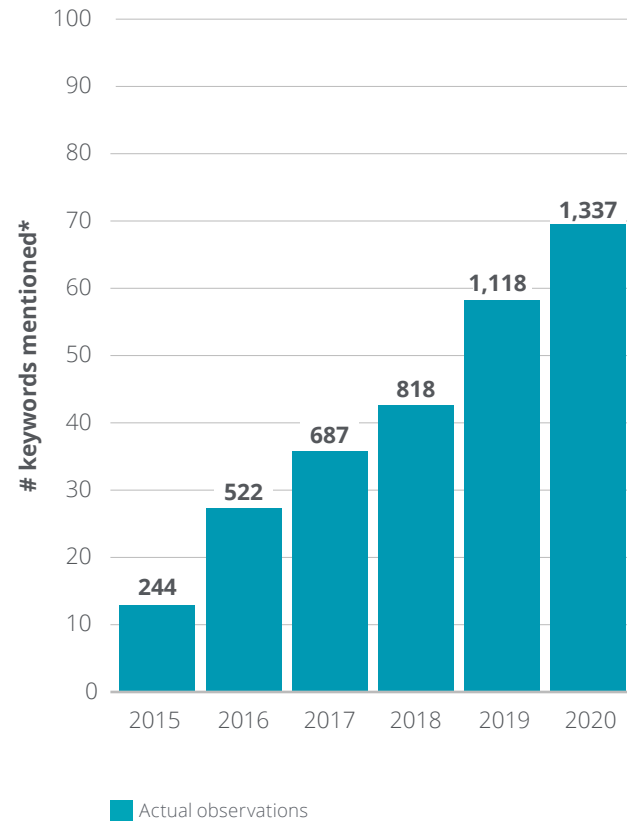
How to respond to the current environment

Given the current situation, it is now more important than ever for suppliers to validate the course they have set, to systematically identify the relevant rapids and cliffs they may encounter along the way, and to monitor these risk drivers on an ongoing basis as well as any other relevant developments.

To help business leaders master this task, we have developed the *Global Supplier Risk Monitor*. This tool enables companies to systematically track risks of varying severity in each supplier market, based on our breakdown of the automotive supplier market into 19 clusters (see page 11).

Our monitor differentiates between purely external risk drivers beyond a company's control and internal risk factors within their control. With such an exhaustive set of risk factors, companies and stakeholder like OEM, equity and debt capital providers can make a tiered assessment not only of relevant risks but also of the risk preparedness among different supplier clusters as well as within an individual cluster.

Fig. 4 – Notes, articles and publications on structural change in the automotive industry



*for the key words please refer to page 6
Source: Deloitte analysis based on factiva database.

Open any newspaper today, and you are likely to find multiple stories about disruption within the automotive sector. This has only intensified in the wake of the COVID-19 pandemic, with media stories putting both winners and losers in the spotlight. Even as sales figures for passenger cars plummet for most OEMs – along with their share prices – electric carmaker Tesla has seen its valuation soar. It will be crucial for suppliers across the industry to draw the right conclusions from the crisis if they intend to bounce back stronger than ever before.

Approach and key results

The Global Supplier Risk Monitor in a nutshell



Why?

Taking a proactive approach to detecting and anticipating risk areas across different supplier component clusters is a key imperative when it comes to your transformation strategy – the first step to securing your business for the long run and navigating the massive changes taking place in the automotive value chain.



What?

Your guide to identifying and assessing the cluster-specific risks facing the global automotive supplier industry.



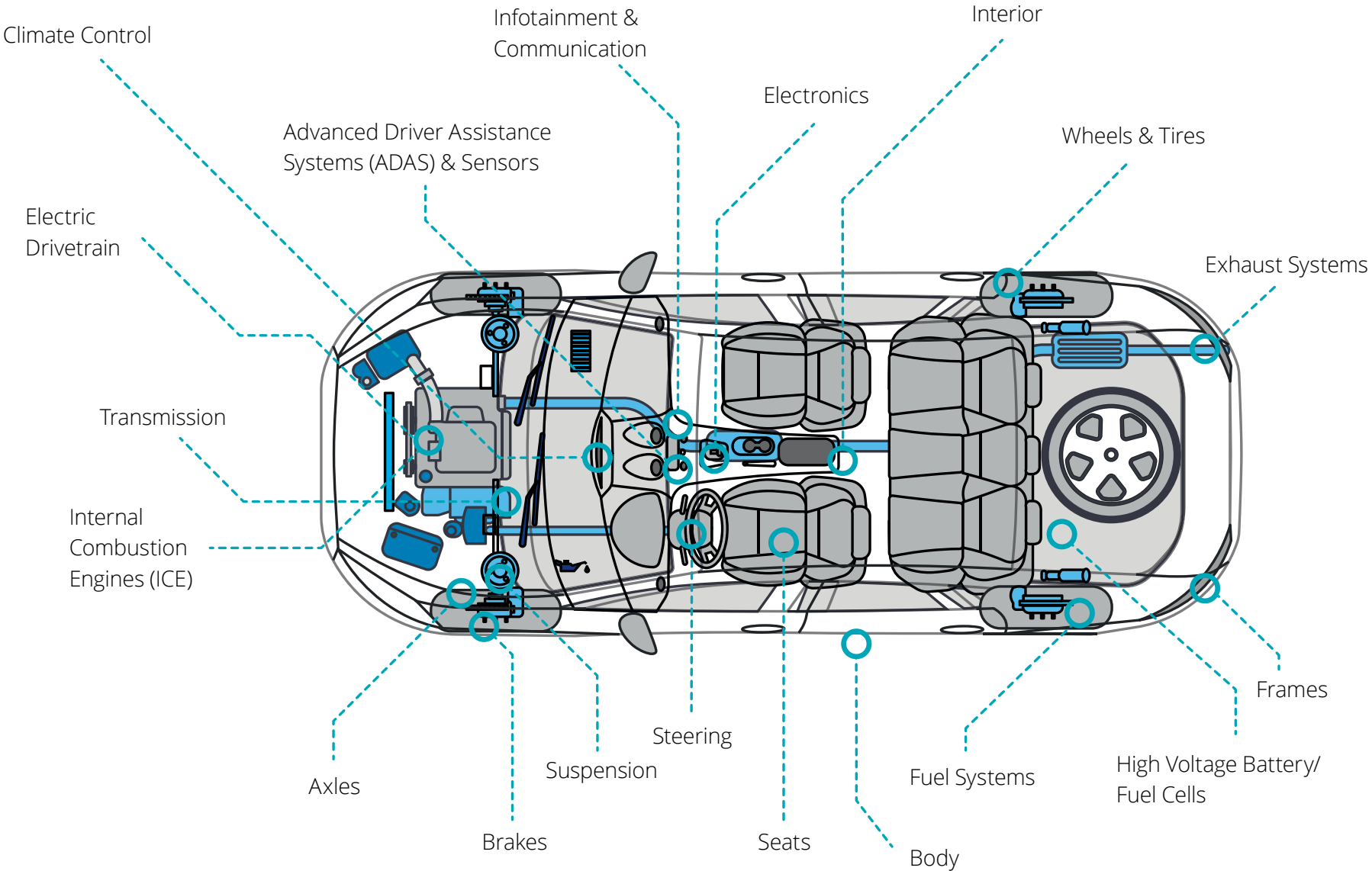
How?

Start by assessing 23 leading indicators that cover uncontrollable risks (external factors) in your company's competitive environment as well as global and societal trends.

Next up are the controllable risks (internal factors) rooted in your company's own operations, financial situation and strategic positioning.

The starting point for your risk evaluation is the set of 19 component clusters introduced in Deloitte's study series on *The Future of the Automotive Value Chain*.²

Fig. 5 - Breakdown of vehicle component clusters



Key results

The *Global Supplier Risk Monitor* enables companies to continuously and systematically monitor risks in 19 separate clusters. We evaluate each cluster based on three external risk categories (market structure and pressure, regulatory and societal environment, future market relevance) and three internal risk categories (cash-generation power, cluster adaptability and capacity for innovation, credit rating) on a scale from 1 to 5. The value assigned to each risk category combines multiple risk indicators, which are rated based on our extensive research and sector knowledge. This allows us to rely on a big-picture view when we identify the relevant risks for a particular cluster.

Understanding the different risks that impact these factors, classified as either internal or external risks, gives us a strong foundation to start developing countermeasures and mitigating risk. Based on its position within the risk matrix, as shown in Figure 6, we can develop an initial hypothesis as to the origin or the primary driver of each risk and develop risk reduction initiatives. It is crucial, however, to work from an in-depth understanding of your company's individual risk structure.

Keep it going

Even though the risk level is low in this quadrant, it is vital to monitor your risk exposure on an ongoing basis.

Clean your house

In this quadrant, you have identified serious internal risks, but there are operational and financial measures you can introduce to control them.

Address market challenges

You need to minimize your exposure to the uncontrollable risks in this quadrant. Targeted use of available resources will address market and strategic challenges.

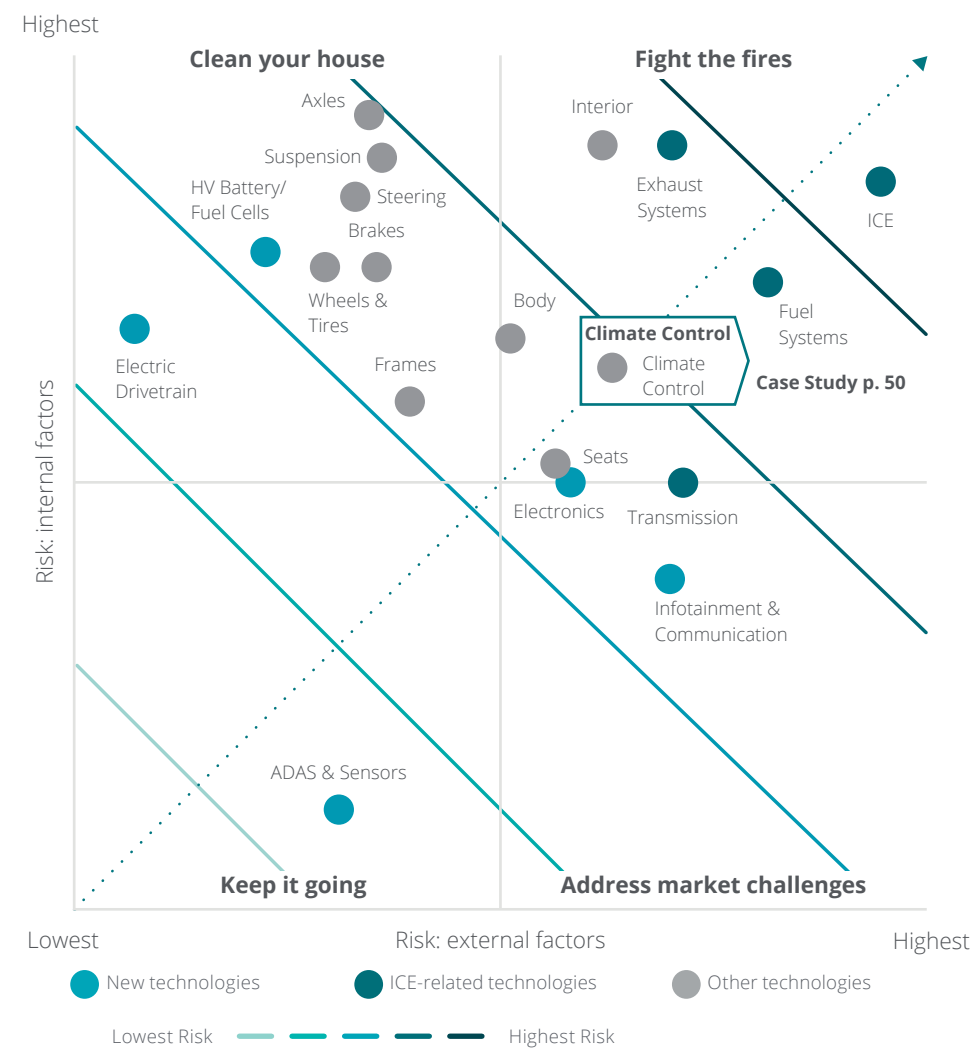
Fight the fires

Both internal and external risks are pronounced in this quadrant. The best course of action is to completely transform your business model, but that is challenging when internal resources are limited.

Due to the structure of ICE-related clusters – and the pressure for carbon-neutral drive systems from both politicians and the general public – the exposure to external risks (uncontrollable) in this area is high. Our analysis has also shown that, on average, companies focused on ICE-related components often face high internal (controllable) risks as well.

Not surprisingly, we also see clusters focused on new technologies with a lower overall risk profile. While risks for Electric drivetrain (lowest external risks closely followed by HV Battery/Fuel cells) and ADAS & Sensors (by far the cluster with the lowest internal risk) score low, the situation for High Voltage Battery/Fuel cells is more nuanced: external risks are classified as low, driven by the determination to advance electrification. Our data sample also shows that there are relevant internal risks as well.

Fig. 6 – Component cluster risk map



Source: Global Supplier Risk Monitor. Internal and external risk factors on a scale 1-5 are weighted 50:50 to achieve the overall risk score (see next page)

The highest risk is in clusters focused on Exhaust Systems and ICE. The highest internal risk we observed is in the Axles cluster (low earnings and bad balance sheet structures). The cluster with the highest external risk is ICE (decreasing market volume, high market consolidation, high adverse impact of legislation).

The lowest risks are found in the ADAS & Sensors and Electric Drivetrain clusters. The ADAS & Sensors cluster has the lowest exposure in five out of six risk categories, among the five clusters with the lowest risk level. The cluster adaptability and capacity for innovation factors as well as credit rating have a particularly positive impact on risk levels.

Tab. 1 – Component cluster risk league table

Risk rank	Change*	Cluster	Risk score
1	→	ICE	4.74
2	→	Exhaust Systems	4.25
3	→	Interior	4.09
4	→	Fuel Systems	4.01
5	→	Climate Control	3.55
6	→	Axles	3.51
7	→	Suspension	3.45
8	→	Transmission	3.44
9	→	Body	3.37
10	→	Steering	3.19
11	→	Infotainment & Communication	3.04
12	→	Brakes	3.03
13	→	Electronics	3.02
14	→	Seats	2.98
15	→	Wheels & Tires	2.87
16	→	HV Battery/ Fuel Cell	2.68
17	→	Frame	2.62
18	→	Electric Drivetrain	2.26
19	→	ADAS & Sensors	1.36

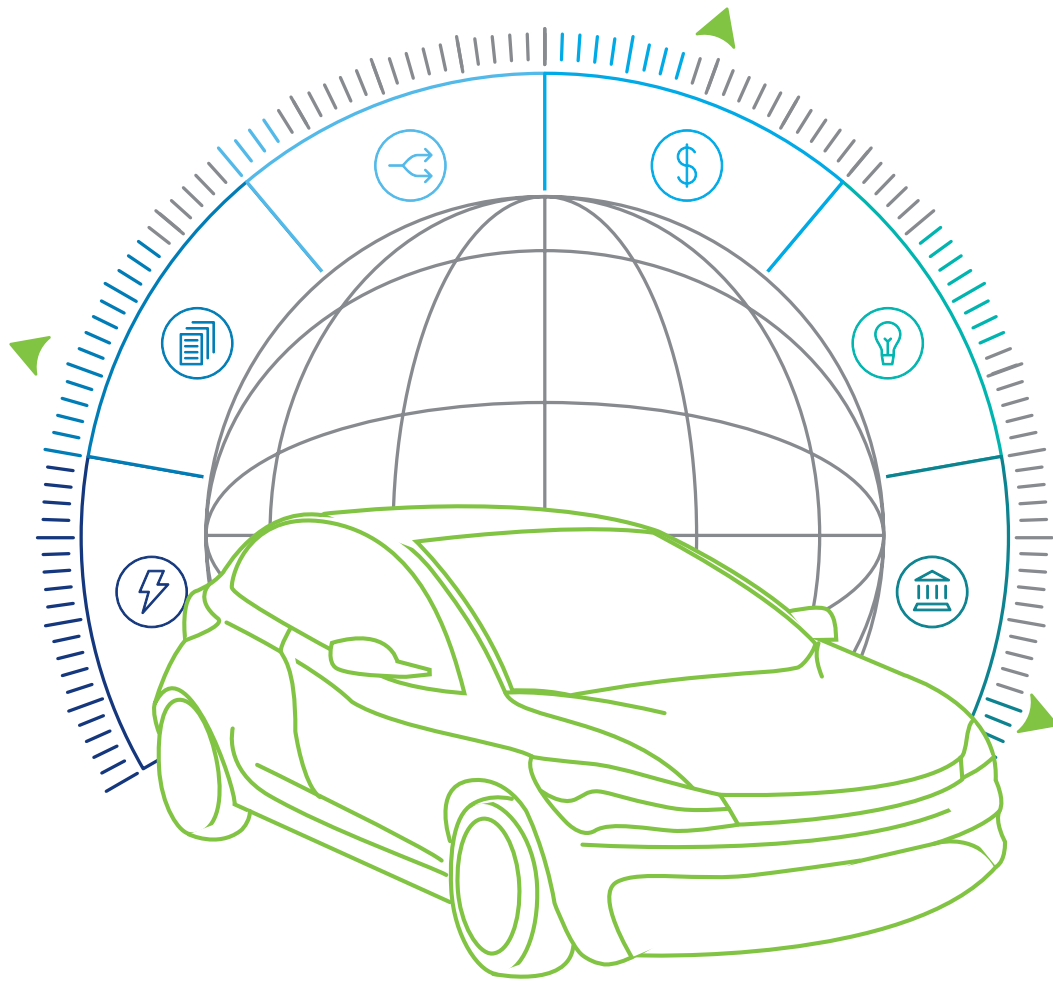
* This is the first time we are publishing these risk scores. In future issues, this chart will include information about the change in risk score over the previous period.

Source: Global Supplier Risk Monitor.

The COVID-19 crisis has limited the room to maneuver for automotive suppliers in every cluster, while governments are seizing the opportunity presented by the crisis to promote sustainability. As a result, COVID-19 is having a particularly negative impact on demand for vehicles with traditional drivetrains, at least over the near term. The market for alternative vehicles, by contrast, looks set to continue to grow.



Risk factors



To ensure that we take a holistic view, each cluster is evaluated based on three external risk categories – defined as uncontrollable factors – and three internal risk categories – defined as controllable factors.

Risk – external factors

These are defined as uncontrollable factors that are likely to have an effect on either the present or future performance of a company but remain to a large degree outside the influence of management.

Risk – internal factors

These are defined as controllable factors that can be either a multiplier or a mitigator for external risks. Whereas all companies within a cluster are affected to the same extent by external factors, they vary with regard to their internal risks.



Market structure and pressure

These are risks arising from the competitive situation within a certain cluster. It is important to consider the current market structure (e.g., the level of fragmentation) relative to the current market size. The outlook for key inputs such as raw materials and skilled talent is an additional factor in our assessment of the market pressure for individual clusters.



Cash-generation power

The ability to adapt new trends and the consistently high pressure from OEMs and the market as a whole make it imperative for companies to stay profitable, i.e., to maintain flexible cost structures and stable operating cash flow as well as keeping locked-up working capital to a minimum.



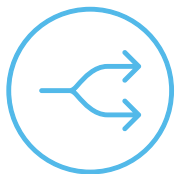
Regulatory and societal environment

Besides the competitive environment, a company's prospects are increasingly being affected by societal and regulatory norms and trends, such as current subsidies for electric vehicles or carbon emission caps. The overarching themes here revolve around issues from security and sustainability to the predictability of the legislative framework.



Cluster adaptability and capacity for innovation

We assess patents and the level of R&D investment over the medium-term to determine a cluster's readiness to capture current and prospective market trends and a company's willingness to invest in the future of a market. In addition, innovative clusters offer opportunities for companies to set themselves apart from the competition through innovation or create a new profitable market niche.



Future market relevance

Besides the risks arising from global megatrends, there are additional risk indicators that may affect a cluster's future market relevance, such as entrepreneurial attractiveness or M&A attractiveness. Innovation and disruption from automotive players as well as new entrants are expected to change the current value-added process and, with it, the entire automotive supplier landscape.



Credit rating

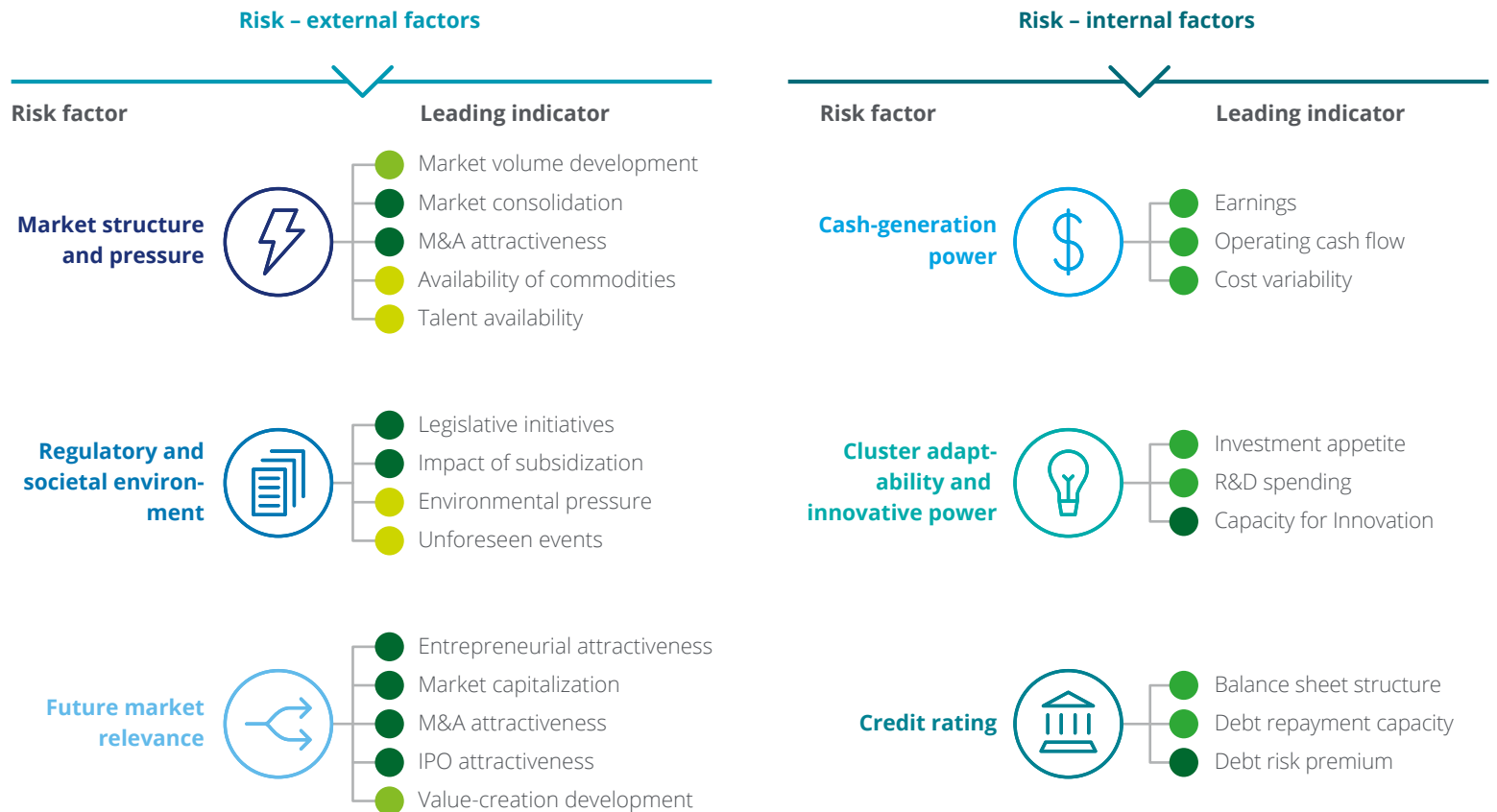
Here, we evaluate a cluster's ability to finance necessary changes, to fund new projects through external equity or debt capital and to service existing loans. A high credit rating helps companies source debt capital or equity capital providers, which in turn will help fund future endeavors to expand the business, create a niche, grow the product portfolio or drive consolidation.

Leading indicators

This risk assessment covers a comprehensive set of leading internal and external risk indicators that companies can measure and monitor.

For the purpose of this study, we made sure the indicator database is always up to date to ensure that the assessments reflect the latest developments.

Fig. 7 - Overview of leading indicators and data sources



● Deloitte *The Future of the Automotive Value Chain* study studies³ ● Deloitte benchmark database ● Deloitte research ● Deloitte specialist knowledge

Risk monitoring and mitigation

Tab. 2 - Overview monitor and mitigation approach

Risk monitoring		Risk mitigation
<p>Analyze and monitor macro risks</p> <ul style="list-style-type: none"> Analyze leading indicators to assess the risks of individual automotive component clusters. Use leading internal and external indicators to enable an objective risk assessment. Perform risk assessment on a global basis, regularly updating and publishing results. Track the development of risk exposure over time, to allow comparison with the previous risk assessments of component clusters. 	<p>Identify key risks</p> <ul style="list-style-type: none"> Consider and translate Global Deloitte Risk Index to a specific company scenario. Analyze company-specific risks: <ul style="list-style-type: none"> Does one company have a different risk exposure than its component cluster? How has the risk level developed compared to the previous assessment? Identify key risks based on their expected impact on the company. Distinguish uncontrollable risks from controllable risks. 	<p>Define mitigation actions</p> <ul style="list-style-type: none"> Assess different transformation scenarios for own component clusters in general and in light of the Deloitte risk evaluation. Define a transformation path and action plan to mitigate key risks. Update action plan based on changed risk exposure.
<p>Focus of this study</p>		<p>Supplier-specific report tailored to reflect the relevant internal/external risk level.</p> <p>Focus of the Deloitte Supplier Financial Transformation Model⁴</p>

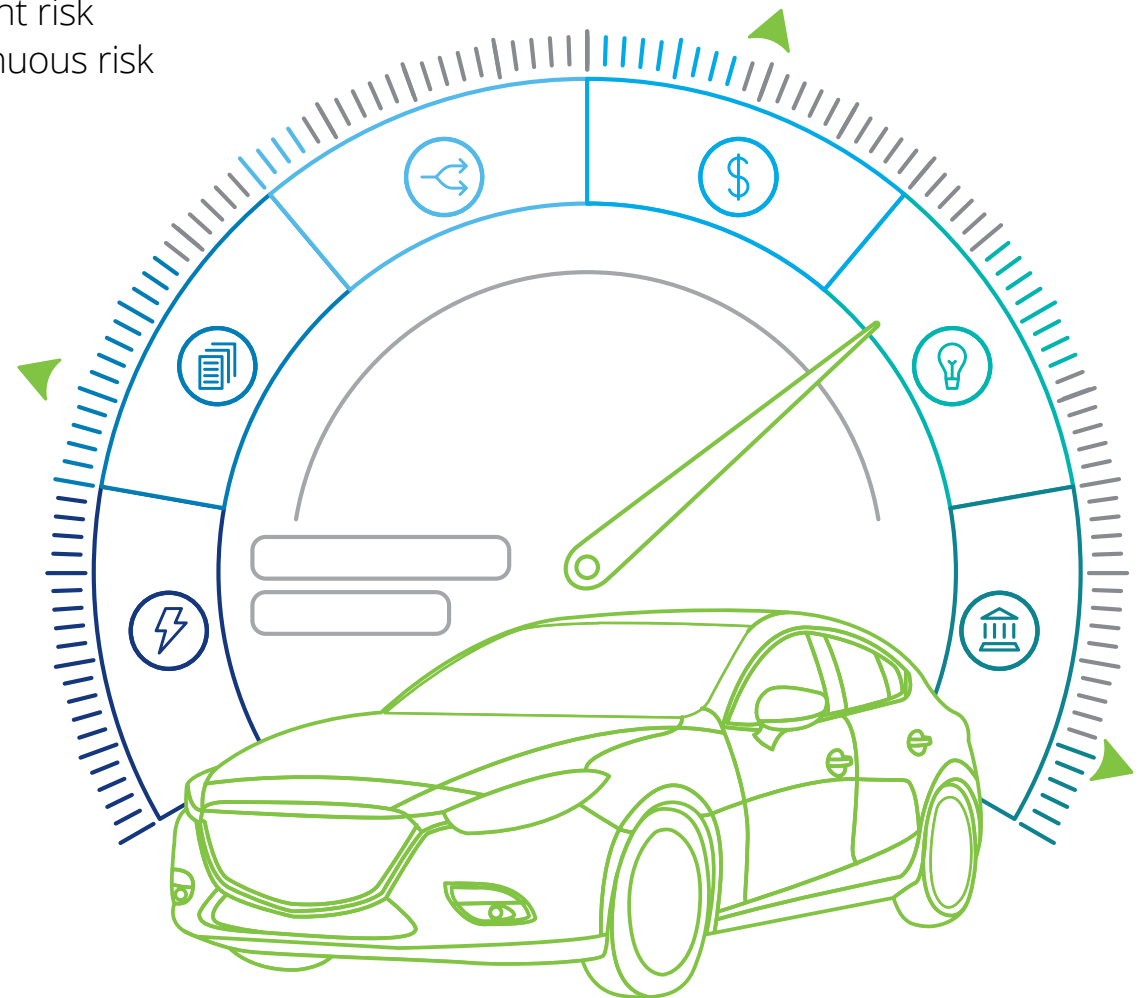
It is important for each company to establish a continuous and systematic approach to monitoring and evaluating internal and external risks. To achieve long-term business success, you need a structured methodology that enables you to identify risks at an early stage and respond with the right countermeasures.

^{3,4}Deloitte, *The Future of the Automotive Value Chain – The Supplier Financial Transformation Model*, 2018.

Risk categories and indicators: Evaluation per component cluster

Deloitte has developed a proprietary methodology that enables suppliers, OEMs, banks and investors to identify and monitor risks on an ongoing basis using a set of 23 objective leading indicators. These indicators are categorized into 6 different risk factor categories and updated regularly to support continuous risk monitoring.

Suppliers, OEMs, banks and investors can rely on Deloitte's powerful leading indicator database to benchmark different component clusters and automotive suppliers against one another. With regular updates of the database, we will be able to provide insight about how risks levels change over time in future issues of our *Global Supplier Risk Monitor*.



The following pages present all of our leading indicators as well as their impact on the risk categorization of each component cluster. Get in touch with us for a chance to rank your company, your portfolio of companies, your customers or your suppliers against the competition; we look forward to helping you identify the specific risks of your business and develop possible mitigation measures.



Market structure and pressure

Infotainment and Climate control are the riskiest clusters in terms of market pressure. Infotainment gets the highest risk score in four out of five indicators. Development in this market is expected to remain low, moving market players to try and stabilize their sales volume by buying direct competitors (i.e., consolidating the market).

At the same time, chances are slim of finding investors outside the same cluster that are willing to invest in Infotainment. Players in the Wheels & Tires cluster face the lowest risk in terms of market pressure. With market consolidation low, investors are willing to provide funds, and the necessary commodities are widely available.

Talent availability and most recently the semi conductor crisis pose significant risk onto new drivetrain and connected driving and electronics clusters that are expected to remain. In both fields the automotive industry is competing with players from the IT and consumer electronics sector that are more established as attractive employers and larger in scale as a customer than the automotive industry combined.

Tab. 3 – Risk league table: market structure and pressure

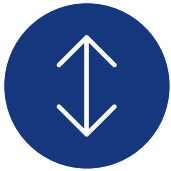
		Market- volume devel- opment	Market consolidation	M&A attractiveness	Availability of commodities	Talent availability
	Risk score	Indicator's impact on risk score				
Highest risk	5					
Infotainment	5.00	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
Climate Control	4.08	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
Fuel System	4.08	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
Exhaust Systems	3.86	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
HV Battery/Fuel Cell	3.68	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
...						
ADAS & Sensors	2.42	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
Frame	2.42	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
Electric Drivetrain	1.87	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
Body	1.86	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
Wheels & Tires	1.00	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
Lowest risk	1					

● ● ● High risk ● ● ● Medium risk ● ● ● Low risk Lowest Risk ■ ■ ■ ■ ■ Highest Risk

Source: Global Supplier Risk Monitor.



Description of risk indicators



Market volume development

Expectations regarding the development of the global* market volume for each component cluster. If forecasts indicate a strong increase in market volume, this will typically lead to a less competitive environment in the short term and, consequently, a lower risk level for all market participants.



Availability of commodities

Analysis of the worldwide availability and corresponding price trends in the raw materials required for production in a component cluster. Scarcity of raw materials poses a risk for all market participants in a given cluster.



Market consolidation

Intra-cluster M&A: a company operating in a specific cluster segment acquires another company in the same cluster segment. High intra-cluster M&A activity is an indicator of market consolidation, which may result in strong market concentration with just a few suppliers and high risks for smaller, less market-dominating competitors.



Talent availability

Given the pace of technological change (electrification) and increasing digitalization in cars (car to x), the availability of employees with specialist skills is an extremely important factor. Finding talent with the appropriate background (education and experience) is key to leveraging the market trends expected in some component clusters.

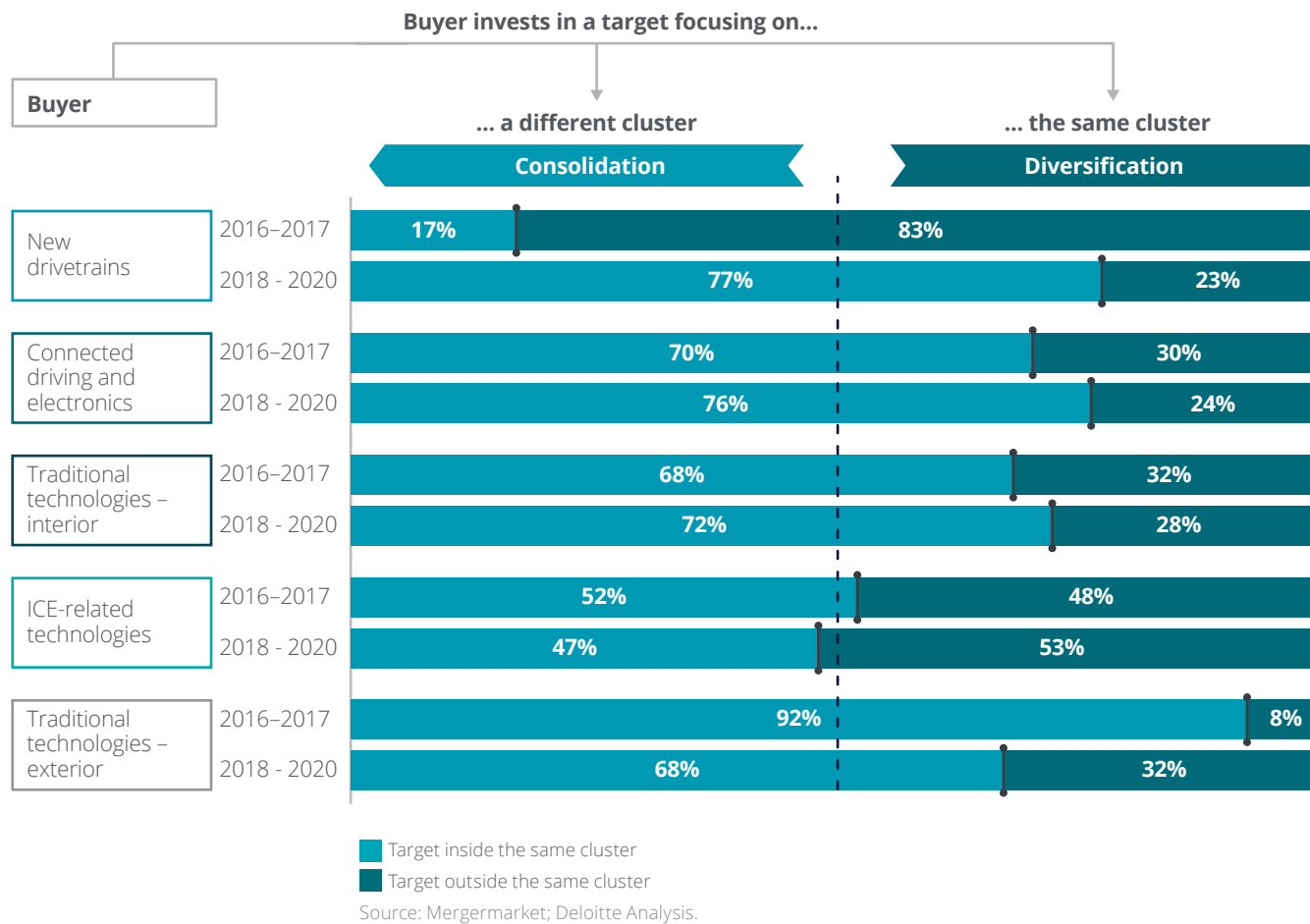


M&A attractiveness

Inter-cluster M&A: a company invests in a company that is operating in a different component cluster. In this case, the investor is only willing to enter a market with a positive market outlook. In contrast to an intra-cluster M&A, this does not necessarily change the competitive structure of the cluster.



Fig. 8 - Evolution of M&A activity by buyer group, 2016–2020



M&A activities outside the ICE-related clusters were mainly driven by consolidation from 2018 to Q1 2021 (i.e., buyer and seller were direct competitors in the same cluster), while there was a complete reversal in the Electric drive-train cluster from diversification (investing in targets with a business focus in other clusters) to intra-cluster deals (driving consolidation).

Taking a closer look at ICE-related technologies, it appears that buyers are almost evenly split into two camps, either following a consolidation strategy (47%) or a diversification strategy (53%), targeting structurally important and innovative cluster groups that have the potential to be more relevant in future.

While the traditional technologies exterior cluster as a buyer group is predominantly focused on consolidation (68%), buyers in this cluster are predominantly players from outside the supplier industry, e.g., financial investors (private equity (PE) and other, 27%).

It's noteworthy that M&A activity targeting companies in the ICE-related cluster is predominantly driven by consolidation acquisitions (67%), with financial investors (PE and other, 15%) as the second-largest buyer group.

Key messages

A component supplier that is evolving into a full-systems provider is a key driver of diversification. More and more suppliers are determined to complete their product portfolio and provide OEMs with systems rather than individual components.

The availability of commodities is important for digitalization and automation in particular, as well as for the switch to electric drive systems. Sourcing relevant raw materials such as cobalt and rare-earth metals hinges on the political stability of the countries of origin in addition to human rights and environmental issues.

Especially the sectors ADAS & Sensors, Electric Drivetrain, Electronics, Climate Control and Infotainment were heavily hit by the semiconductor crisis with expected longer lasting implications.

The limited availability of skilled IT and electro-technical specialists is expected to launch a fierce battle for talent in clusters such as ADAS & Sensors, Infotainment, E-mobility as well as the Electric drivetrain and High Voltage battery/Fuel cells clusters. Conversely, conventional specialist roles will remain unaffected.



Regulatory and societal environment

In terms of the internal regulatory and societal environment, the ICE and Fuel systems clusters face the highest risks.

Increasingly strict legislation with respect to CO₂ emissions, the impact of government subsidies and environmental pressure are the key drivers of risk in the clusters related to ICE technology, such as ICE and Fuel Systems, while large unforeseen events hit all clusters equally.

We find the lowest risk in new technologies, namely in the Electric Drivetrain cluster, as well as in the HV battery/Fuel cells cluster. Although one could never claim that the CO₂ emissions from battery production are low, politicians seem determined to promote electromobility. This coupled with virtually ubiquitous environmental pressure means risk in this area is low.

Tab. 4 – Risk league table: regulatory and social environment

		Legislative initiatives	Impact of subsidization	Environmental pressure	Unforeseen events
	Risk score	Indicator's impact on risk score			
Highest risk	5				
ICE	5.00	● ● ●	● ● ●	● ● ●	● ● ●
Fuel Systems	3.29	● ● ●	● ● ●	● ● ●	● ● ●
Transmission	3.00	● ● ●	● ● ●	● ● ●	● ● ●
Electronics	2.72	● ● ●	● ● ●	● ● ●	● ● ●
Interior	2.66	● ● ●	● ● ●	● ● ●	● ● ●
...					
Suspension	2.25	● ● ●	● ● ●	● ● ●	● ● ●
HV Battery/Fuel Cells	2.22	● ● ●	● ● ●	● ● ●	● ● ●
Steering	2.09	● ● ●	● ● ●	● ● ●	● ● ●
Axles	2.09	● ● ●	● ● ●	● ● ●	● ● ●
Electric Drivetrain	1.00	● ● ●	● ● ●	● ● ●	● ● ●
Lowest risk	1				

● ● ● High risk ● ● ● Medium risk ● ● ● Low risk Lowest Risk ■ ■ ■ ■ ■ Highest Risk

Source: Global Supplier Risk Monitor.



Description of risk indicators



Legislative initiatives

Legislation can accelerate market trends in some component clusters and slow them down in others. Where legislation is restrictive, companies may be unable to fully exploit the market's technological potential (e.g., autonomous driving), while legislative activism may boost other trends (e.g., electrification). Uncertainty due to the absence of legislation, on the other hand, means the risk in this area is higher than other well-regulated markets.



Environmental pressure

There is massive social pressure on today's OEMs to move toward carbon-neutral production. As a result, OEMs will work to replace some components that have an adverse carbon footprint with alternative components that improve the carbon-neutral balance. OEMs may also try to pass – at least in part – the price premium associated with these solutions to their suppliers. That would increase the risks for suppliers in this component cluster, who will have to achieve even more efficiency improvements and innovations to cover these additional costs.



Impact of subsidization

Government subsidies can drive demand for products that lasts longer or provides a temporary boost, even if they are at a disadvantage to competing products. Where initial production costs are too high for some products (making them affordable only for a limited group of buyers), subsidies can move products into the mass market earlier. Subsidies may reduce risks for companies in a cluster, even as they increase long-term dependency and decrease competitiveness.



Unforeseen events

One-off events – such as wars, pandemics such as the current crisis, ecological disasters, political instability (e.g., Brexit), accidents (e.g., exploding batteries in BEVs (battery electric vehicles) or fatalities caused by self-driving cars) can have a direct impact on the demand within a component cluster.



The repercussions of COVID-19

Actual impact

The COVID-19 pandemic may be one of the biggest crises to hit the automotive industry in recent decades. We are seeing a significant slump in new vehicle purchases in the European Union, though it is manageable for vehicles with alternative drive systems.

Current measures – Germany's example

Despite the considerable challenges we are facing in the pandemic, governments have seized this opportunity to step up their efforts toward sustainability. Measures taken by the German government, for example, are compensating for the pandemic's negative impact on alternative drivetrains and promoting long-term sustainable development.

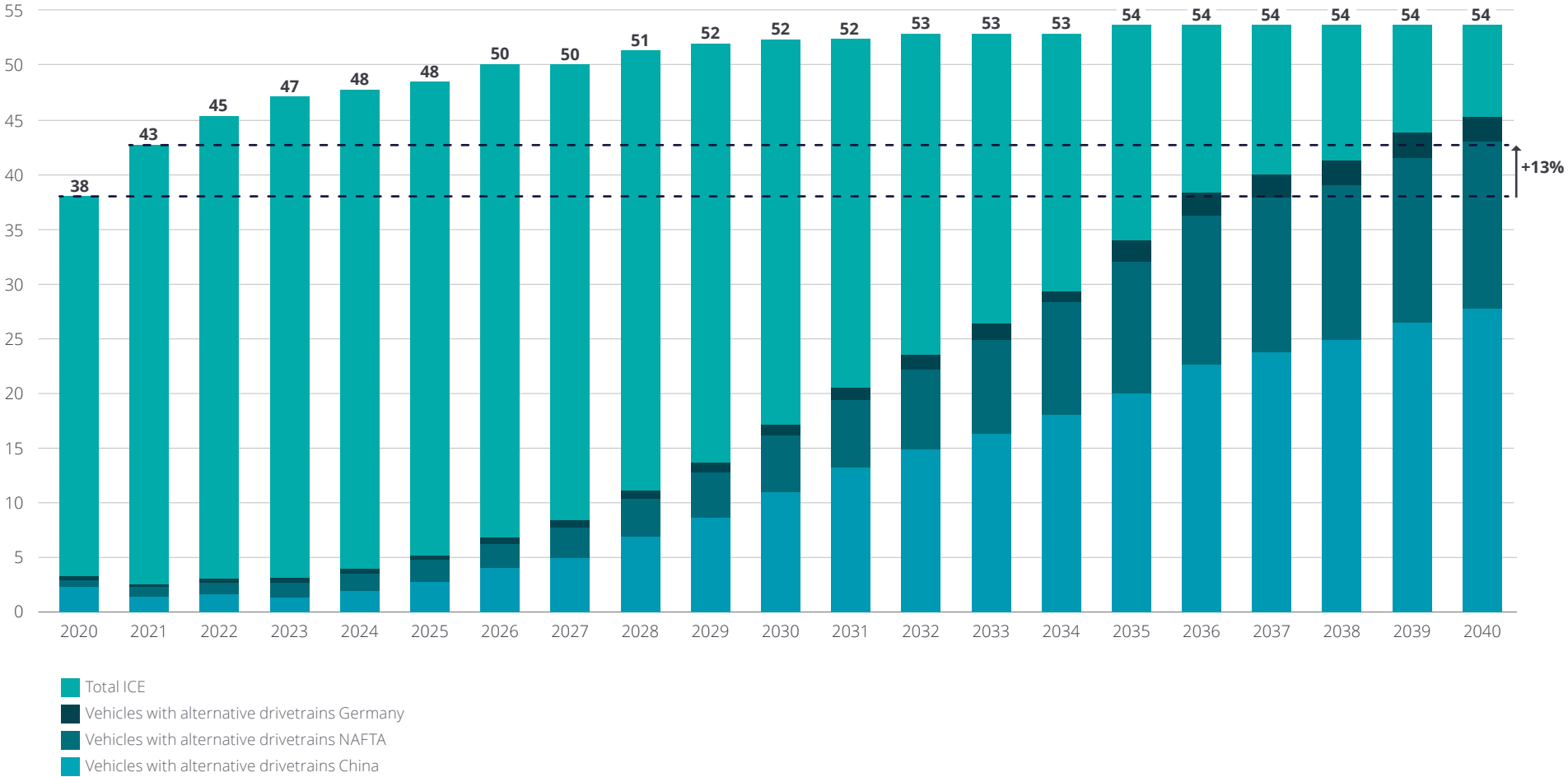
Global outlook

From a global perspective, the COVID-19 crisis is having a particularly negative impact on demand for vehicles with traditional drive technology, at least in the short term. The market for alternative vehicles, on the other hand, looks set to continue to grow. We estimate that by 2040 annual sales of new alternative vehicles will exceed 40 million worldwide.

Despite efforts in some quarters to soften current CO₂ targets during the current crisis, we have also seen calls for tightening them by 2030. The European Commission has announced plans to discuss tightening its CO₂ regulations, already the world's strictest, in 2021.

While we expect a rather moderate increase in vehicles with alternative drivetrains by 2023, that trend is expected to pick up pace as of 2024 and beyond.

Fig. 9 - Annual sales of alternative vehicles in Germany, NAFTA and China in comparison to vehicles with internal combustion engine (in millions)



Source: Deloitte, *Elektromobilität in Deutschland – Marktentwicklung bis 2030 und Handlungsempfehlungen*, 2020.

Key messages

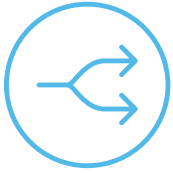
Legislative trends promoting the transformation of the mobility landscape, driven primarily by stricter emission regulations, will have a positive impact on e-mobility clusters – and to a certain extent on the Exhaust Systems cluster.

In addition to legislative initiatives, government subsidies helping the industry face pandemic-related challenges are clearly geared toward alternative drivetrains, as opposed to ICE-related systems.

In terms of carbon footprint, battery production is the prime emitter of CO₂ behind body, electric drivetrain and ICE production due to its resource-intensive processes.



The regulatory environment can have a massive impact on risks within a component cluster. On the one hand, restrictions may make certain products obsolete or, at a minimum, increasingly less profitable, as is the case for ICE and ICE-related components. On the other hand, government subsidies may boost trends such as BEVs and increase the pace of change in this area. While we expect annual sales of new alternative vehicles to reach approx. 17 million across Germany, NAFTA, China by 2030, this figure could increase upwards of 40 million by 2040.



Entrepreneurial attractiveness

Experts expect internal combustion engines to become significantly less relevant in the future. Our risk indicators confirm this:

- Very low start-up activity
- A sharp decrease in market capitalization
- Low EBIT multiple and fewer opportunities to refinance through an IPO

Despite a lack of entrepreneurial activity (due to high market-entry barriers) and low IPO attractiveness, the High Voltage Battery/Fuel cells cluster has the lowest risk scores.

Tab. 5 – Risk league table: future market relevance

		Entrepreneurial attractiveness	Market capitalization	M&A attractiveness	IPO attractiveness	Valuecreation development
	Risk score	Indicator's impact on Risk score				
Highest risk	5					
ICE	5.00	●●●	●●●	●●●	●●●	●●●
Exhaust Systems	4.99	●●●	●●●	●●●	●●●	●●●
Fuel Systems	4.73	●●●	●●●	●●●	●●●	●●●
Transmission	4.61	●●●	●●●	●●●	●●●	●●●
Body	4.61	●●●	●●●	●●●	●●●	●●●
...						
Electronics	2.60	●●●	●●●	●●●	●●●	●●●
Suspension	2.50	●●●	●●●	●●●	●●●	●●●
Electric Drivetrain	2.27	●●●	●●●	●●●	●●●	●●●
ADAS & Sensors	2.19	●●●	●●●	●●●	●●●	●●●
HV Battery/Fuel Cells	1.00	●●●	●●●	●●●	●●●	●●●
Lowest risk	1					

●●● High risk ●●● Medium risk ●●● Low risk Lowest Risk ■■■ Highest Risk

Source: Global Supplier Risk Monitor.



Description of risk indicators



Entrepreneurial attractiveness

The number of active and new start-ups within a cluster acts as a good indicator of the future competitive environment. At the same time, it says a lot about how attractive a particular cluster is for new business opportunities, how positive its future outlook is and what potential threats could come from new young competitors.



IPO attractiveness

The IPO volume over the last few years allows us to estimate the general attractiveness of a cluster's market. High IPO volumes indicate that the cluster is extremely attractive to investors, while low IPO volumes indicate the opposite.



Market capitalization

The market capitalization of companies in different clusters demonstrates how external stakeholders assess the potential returns on the purchase or sale of shares in these clusters, and therefore the attractiveness of the market. When share prices decrease, it suggests that the opportunities to raise capital through outside financing will become increasingly limited.



Value creation development

Analyzing the (material) cost share of a cluster in an average mid-range car relative to the projected share for 2028 provides insights about this cluster's future relevance. For example, as demand for and therefore production of electric cars increases, the relevance of clusters focused only on cars with combustion engines will decrease. This indicator also allows us to assess the future attractiveness of a cluster.



M&A attractiveness

Similar to changes in market capitalization, the EBIT multiple shows how external stakeholders judge a company's market attractiveness. A high EBIT multiple indicates a company's strong future prospects as well as an ability to sell off part of the company to pay for future transformation efforts.



The ICE and Transmission clusters are expected to experience the biggest losses in terms of the share in value creation, while we expect this figure to be significantly higher for the High Voltage Battery/Fuel cells and Electronics clusters.

Investors have indicated that they feel the same way:

- ICE-related technologies trade at low EBIT multiples, with companies focused on new drivetrains trading at the highest EBIT multiple.

Fig. 10 – Development of material cost share (baseline medium car)

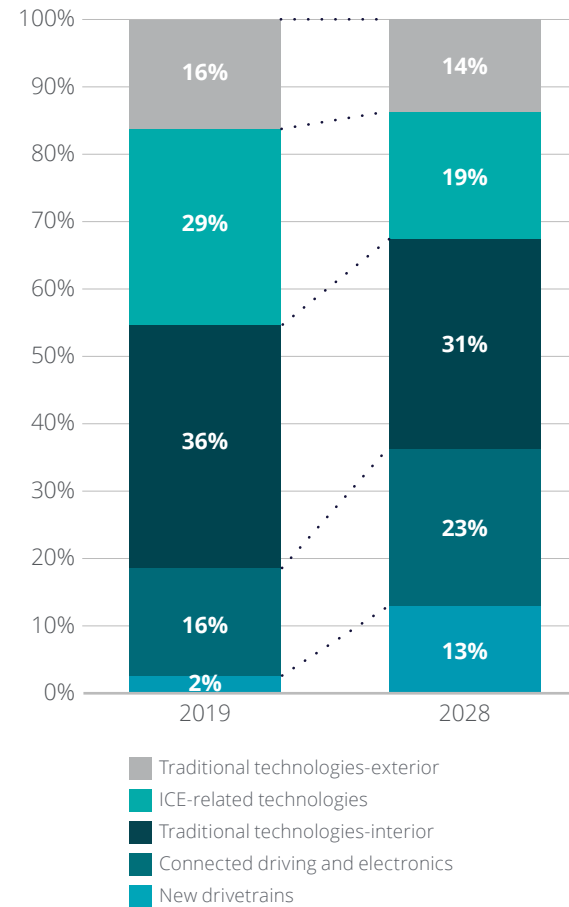
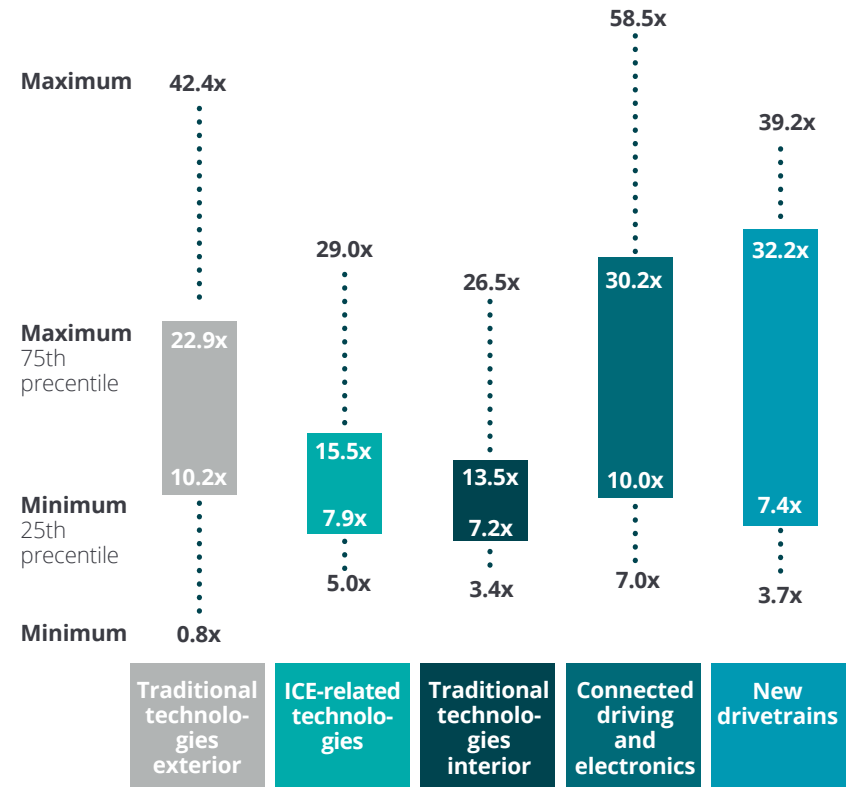
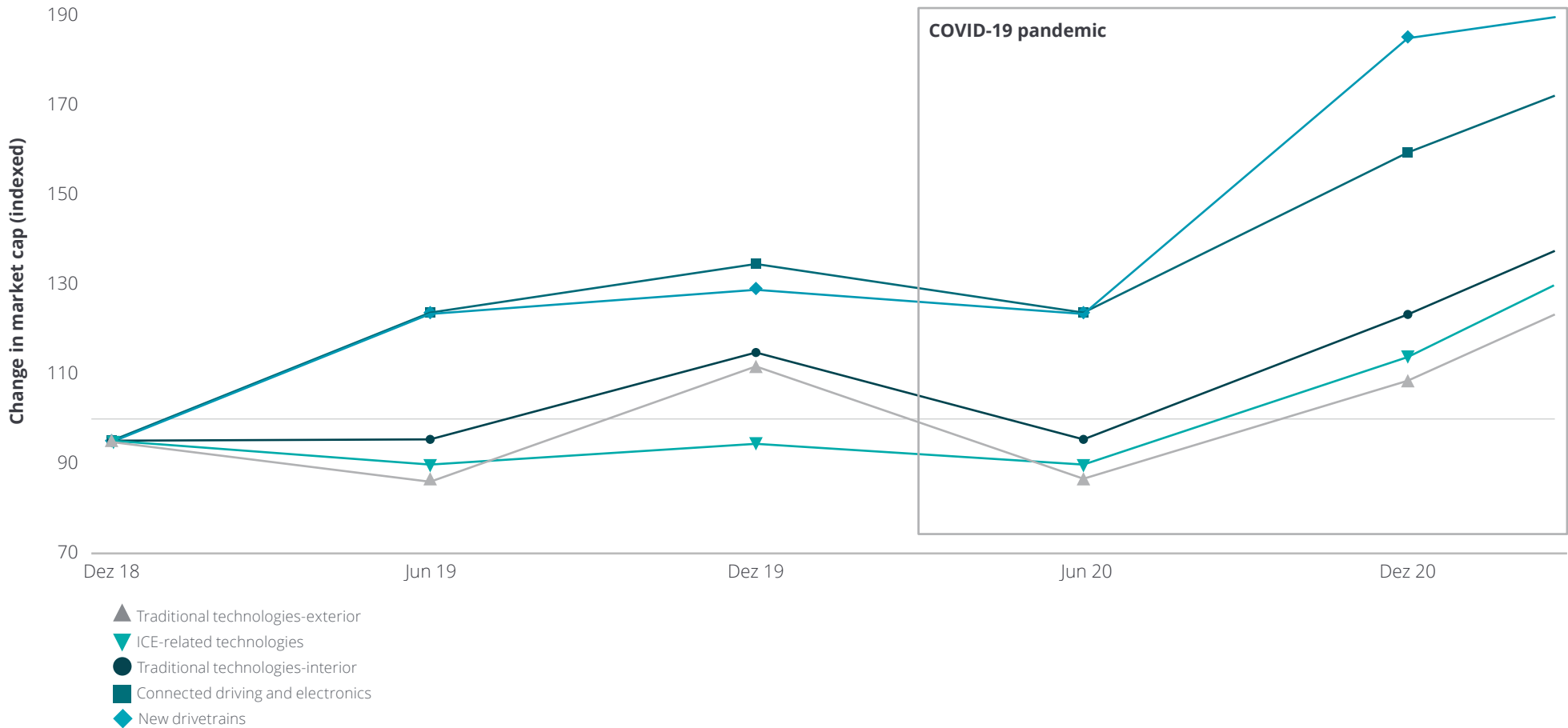


Fig. 11 – Market attractiveness in terms of EBIT multiple (in x)



Source: Mergermarket.

Fig. 12 - Change in market cap pre and post COVID-19 (Dec 18 = 100)



Source: Refinitiv Eikon.

Key messages

Most of the new startup activity is in new technologies, such as ADAS & Sensors and Electric Drivetrains, highlighting the potential for long-term growth in these clusters, even as we expect stagnation or, at a minimum, slow growth for the market as a whole.

In the 14-month period before COVID-19 swept across the world, new technology companies saw their market cap outperform that of other clusters with double-digit growth rates (>30%). The Fuel systems and Frames clusters underperformed during the same period, with double-digit negative growth rates.

The cluster group of Wheels, Frames, and Suspension reported above-average IPO volumes, which demonstrates that this cluster group will remain relevant and that investors see these clusters as a potential safe harbor.



The markets are already anticipating that ICEs and ICE-related technologies will be less relevant in the future. Not only are companies focused on ICE-related technologies trading at low EBIT multiples, but since the outbreak of the COVID-19 pandemic they have also seen the slowest increase in market capitalization.



Cash-generation power

In terms of internal financing power, the Axles and Exhaust Systems clusters have the highest risk in the automotive supplier sector.

Earnings (EBIT-margin) and operating cash flow are also the lowest in these two clusters. Meanwhile, the high R&D investments and – as of 2018 – still low capacity utilization rates in the High Voltage Battery/Fuel cells clusters are impacting earnings. The very flexible cost structures, on the other hand, reduce the risk exposure in these clusters.

The areas with the lowest risks are the Infotainment and ADAS & Sensors clusters. High profitability and high operating cash flows compensate for the relatively stable cost structure.

Tab. 6 – Risk league table: cash-generation power

		Earnings	Operating cash flow	Cost variability
	Risk score	Indicator's impact on Risk score		
Highest risk	5			
Axels	5.00	● ● ●	● ● ●	● ● ●
Exhaust Systems	4.01	● ● ●	● ● ●	● ● ●
Steering	3.93	● ● ●	● ● ●	● ● ●
ICE	3.89	● ● ●	● ● ●	● ● ●
HV Battery/Fuel Cells	3.84	● ● ●	● ● ●	● ● ●
...				
Frames	2.34	● ● ●	● ● ●	● ● ●
Transmission	2.07	● ● ●	● ● ●	● ● ●
Wheels & Tires	1.87	● ● ●	● ● ●	● ● ●
ADAS & Sensors	1.00	● ● ●	● ● ●	● ● ●
Infotainment	1.00	● ● ●	● ● ●	● ● ●
Lowest risk	1			

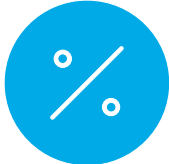
● ● ● High risk ● ● ● Medium risk ● ● ● Low risk
 Lowest Risk

 Highest Risk

Source: Global Supplier Risk Monitor.



Description of risk indicators



Earnings

In the companies we analyzed for our benchmark analysis (519 suppliers in total), EBIT serves as a proxy for each cluster’s profitability. We use the total earnings generated by a component cluster to understand how well or how poorly a certain cluster is performing in the market and to what extent it has the ability to adapt to future changes under its own power.



Cost variability

Cost variability is defined as the ratio of variable costs to fixed costs in a cluster or company. A high proportion of variable costs is seen as positive, because it allows a company to more easily adapt its operations to lower revenue levels in an economic downturn.

In our benchmark analysis, we compared variable costs to fixed costs for each company under review.



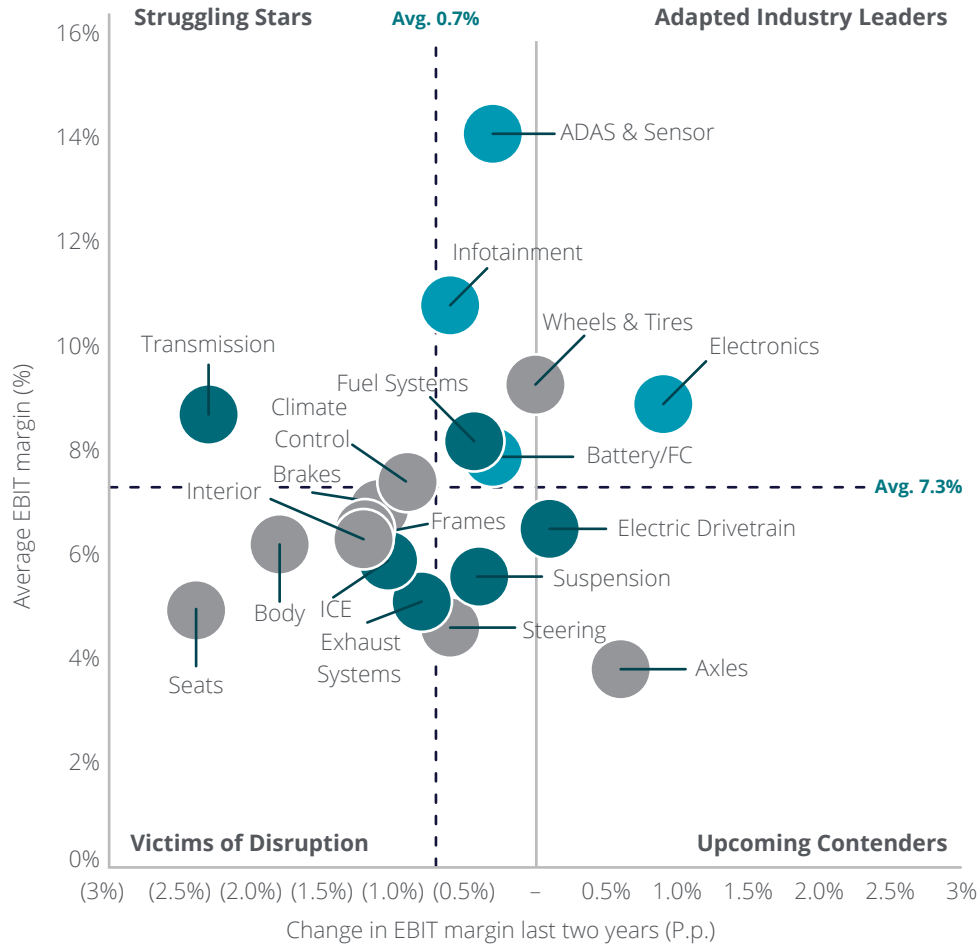
Operating cash flow

Operating cash flow measures a company’s own financing power earned from ordinary business activities.

We have adjusted EBIT for non-cash items and added working capital to better analyze the operating cash flow of the companies in our benchmark analysis.



Fig. 13 – EBIT margin development



With the exception of Electronics, Axles and Electric Drivetrains, we have seen profitability decline in every cluster over the last two years.

High yields are driven by innovation, which also enables suppliers to set themselves apart from the competition and build market-entry barriers. There are many examples of this in the area of new technologies.

However, we have seen margin growth outside of these growth areas and novel technology clusters as well. The Axles cluster, for example, has reported increasing margin for the past two years, albeit at a low level.

Margins for Electronics, by contrast, have increased disproportionately, making it the most risk-resistant cluster in the supplier industry.

Suppliers typically need to have competitive advantage, best-in-class processes and strict cost optimization across the entire value chain to achieve sustainably high margins. We have also seen players succeed by going on the offense with economies-of-scale strategies or by driving industry consolidation. There is, however, no guarantee that they will secure sustainable, long-term survival in a component cluster with declining relevance.

- New technologies
- ICE-related technologies
- Other technologies

Source: Deloitte Supplier Benchmark database.

Key messages

While the Electronics cluster was able to increase its already competitive margins, the ADAS and Infotainment clusters struggled to sustain their above-average margins.

We can classify the Seats cluster as a victim of disruption, based on the fact that its already low profitability continues to decline. And although the High Voltage Battery cluster generates a solid EBIT margin, it is currently scaling up production, which has negatively impacted cash flow. This cluster will need external financing to fund further growth (investment and working capital).

New technologies have the highest ratio of variable to fixed costs, mainly due to comparatively low revenues coupled with very necessary and very costly R&D investments. Especially given the uncertainty and changing expectations on today's market, these companies are very vulnerable to sales declines.



Cluster adaptability and capacity for innovation

Investment appetite, R&D spending and the capacity for innovation in the Suspension, Wheels & Tires and Brakes clusters are all moving in the same direction: relatively high risk in terms of capacity for innovation.

High R&D spending and a high level of patents in ADAS & Sensors make this the cluster with the highest capacity for innovation. As a result, they also have the potential to set themselves apart from their competitors.

Tab. 7 – Risk league table: cluster ability and capacity for innovation

		Investment appetite	R&D spending	Capacity for innovation
	Risk score	Indicators impact on Risk score		
Highest risk	5			
Suspension	5.00	● ● ●	● ● ●	● ● ●
Wheels & Tires	4.85	● ● ●	● ● ●	● ● ●
Brakes	4.78	● ● ●	● ● ●	● ● ●
Steering	4.70	● ● ●	● ● ●	● ● ●
Interior	4.29	● ● ●	● ● ●	● ● ●
...				
Electric Drivetrain	2.64	● ● ●	● ● ●	● ● ●
Electronics	2.62	● ● ●	● ● ●	● ● ●
Frames	2.61	● ● ●	● ● ●	● ● ●
Seats	2.49	● ● ●	● ● ●	● ● ●
ADAS & Sensors	1.00	● ● ●	● ● ●	● ● ●
Lowest risk	1			

● ● ● High risk ● ● ● Medium risk ● ● ● Low risk Lowest Risk ■ ■ ■ ■ ■ Highest Risk

Source: Global Supplier Risk Monitor.



Description of risk indicators



Investment appetite

The capital expenditure ratio compares the investments made by one component cluster to those of other clusters. A high ratio implies that a cluster is very likely to invest in expansion, which indicates that there must be market opportunities in this cluster. Where this ratio is consistently low, it would seem to suggest that companies in this cluster are pursuing a harvest strategy.



Capacity for innovation

Similar to R&D expenditure, the number of registered patents a cluster has can also be used as a parameter for its future viability. R&D expenditure directly correlates to the number of registered patents as well. The higher the number of patents, the greater the probability that the cluster will be relevant for the entire market in the future, and the lower the number, the less likely it is to remain relevant.



R&D spending

We can use a cluster's expenditure on research and development as an indication of its viability in the long term or of the degree to which players in this cluster believe their products will be relevant in the future. Where spending on research and development is low, on the other hand, the cluster is likely to be in a much weaker position to deal with future technological advances.

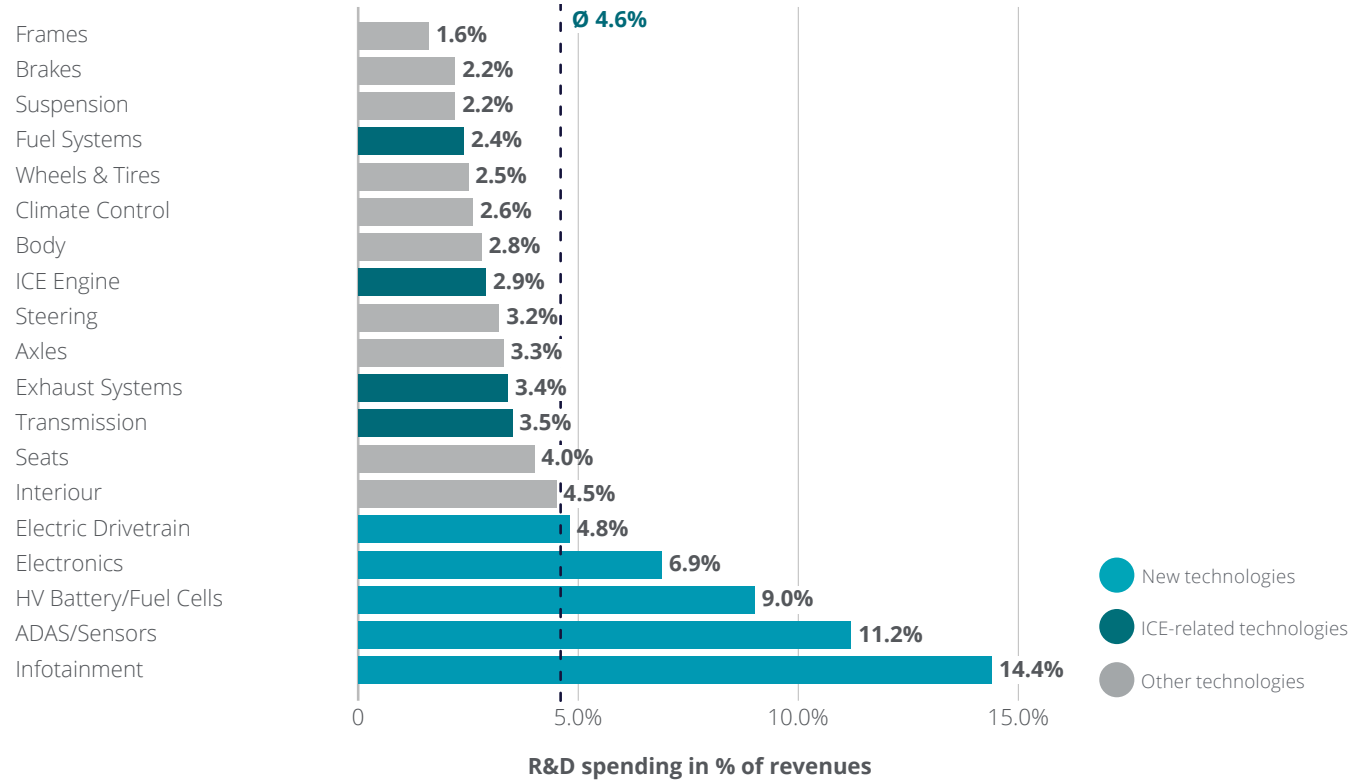


Based on our analysis, clusters focused on new technologies are outspending all other automotive clusters in terms of R&D spending as a percentage of revenue.

Even without accounting for the different sizes of the markets, the majority of patents registered within the last 24 months are for new technologies, with Electronics alone accounting for 19 percent of all patent applications. Although the Electronics cluster has the highest number of patent applications (2,208) in absolute terms, the ADAS & Sensors cluster has, in relative terms, a higher number of patent applications per company.

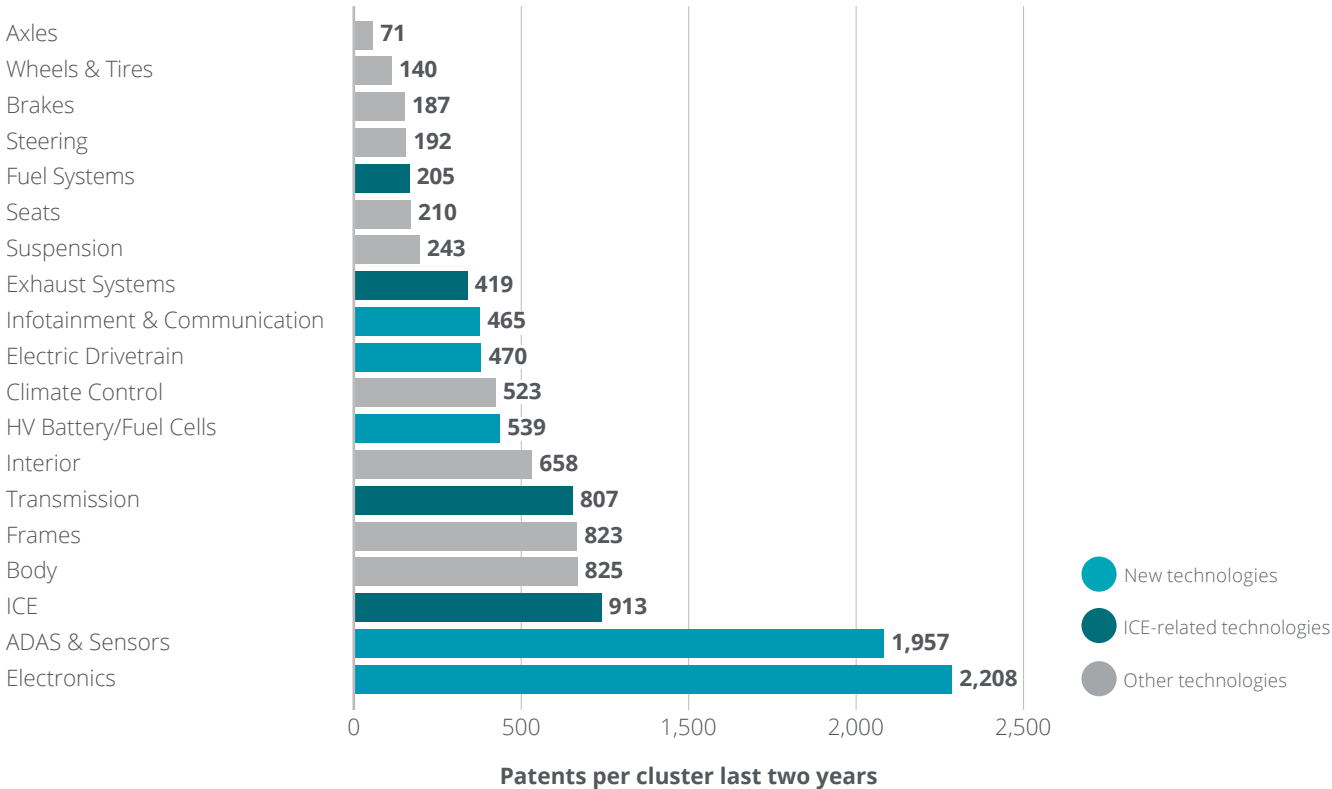
This finding is in line with the level of R&D spending, where the Infotainment & Communication and ADAS & Sensors clusters rank the highest.

Fig. 14 – R&D spending per cluster



Source: Deloitte Supplier Benchmark database.

Fig. 15 – Patents per cluster



Source: Deloitte analysis, DPA.

Key messages

Despite the questionable long-term outlook, ICE-related clusters are still reporting above-average investment. Continued investment in a shrinking market will only increase the financial pressure in these clusters.

Infotainment, with the highest share of R&D spending, is looking to redesign the value proposition of the automobile and establish these features as a significant point of differentiation.

With a strong presence in the new value networks for electric vehicles and autonomous driving, the Electronics and ADAS & Sensors clusters are actively developing new technologies. Together, they currently account for about 30 percent of all new patents.



We have observed a high level of R&D spending and investment in production capacity in certain component clusters (e.g., ADAS & Sensors and Electric drivetrain). While this shows confidence in the future development of the market on the one hand, it also represents a challenge for these companies due to their current financial situation.



Credit rating

When the debt burden is high and the equity level is low (due to low profitability), companies will find it more difficult to refinance existing loans or secure new financing. Credit ratings are comparatively low for companies in the Frames and Exhaust Systems clusters.

As they demonstrate good balance sheet structure and strong debt servicing capacity, companies in the ADAS & Sensors cluster have a higher credit rating. Capital providers see it the same way: risk premiums in this cluster are low as a result.

Tab. 8 – Risk league table: credit rating

		Balance sheet structure	Debt repayment capacity	Debt risk premium
	Risk score	Indicator's impact on risk score		
Highest risk	5			
Interior	5.00	● ● ●	● ● ●	● ● ●
Body	4.81	● ● ●	● ● ●	● ● ●
Exhaust Systems	4.78	● ● ●	● ● ●	● ● ●
Frames	4.69	● ● ●	● ● ●	● ● ●
Axles	4.61	● ● ●	● ● ●	● ● ●
...				
Seat	2.73	● ● ●	● ● ●	● ● ●
Infotainment	2.73	● ● ●	● ● ●	● ● ●
Transmission	2.40	● ● ●	● ● ●	● ● ●
Climate Control	2.28	● ● ●	● ● ●	● ● ●
ADAS & Sensors	1.00	● ● ●	● ● ●	● ● ●
Lowest risk	1			

● ● ● High risk ● ● ● Medium risk ● ● ● Low risk Lowest Risk ■ ■ ■ ■ ■ Highest Risk

Source: Global Supplier Risk Monitor.



Description of risk indicators



Balance sheet structure

We use the ratio of existing debt capital to equity to assess how likely it is for a cluster or a company to secure a loan in a crisis. A low debt ratio is a positive factor here, indicating that the cluster or company would be able to obtain outside capital a lot easier and faster when they need it and can therefore rely on its own refinancing capacity to survive a crisis.



Debt risk premium

The interest spread is the difference between the average interest rate a cluster has to pay to service its existing loans compared to the EURIBOR. The higher this spread is, the greater the risk and therefore the less attractive a cluster is likely to be for future lenders. As a result, we refer to this interest spread as the risk premium for this cluster.



Debt repayment capacity

We use this indicator to assess how long it will take for a component cluster to repay their loans. The net financial debt is expressed as a ratio of EBITDA for this purpose. On the basis of this ratio, we can establish how many years it would take a cluster with a stable debt burden and stable earnings to repay all of its debt.

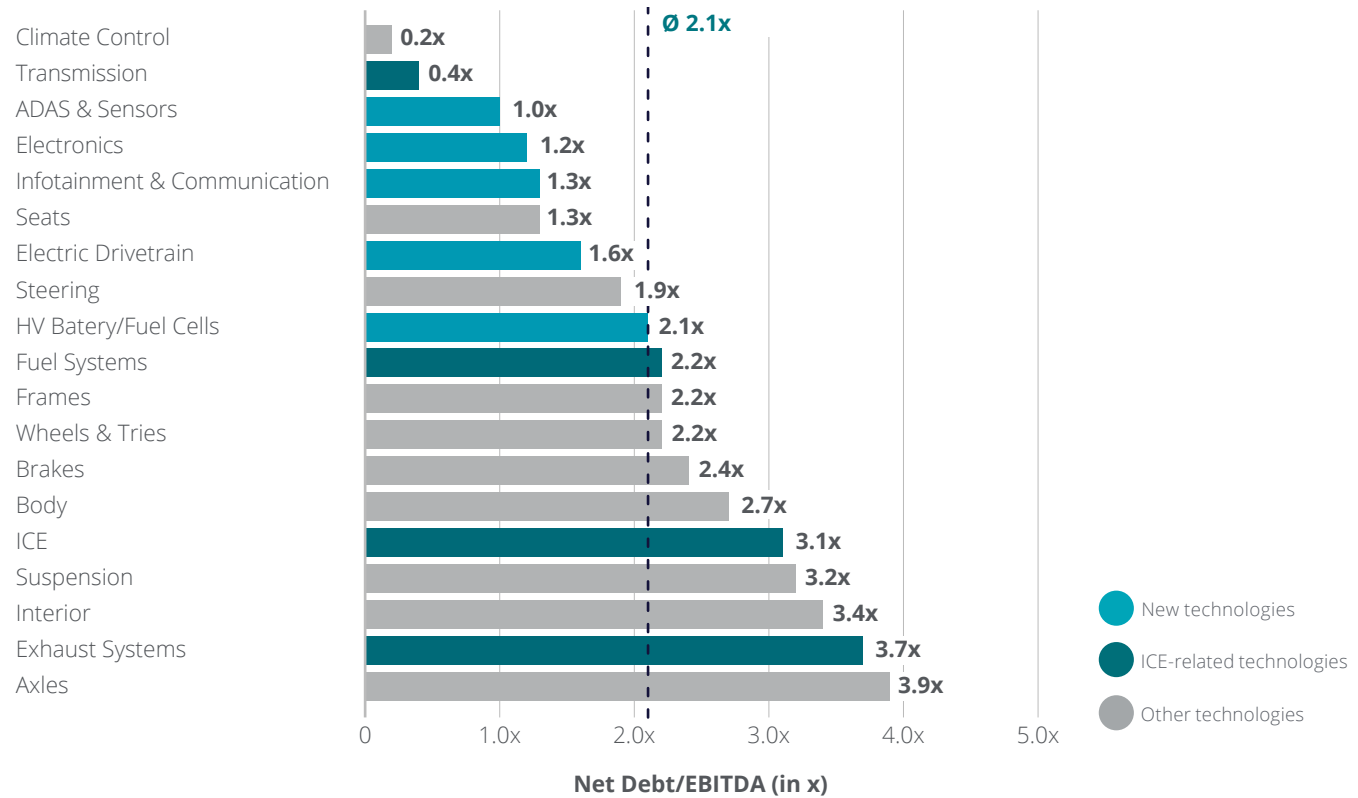


In relation to their profitability, several clusters have a comparatively high debt burden. Large production facilities may be debt financed and often serve as collateral, so it is not unusual for manufacturing industries in general, and automotive suppliers in particular, to have a high debt load. Experts rate a manufacturing company as “investment-grade” if its financial leverage, expressed as net debt/EBITDA, is less than 2.5.

A high debt burden coupled with expectations of margin erosion, especially in ICE-related clusters, poses a risk – one that capital markets monitor and quantify.

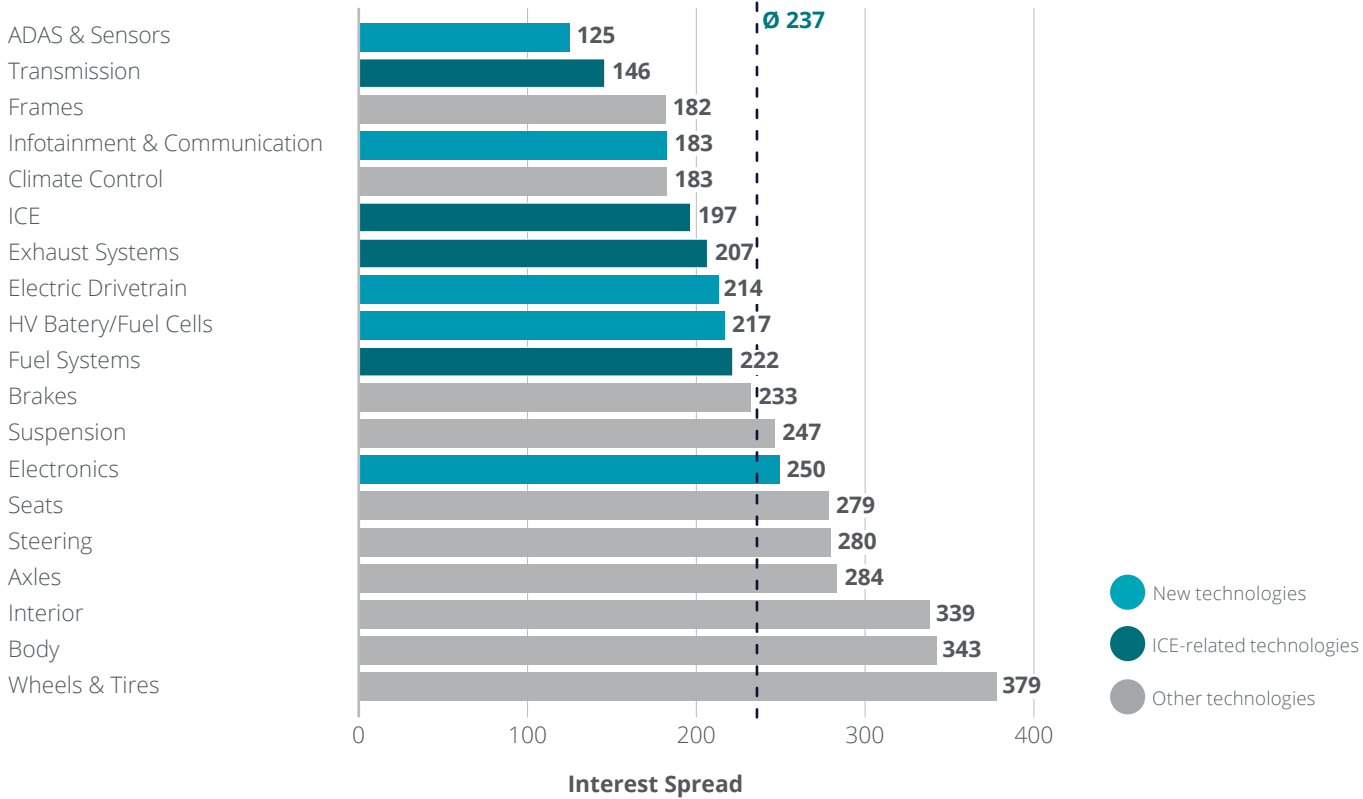
The yield spread is often an indication of the risk premium that capital providers will demand from borrowers. It is remarkable that yield spreads paid by borrowers in ICE-related clusters are still comparatively low. This could be due to the relatively high asset base, which can be used as collateral, or due to historically steady cash flow and strong historical profitability as compared to competitors.

Fig. 16 – Debt repayment capacity per cluster



Source: Deloitte Supplier Benchmark database.

Fig. 17 – Debt risk premium per cluster



Source: Thomson Reuters Loanconnector.

Key messages

The automotive industry has a relatively solid equity base* (balance sheet structure), with no cluster reporting a leverage ratio in excess of 1.7 (Frames). That said, the financial position and consequently the risk profiles of individual players within the industry vary widely.

In relation to profitability, there are several clusters with a comparatively high debt burden: the Axles, Exhaust and Interior clusters report liabilities at more than three times their EBITDA. The threat of a market downturn is therefore the biggest risk factor for the debt-servicing capacity of a given cluster.

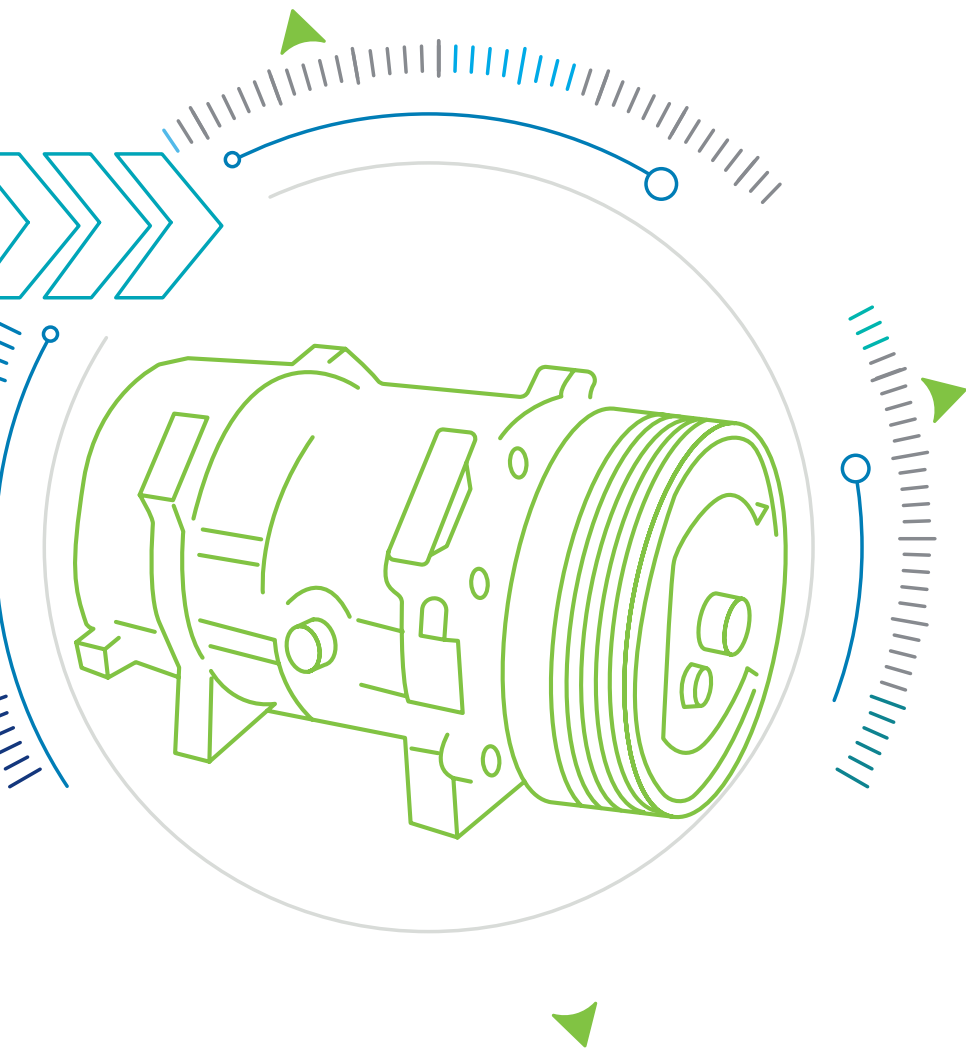
New technologies, as well as ICE-related technologies, pay a lower risk premium compared to other clusters. Conversely, the Body and Interior clusters, which are considered commodities in some circles, have to pay high risk premiums.



The Frames and Exhaust Systems clusters, with their high debt burdens and low equity levels, have a comparatively low credit rating, while it is high for ADAS & Sensors thanks to this cluster's good balance sheet structure and high debt-servicing capacity.

Case Study

Climate Control supplier



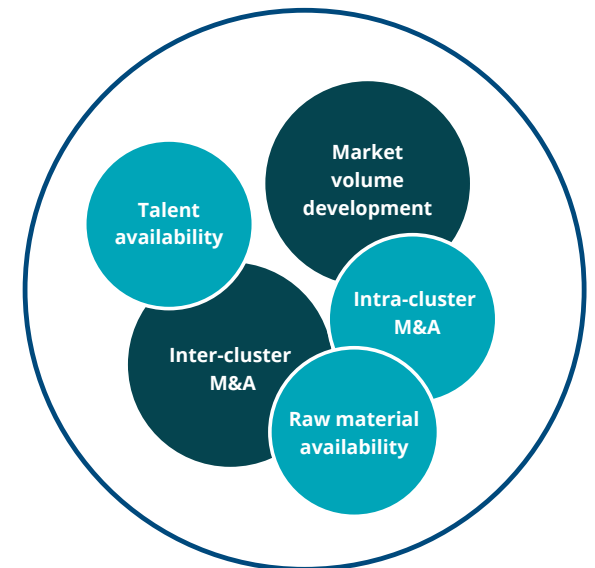
We assessed the risks facing the climate control supplier in our case study using the risk classification system of our *Global Supplier Risk Monitor*. In the chart on the left, large circles indicate that this risk indicator currently has a high impact on the supplier's risk exposure.



Fig. 18 - Risks in the climate and control market - Macro risk analysis



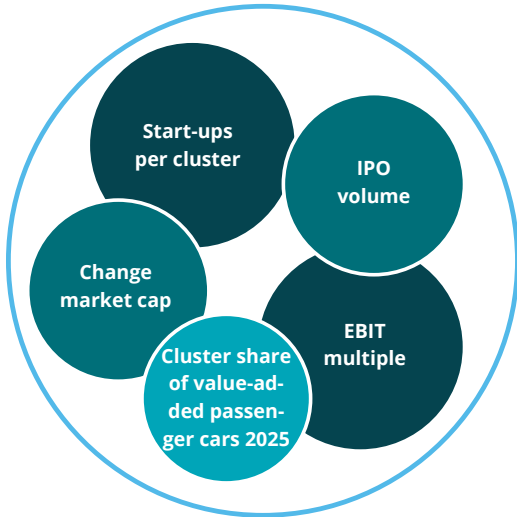
Market pressure/market structure



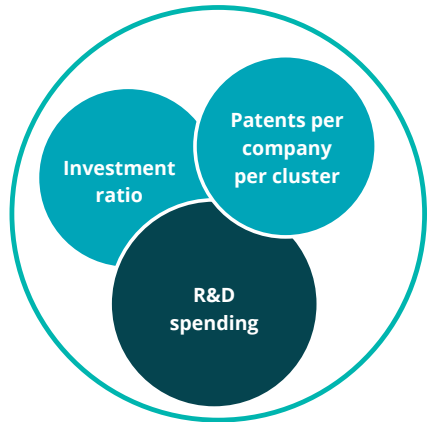
Source: Global Supplier Risk Monitor.



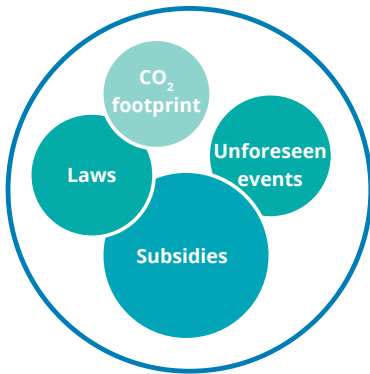
Future market relevance



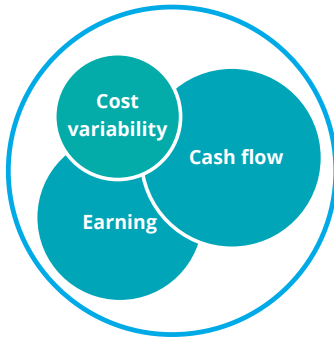
Cluster adaptability and capacity for innovation



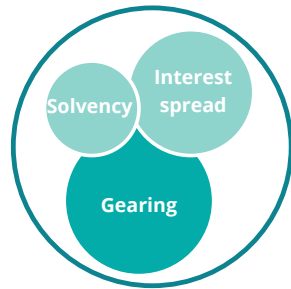
Regulatory and societal environment



Cash generation power



Credit rating



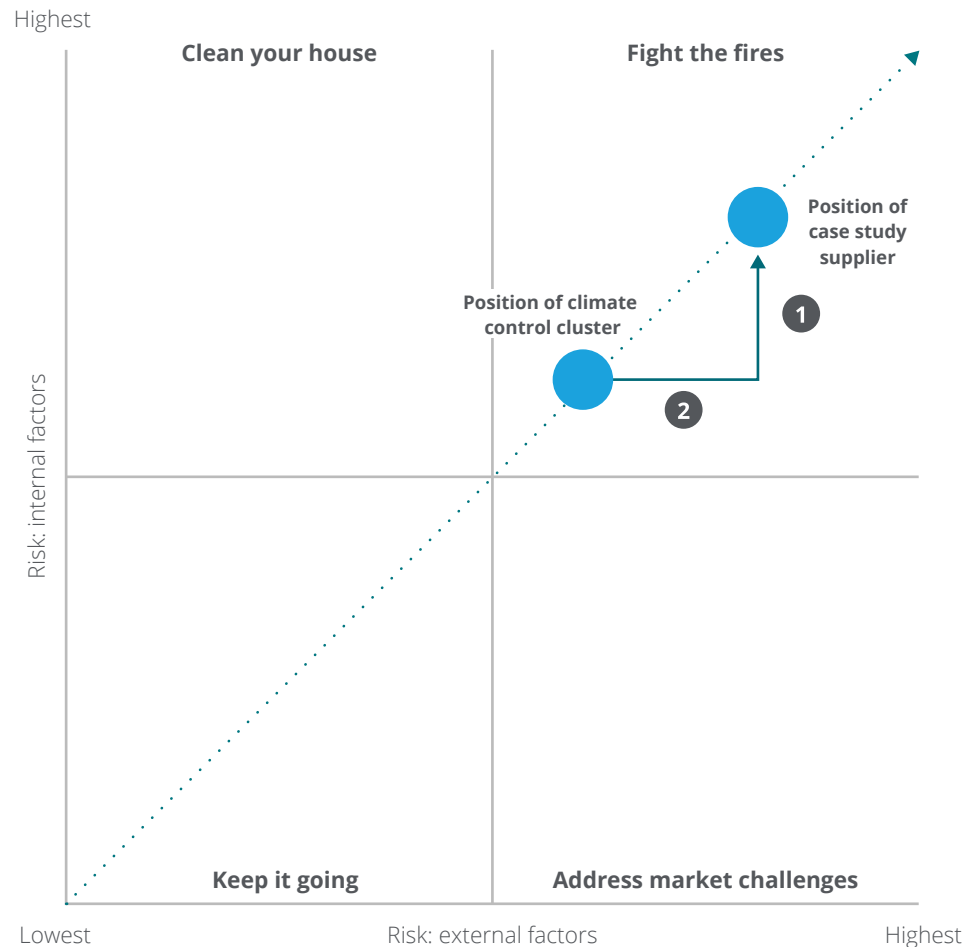
Micro risk-analysis: The starting position for our climate control supplier

- Commoditization presents biggest driver of sector competitiveness: Market volumes aren't expected to reach pre-COVID-19 levels until 2024. However, based on our experience, we believe that commoditization is already a factor in a sector where the capacity for innovation is low and the opportunities to increase profitability and differentiate from the competition are limited. Market pressure is comparatively high as a result.
- Production of innovative Components or pivot to system supplier offer promising coping strategies: If the supplier offers customized products for electric mobility or complete climate control systems, there is still a chance they can set themselves apart from the competition:
 - Electric compressors are a key component in hybrid and pure electric vehicles. As such, today's sales volumes are pretty small (2.2 million units sold in Europe in 2020), but experts are forecasting strong growth at an attractive price point. However, the supplier has to supply OEMs with products for ICES (e.g., mechanical compressors) and for EVs (e.g., electronic compressor) at the same time, tying up financial as well as human resources.

– As cost pressure increases, more and more OEMs are asking suppliers to supply additional features, including entire systems. As a result, only manufacturers that can offer complete systems rather than individual components will be in a better strategic position.

- Climate control market has consolidated as an oligopoly: The climate control market is an oligopoly. In the European market, for example, there are only five large global players, each with a fairly stable market share (though that share varies in different global regions). Each of these competitors has a slightly different position, with only two of them focused primarily on thermal management. All five are competent in complete HVAC systems, and only one of them mainly offers individual HVAC-related components.
- Direct Competitors are better positioned: Given the size of the competitor suppliers and their rather diversified product portfolio, we can classify their internal financing power and their credit rating as comparatively high.

Fig. 19 – Risk map climate control



Source: Global Supplier Risk Monitor.

Heavy hits: the pandemic, commoditization and the transition towards new drivetrain technologies are having a huge impact on climate control

Our supplier is located in Europe with a production footprint in both low-cost European countries and western Europe.

The risk profile of our supplier differs from the risks that are typically found in the climate control market:

1

Higher internal risks: The supplier's sole focus on ICE-related products and components rather than complete systems has triggered a massive price drop, which they are unable to offset through increased productivity. At the same time, labor costs are increasing at sites in what were once considered low-cost labor markets.

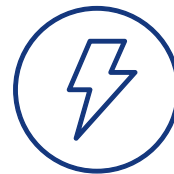
2

Higher external risks: Suppliers with a focus on ICE-related products rely on growing sales volumes to maintain a stable contribution margin as commoditization occurs. Suppliers with electronic compressors made for electric vehicles need a global production footprint to compete in this high growth environment and secure contracts from global platforms. Given that our supplier's production footprint is focused on Europe, the opportunity to participate in the global market growth is limited. The focus on internal combustion engines also limits its growth potential.

“We are at the crossroads of producing components and making commodities while the market undergoes unprecedented disruption, both in the wake of the COVID-19 crisis and as OEMs transition toward e-mobility.”

CEO, Automotive Tier-1

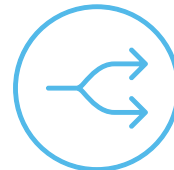
The Top risks of our climate control supplier



Market structure and pressure

Price pressure

We are in the midst of the commoditization of the component business in general and ICE-related products in particular. It is essential for suppliers to secure large-volume projects to cover their fixed costs, which means building a global production footprint with sufficient capacity will be a decisive factor.



Future market relevance

Stable market development

Overall sales volumes are expected to remain stable, as almost every car is already equipped with a thermal management system. Especially for suppliers still focused on ICE components, volume growth becomes an issue when the target market is expected to shrink.



Capacity for innovation

Lack of innovation opportunity

The potential for new, ground-breaking innovations in this sector is low. Suppliers that are still lacking e-mobility components in their portfolio may, based on our experience, be heavily exposed in an environment of ongoing commoditization.



Cash-generation power

Low diversification

Although most suppliers have a relatively strong financial situation today, price pressure and stable market trends will have an impact on future profitability. Players focused solely on thermal management are especially affected, as they will not be able to cross-finance the transformation of their business (e.g., develop e-mobility components and supply OEMs with low-margin ICE components at the same time) with steady cash flows from other component clusters focused on new technologies.

An action plan to address the core risks facing climate control suppliers

- Collaborate with other suppliers if your market is commoditizing and you lack a global footprint.
- Enforce strict cost optimization across the entire value chain to stabilize gross margins (i.e., restructure production footprint, find outsourcing partners, reduce overheads).
- Work to achieve best-in-class processes for high-volume production to increase productivity.
- Streamline your product portfolio.

- Drive market consolidation by forcing competitors out and acquiring additional market share (e.g., consider investing in an e-compressor supplier, building production sites in growth areas or entering high-margin markets).
- Invest in other component suppliers to supplement your product portfolio and become a system supplier.

- Collaborate with other suppliers, joining forces to develop e-mobility products.

- Shift production portfolio by investing in a supplier that operates in a less competitive market.
- Enhance working-capital management to improve internal financing power.
- Divest non-performing production sites/entities to stop the bleeding and use the proceeds to subsidize transformation.
- Refinance in order to improve ability to raise fresh capital.

“Beyond overcoming the acute symptoms of the COVID-19 crisis, re-thinking of the fundamental business model is required for many companies. Immediate and thus proactive restructuring can help players to regain an even stronger and also sustainable competitive position.”

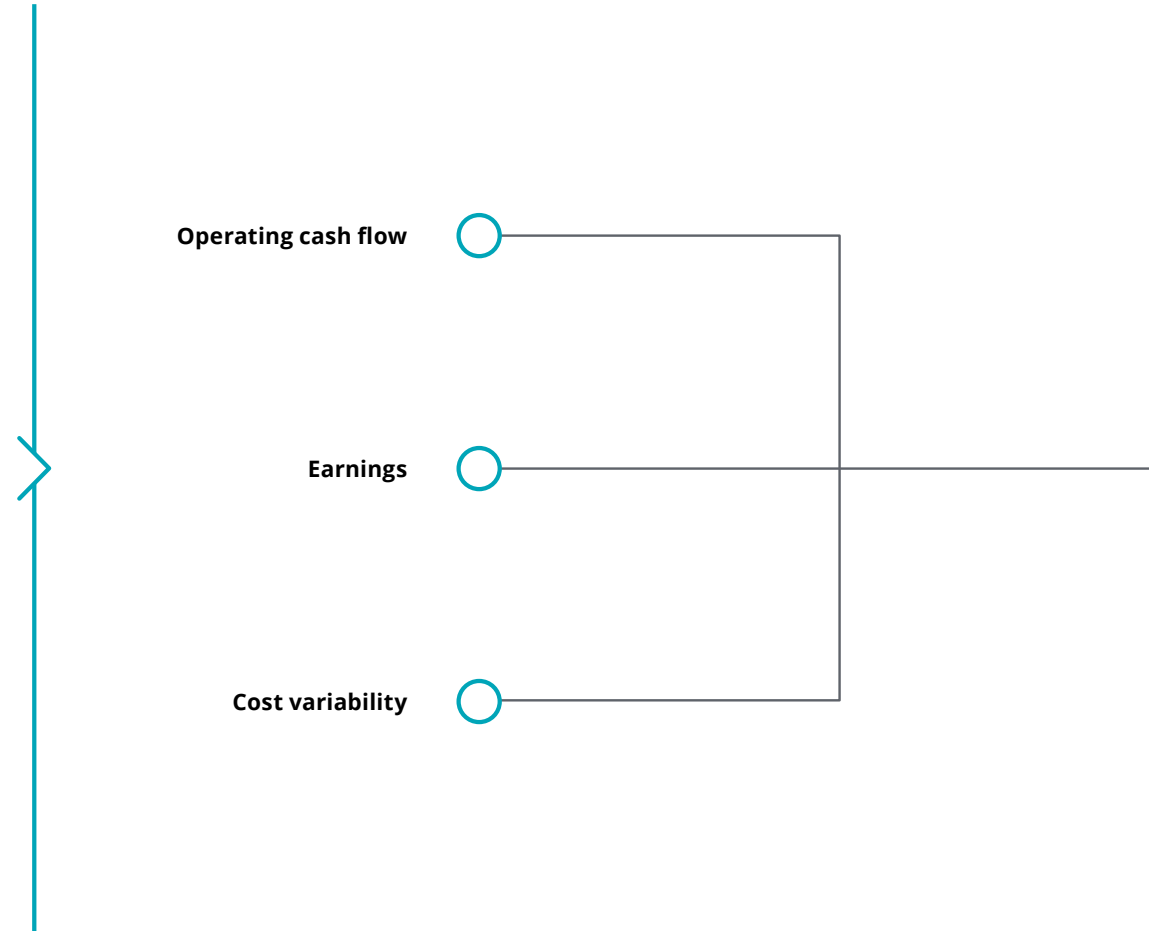
Dr. Philipp Kinzler, Restructuring Services

Driver tree for risk assessment approach

Level 3 (p.36): Leading indicator

Cluster	Risk rank	Risk score	Risk Classification	EBIT Margin*
Axles	1	5.00	● ● ●	3.4%
Steering	2	4.47	● ● ●	4.9%
Exhaust Systems	3	4.24	● ● ●	5.5%
Suspension	4	4.12	● ● ●	5.8%
Seats	5	3.97	● ● ●	6.2%
Electric Drivetrain	6	3.88	● ● ●	6.5%
ICE	7	3.77	● ● ●	6.8%
Body	8	3.64	● ● ●	7.1%
Interior	9	3.63	● ● ●	7.2%
Frame	10	3.51	● ● ●	7.5%
Brakes	11	3.46	● ● ●	7.6%
Climate Control	12	3.39	● ● ●	7.8%
HV Battery/Fuel Cell	13	3.30	● ● ●	8.1%
Electronics	14	3.18	● ● ●	8.4%
Fuel System	15	3.16	● ● ●	8.4%
Wheels & Tires	16	2.89	● ● ●	9.2%
Transmission	17	2.65	● ● ●	9.8%
Infotainment & Communication	18	2.18	● ● ●	11.1%
ADAS & Sensors	19	1.00	● ● ●	14.3%

For every leading indicator all supplier clusters are compared among each other. Both the highest out-performing as well as under-performing cluster is ranked as either low risk [1.00] or high risk [5.00]. All other clusters are distributed relative to these extremes, based on the fundamental driver of the leading indicator.



All leading indicators within a respective risk factor cluster are equally weighted among another to make up the overall risk factor.

Level 2: Risk factors

Level 1 (p.13): Overall risk score



Cluster adaptability and innovative power



Cash-generation power



Creditworthiness

All risk factors are equally weighted among another to determine the ultimate internal [and respectively external] risk.

Risk - internal factors



Risk - external factors

Ultimately the internal and external Risk factors are weighted 50:50 to determine to overall risk score of any respective supplier cluster.

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