# THE NEXT GENERATION OF TRUCKS

## How OEMs can empower transportation and logistics companies to embrace connected, autonomous, electric trucks

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# Executive Summary

IDC conducted thought leadership research on the future of trucking. Through 151 interviews with senior leaders among European transportation and technology providers and in-depth interviews trucking OEMs business executives, IDC found out that the convergence of business disruption, technology innovation and ESG/regulatory pressures are driving transportation and logistics companies to embrace the next generation of trucks. Truck operators expect OEMs to deliver connected, autonomous and electric trucks, not for the sake of the technology itself, but to:

- Enhance the operational efficiency and resilience of transportation and logistics, through intelligent solutions that empower them to optimize load factors, routing and reduce the downtime of trucks through predictive maintenance, to cope with the rising fuel prices.
- Increase the business agility to personalize pick ups and drop offs and speed up deliveries to compete with digital native companies that have introduced disruptive business models.
- Comply with regulatory mandates to reduce CO2 emission and improve road safety.

OEMs need to delivery the next generation of trucks, while dealing with supply chain disruption, particularly electronic components, skills shortages, increasing costs of product assembly due to high energy costs that require them to re-think ecosystem collaboration, operations and go-to-market.

**OEMs that want to successfully design and deliver the next generation of trucks must master the convergence of the three big shifts in truck platforms – autonomous, connected, electric:**

**Connected** – Connected trucks must yield business value through fuel expense management, route optimization and predictive maintenance.

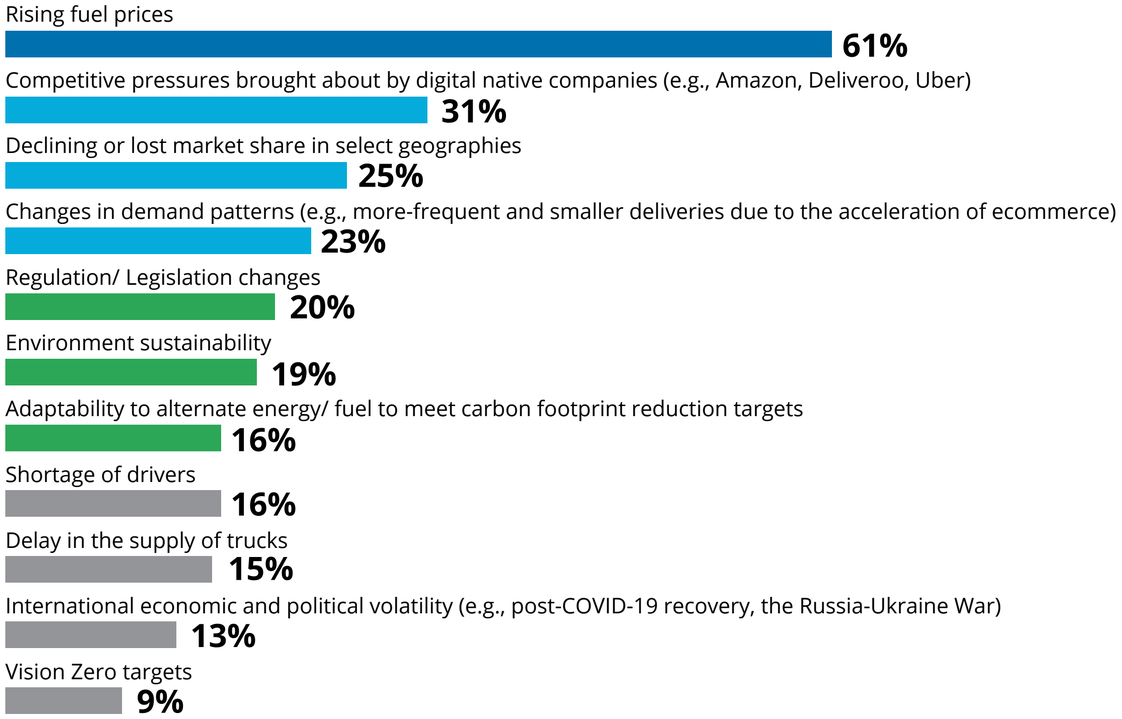
**Autonomous** – OEMs must work with suppliers, customers, and regulators to scale from test vehicles to widespread adoption of levels of autonomy all the way up to level 5, by addressing both technological, such as infrastructure instrumentation, and societal concerns, such as emotional acceptance based on new models of responsibility and insurance liability.

**Electric** – Government incentives to phase out internal combustion engine vehicles have made battery technology central to product design and development, parts procurement, manufacturing, and after market service. OEMs must also work with policymakers to advocate funding charging infrastructure and financial incentives for fleet replacement to turn latent demand into active purchases.

Designing and manufacturing the next generation of trucks will not be enough to capture market share in the fast-growing market for next-generation connected, autonomous, and electric trucks; OEMs must transition from a product mentality to a customer-centric solution mindset, where Value Streams must connect product design with component procurement, operations, and after-market services and dealership network management to empower transport and logistics companies increase the yield of their investment throughout the truck life-cycle.

# The perfect storm for re-imagining transportation and logistics

**Top strategic concerns that European transportation and logistics companies will need to address in the next 2–3 years**




**Short term emergency:** Fuel prices are putting financial resilience is at risk

*"The average price for a load in Europe has already reached record-breaking levels, but the continuously rising inflation and any kind of disruption to global supply chains could send out a ripple effect to our local economies, potentially increasing the costs of transportation between up to 20 and 35 per cent."*

**CEO of Girteka Group**

**Medium term preoccupation:** Competitive disruption is making business model agility is paramount

*"We differ from incumbent competitors both in having a newer technological platform, and in the operational characteristics of our business…We are not capital-heavy. We don't own our delivery vehicles. We partner with local forwarders who provide drivers and vehicles. We don't own our premises."*

**CEO of Budbee**

**Long term challenges:** Citizens and policymakers are demanding that competitive differentiation converges with societal purpose

*"The growth of e-commerce has significantly changed consumption patterns, but the external costs of millions of deliveries… must be factored in. Hence, sustainable urban mobility planning should also include the freight dimension…"*

**EU Sustainable and Smart Mobility Strategy**

Other concerns, such as labor shortages and political volatility do not rank at the top; however, they are compounding the impact of other factors of change. For instance, international economic and political volatility is at the origin of rising fuel prices, while labor shortages are being further disrupted by new "gig economy" contractual models offered by digital native companies.



Source: IDC EMEA, Logistics & Transportation Survey, Capgemini, August 2022 – N = 151

# To implement resilient, agile and competitive strategies, most European transportation and logistics will invest in the next generation of trucks

**Impact of strategic concerns on European transportation and logistics companies' fleets**

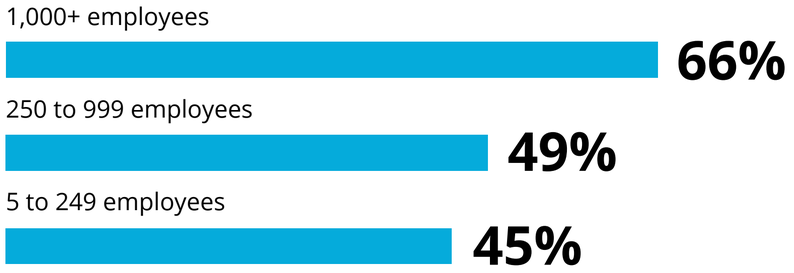
**21%**
We will buy or operate fewer trucks

**29%**
We will buy or operate as many trucks as before

**50%**
We will buy or operate more trucks

European transportation and logistics companies plan to invest in their fleet

**European transportation and logistics companies that will buy or operate more connected, autonomous, and electric trucks**




... and from small to large size companies, they will embrace the next generation of **CONNECTED**, **AUTONOMOUS**, **ELECTRIC** trucks

**Truck OEMs are re-imagining their product roadmaps, how they work with tier 1 and tier 2 suppliers, and how they go-to-market in partnership with dealers to capture growth by converging connected, autonomous and electric features:**

**80%** *of our market is still made of traditional internal combustion engine (diesel and gas), but it is flat, while we expect double-digit growth from energy saving products. We are best in class in terms of energy efficient powertrains, but we need customers to pick up connected features to maximize the yield of electric battery and fuel cell trucks through predictive maintenance and better driver behavior.*

**quote from truck OEM in-depth interview**

# Transportation companies expect a new kind of partnership with OEMs to embrace the next generation of trucks. One based on value for money and trusted relationships for the whole life cycle of the truck

| | Most important criteria when acquiring new trucks for companies that **OWN** their fleet | Most important criteria when acquiring new trucks for companies that **LEASE** their fleet | Most important criteria when acquiring new trucks for companies that **OUTSOURCE** their fleet |
|---|---|---|---|
| Total cost of ownership | 48% | 39% | 45% |
| Truck performance and features | 38% | 39% | 30% |
| Delivery lead time | 38% | 25% | 21% |
| Services provided by the manufacturer, such as predictive maintenance | 23% | 25% | 27% |
| Relationship with dealer/ sales executive | 20% | 31% | 22% |
| Truck/ manufacturer brand | 20% | 14% | 28% |
| Manufacturer's service network | 20% | 28% | 21% |
| Environmental sustainability | 10% | 19% | 18% |
| Affordable financing and leasing | 13% | 6% | 12% |

**60%**
of European transportation and logistics companies have experienced **2 months or longer** delays in the delivery of trucks, in the past year

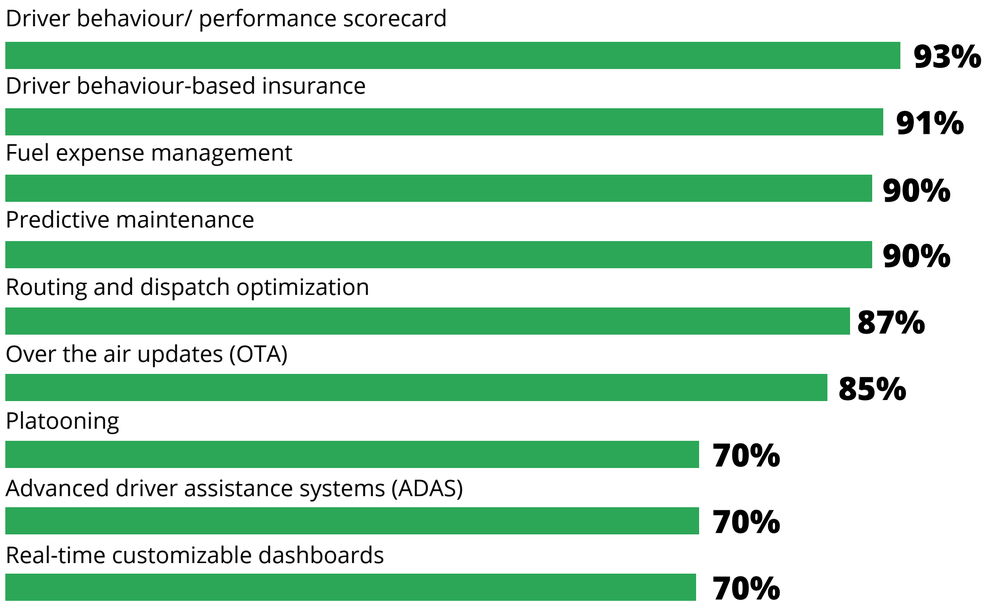
**OEMs that focus on new product features only will not win market share. Transportation companies expect OEMs to be partners that can deliver value for money throughout the life-cycle of the truck, from on-time delivery, to maintenance services that extend the life-cycle and make it worthwhile to operate the next generation of trucks that will be more expensive.**

*"Fleet managers expect that there is a person that will pick up the phone on Sunday morning if there's a problem; particularly, the bigger transportation companies expect that we send the cavalry to do the repair quickly"*

**quote from truck OEM in-depth interview**

# Investments in CONNECTED truck solutions are happening NOW to increase operational efficiency of routing, driving and maintenance.

**European transportation and logistics companies' investments in CONNECTED trucks solutions (% of companies using or planning to use)**




**Transportation companies have used technology to manage fuel expenses, maintenance and dispatching for many years and nowadays OEMs have made connected truck solutions widely available to scale the benefits of those solutions.**

*"For 20 years, we have had trucks connected and everything we sell today is connected."*

**quote from truck OEM in-depth interview**

**However, transportation companies have not fully realized the value of connected solutions.**

*"The first stage the connectivity was more focused on the on the machine itself. Now the key factor is how these solutions enable to change the management of the truck"*

**quote from truck OEM in-depth interview**

**The convergence of connectivity with autonomous and electric will make a difference.**

*"The next step will be to connect the machine with the external environment for example to link electric vehicles with charging stations to check availability and do bookings, or to manage battery re-charge to make sure that when the driver arrives in the morning the truck is ready to go"*

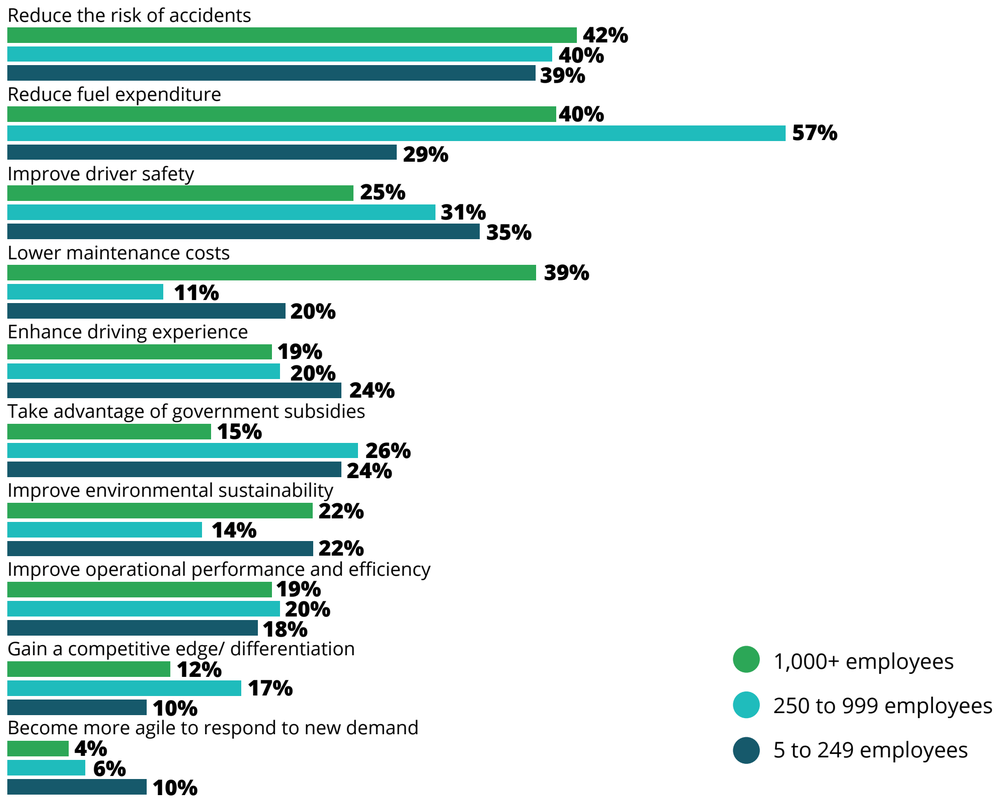
**quote from truck OEM in-depth interview**

Technology and data are only one side of the coin. Organizational aspects are also critical in making this transformation successful. Digital capabilities embedded into products (e.g., connected trucks) and services (e.g., condition-based and predictive maintenance) mean that increasingly complex knowledge is required. This level of complexity cannot be addressed only by hiring or retaining a wider array of skills, but also necessitates changing organizational processes — where digital, operations, and customer services converge — requires investing in cultural change and training.

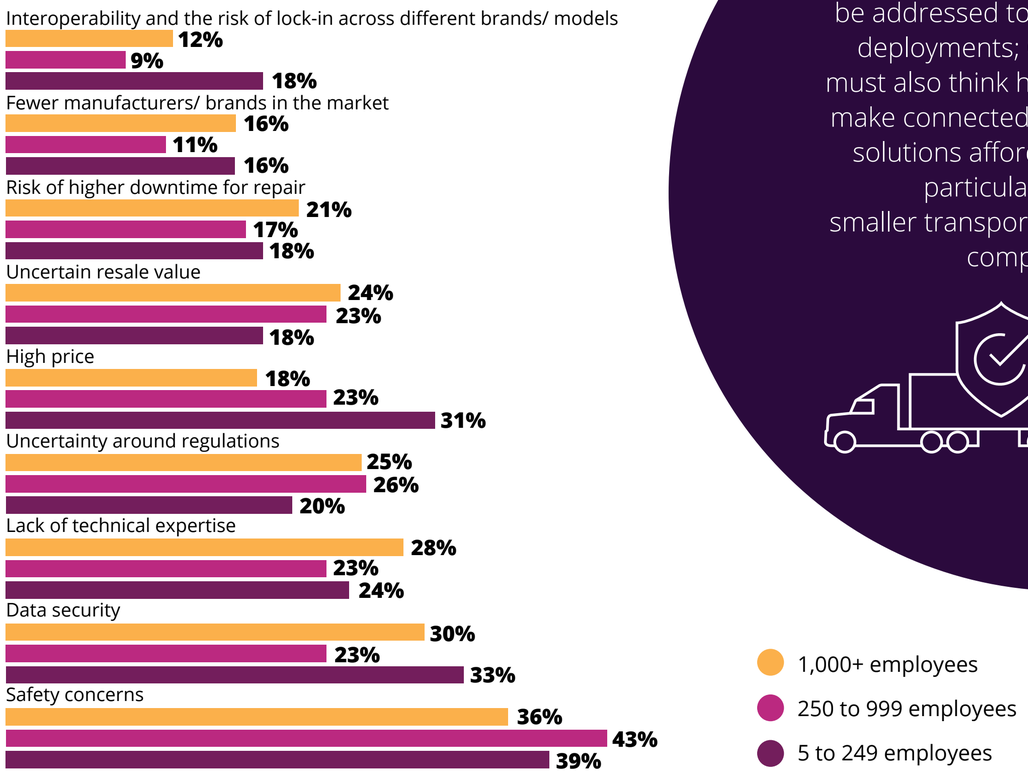

IDC EMEA, Logistics & Transportation Survey, Capgemini, August 2022 – N = 151

# Transportation companies embracing connected solutions aim to reduce cost of accidents and lowering fuel expenses; reducing the cost of maintenance is key for larger companies.

## Expected benefits of **CONNECTED** truck solutions




## Concerns of **CONNECTED** truck solutions



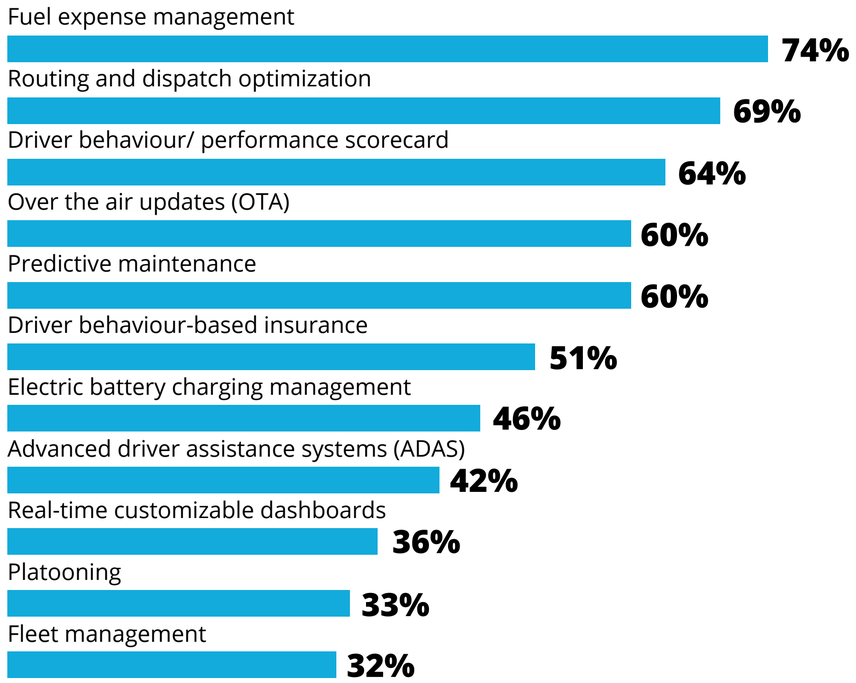

Safety, security and skills concerns must be addressed to scale deployments; OEMs must also think how to make connected truck solutions affordable, particularly for smaller transportation companies



IDC EMEA, Logistics & Transportation Survey, Capgemini, August 2022 – N = 151

# European transportation companies expect OEMs to deliver value added services that leverage digital to help optimize fleet operational efficiency

**CONNECTED, AUTONOMOUS, ELECTRIC that European transportation and logistics companies expect truck OEMs to provide**




*"Digitalization is the biggest opportunity since globalization to take logistics to the next level. Being the industry's innovation leader, we have already established numerous highly efficient digital systems in the market over the last few years. Despite this, we believe the digital transformation of our entire industry is still in its infancy. Looking forward, we see enormous potential. Under "Strategy 2025", we will focus on our profitable core with digitalization being the key lever to become more effective, more efficient, and to create growth opportunities. In short: We must not reinvent ourselves. We will digitalize ourselves."*

**CEO Deutsche Post DHL Group 2019 interview**

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**OEMs are responding by prioritizing use cases where connected solutions can deliver value in terms of operational efficiency:**

*"There are a couple of use cases that we are working on with a push-pull approach with our more forward-thinking customers:*

***Route optimization** – transportation companies need to know load levels/ fill rates, what's coming into each warehouse at any given time to optimize the flow of goods and reduce what's in stock, so that costs can be reduced.*

***Predictive maintenance** – we already have 400 sensors on the truck that can provide insights for condition-based and predictive maintenance. This allows the transportation companies maintenance workshops (as well as our dealers' workshops) to order spare parts in advance, schedule work, call-in vehicles for inspections, before major disruptions happen, so that downtime is reduced"*

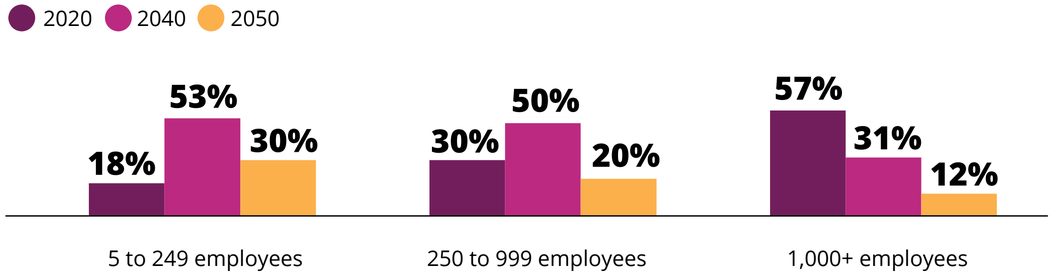
**quote from truck OEM in-depth interview**



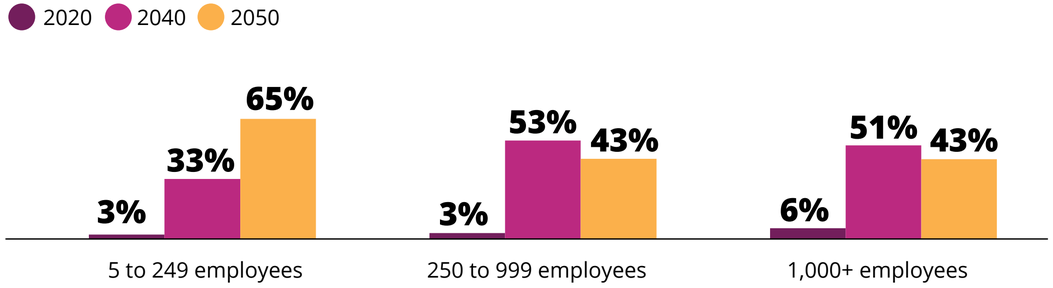
IDC EMEA, Logistics & Transportation Survey, Capgemini, August 2022 – N = 151

# Investments in AUTONOMOUS trucks will happen in the FUTURE, but larger companies that can afford to test them now

**Year when European transportation and logistics companies expect to deploy level-4 AUTONOMOUS trucks**




**Year when European transportation and logistics companies expect to deploy level-5 AUTONOMOUS trucks**




The potential to address some long-standing problems within the trucking industry and create a substantial competitive advantage will drive the adoption of autonomous truck technology. The driver shortage is impeding many organizations' ability to secure the necessary capacity to support operations, driving costs up and continuing a trend that has been developing for years across the trucking industry. Indeed, operating in an increasingly resource-constrained environment accentuated by escalating fuel costs requires solutions to ensure sufficient capacity exists in the truck transportation network. With nearly four out of five organizations raising wages to compete with one another for scarce talent, organizations are in search of alternative solutions to equitably support operations. Advancing autonomous truck technology to safely navigate not only long straight stretches of open highway that present predictable driving conditions but also across regions where mountainous terrain and inclement weather make it more challenging has the potential to provide relief for this longstanding industry dynamic.

**Truck OEMs are aligning their product roadmap to be ready for Level 4 autonomy in the medium term. But they are also re-imagining the whole product design based on full autonomy and the convergence of connectivity, autonomy and electric.**

*"Right now, the cost of operating a truck is 1/3 truck, 1/3 driver, 1/3 fuel – we are working on connected, autonomous and electric converging to increase the yield of the truck manyfold, because the cost of driver will be lower, the price of the truck will lower, because some day the truck may not need a cabin, electricity will replace the fuel, and the truck will run for longer hours "*

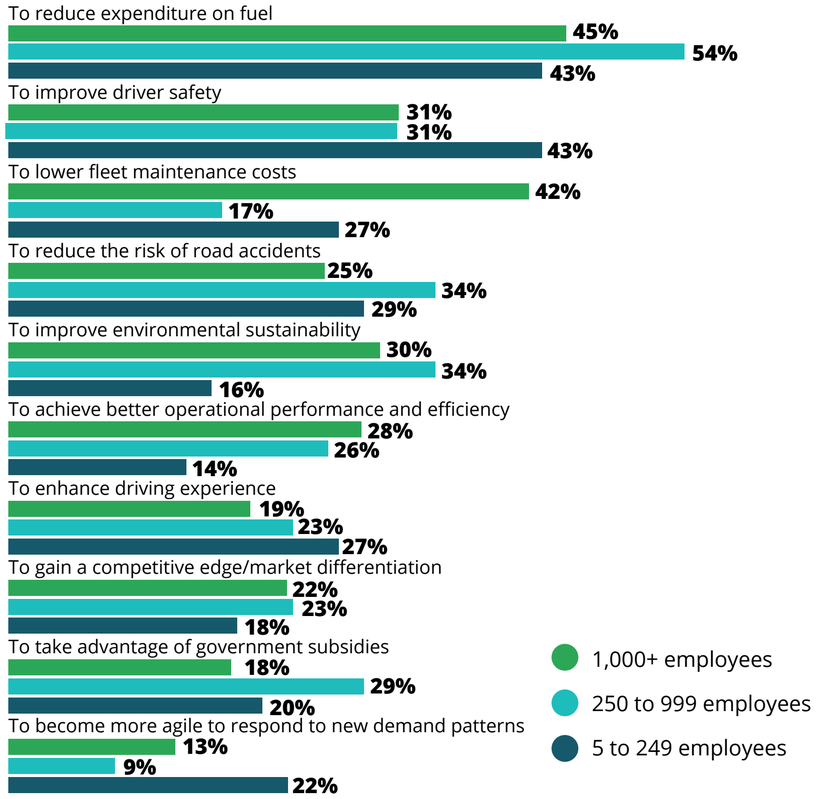
**quote from truck OEM in-depth interview**



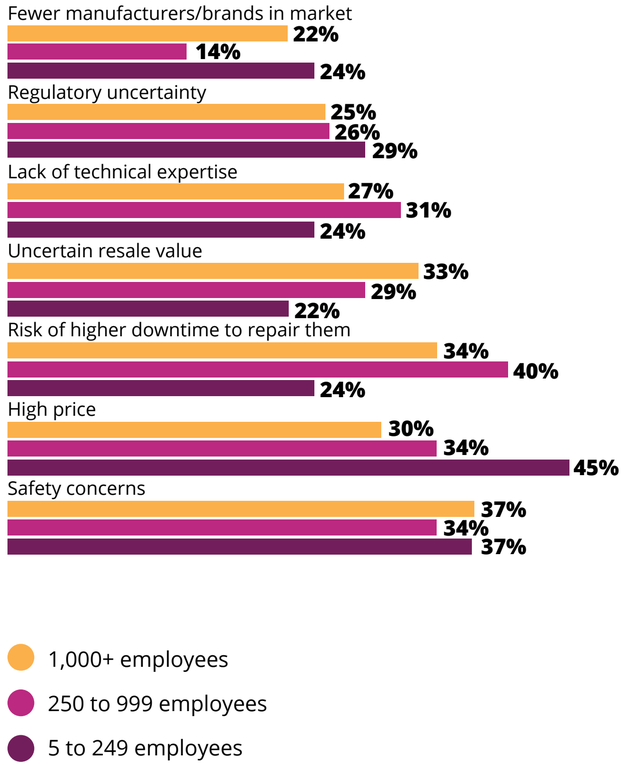
IDC EMEA, Logistics & Transportation Survey, Capgemini, August 2022 – N = 151

# Current pilots will be key to understand how to maximize efficiency and safety benefits, while addressing safety, cost, and downtime concerns to scale adoption

## Expected benefits of **AUTONOMOUS** truck solutions




## Concerns of **AUTONOMOUS** truck solutions



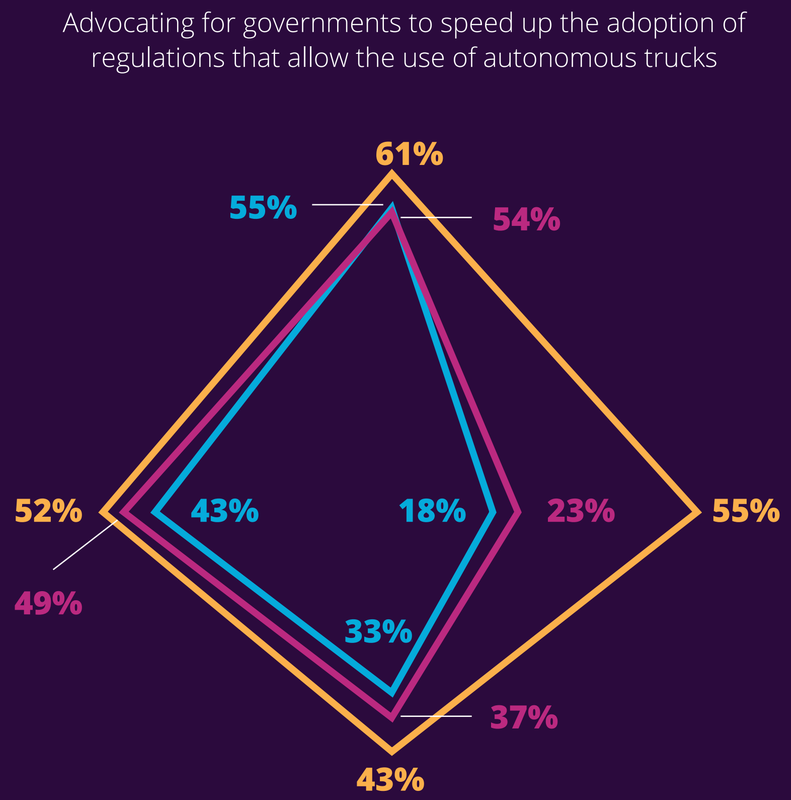

***"It is difficult to predict when level 4 and 5 will come. There are a couple of big factors to be taken into account:***

- *Autonomy requires a level of latency and reliability of connectivity and complexity of data processing that is theoretically possible from a technical point of view, but nobody has done it at scale yet*
- *There is an emotional element – "are we willing to have a 40-ton robot truck carry flammable material through a city at night"? in theory it could be safer, but emotionally we are not ready"*

**quote from truck OEM in-depth interview**

# European transportation and logistics companies expect to join forces with OEMs, when deploying breakthrough technology, like autonomous driving.

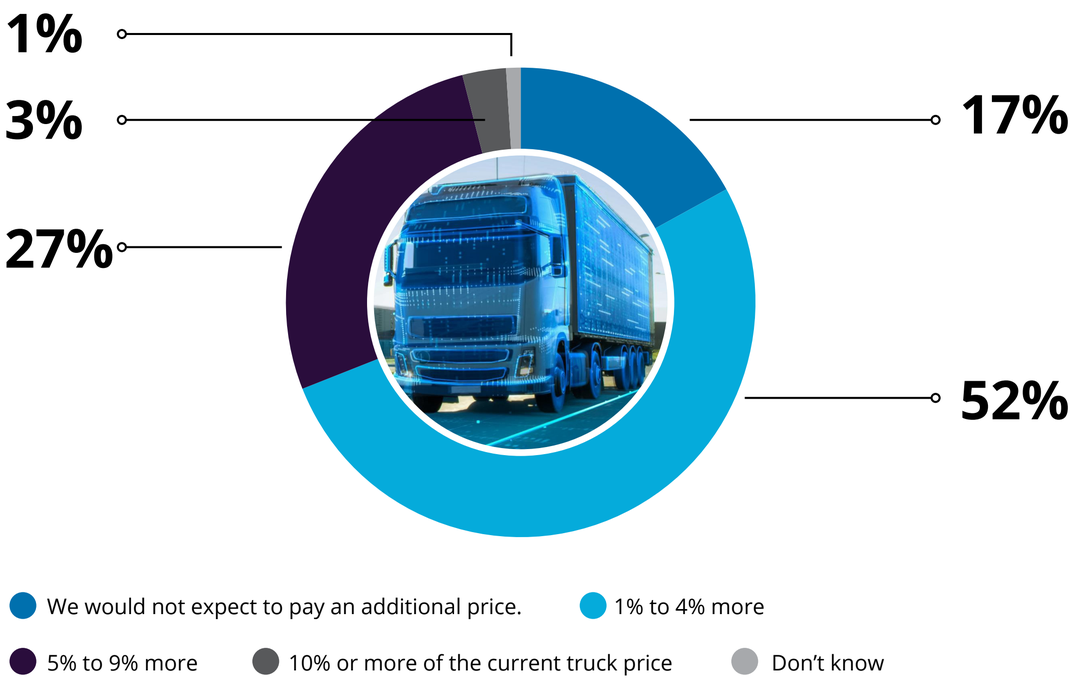
Support European transportation companies would like from truck OEMs to deploy and operate autonomous trucks



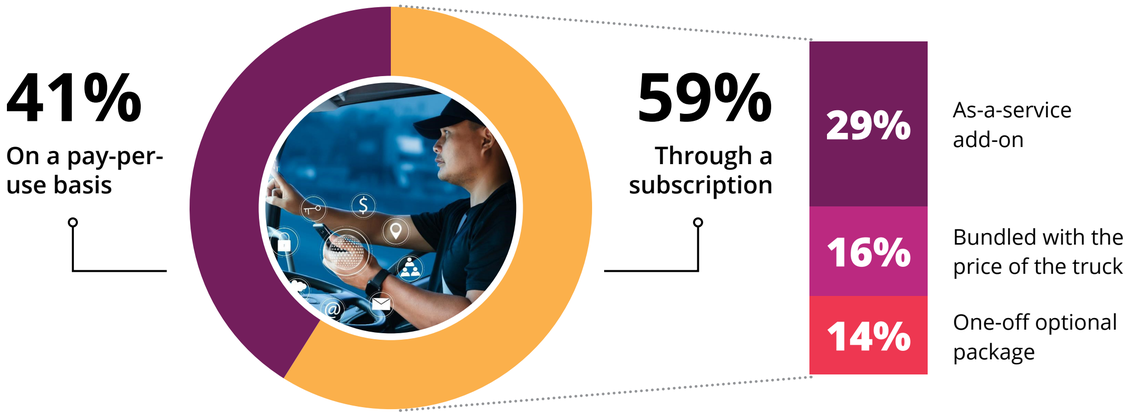

Large transportation companies who are investing more heavily in autonomous pilots are particularly eager to get OEMs to help them with regulators.

# European transportation and logistics companies are ready to pay a premium for the next generation of CONNECTED, AUTONOMOUS, ELECTRIC trucks, but would like to have the option to pay per use or service

**Price increase that European transportation and logistics companies are willing to pay on top of the current price for connected and autonomous trucks**




**European transportation and logistics companies preferred way to pay for next generation connected truck solutions**



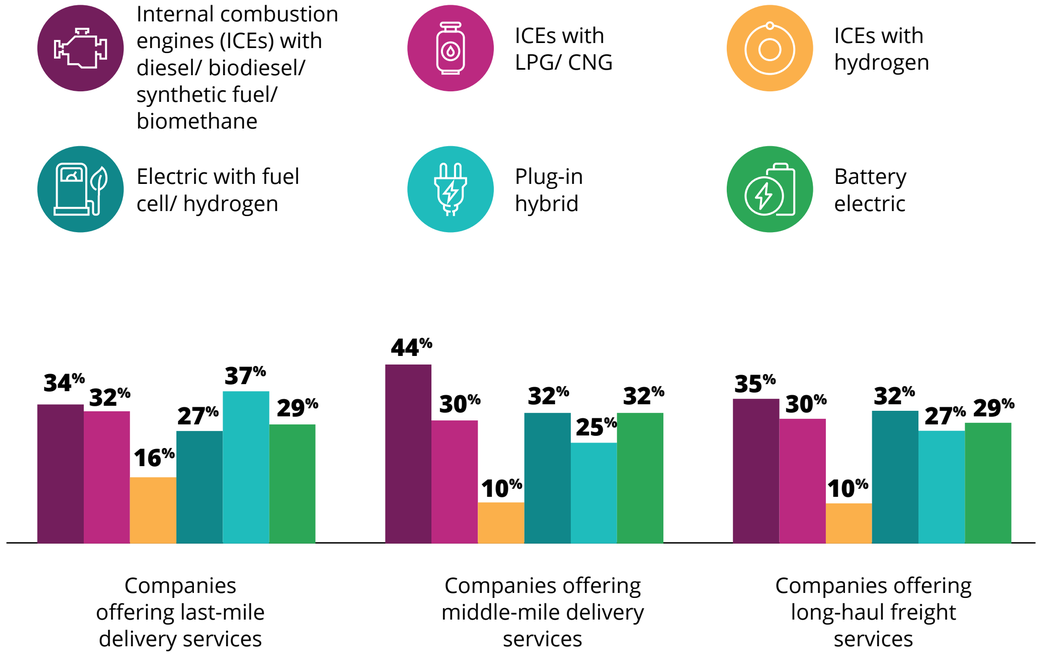

**OEMs need to rethink how they re-organize product innovation, operations and customer service to shift to processes, skills and culture that support solution selling.**

*"The most important shift is that we are not going to sell products in the future; we'll sell solutions. We will sell miles. Even internally we are talking about solution development."*

**quote from truck OEM in-depth interview**

# Investments in ELECTRIC trucks are accelerating with last-mile delivery companies moving more rapidly to battery and plug-in electric, while longer-range operator complementing ICE with fuel cell too..

**European transportation and logistics companies plans to deploy trucks, by type of fuel, in the next 2-3 years**




Increased availability of EV models across light and medium-duty commercial vehicles, longer ranges and reduced running costs, sustainability policies and growing availability of incentives to promote Scope 1 emission reductions are making commercial fleets a sweet spot for electrification due to the captive and shiftable nature of these EV loads, deriving from their predictability of driving, refueling, and overnight parking schedules.

## Truck OEMs need to make critical decisions in times of uncertainty to be ready for double-digit growth of EVs in the next 3-5 years

*"With previous engines platforms it was pretty easy for us to forecast how many units we had to produce, what kind of performance improvement we had to deliver. Those were challenging targets, but we knew when we reached the goal. Today:*

- *We need to understand what customers wants: What range? What type of terrain they operate in? Do they want hybrid powertrains?*
- *We need to predict volumes while the demand is still latent.*
- *We have policy pressure from the European Green Deal and other initiatives which are progressing at different speeds in different countries.*

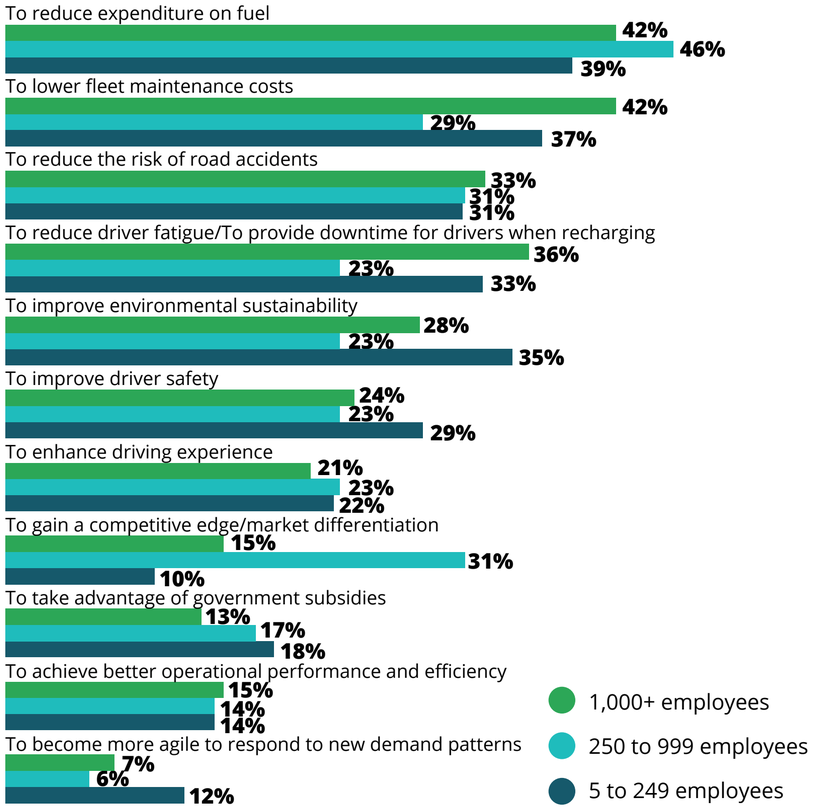
*We must rethink product design, engineering, and operations, by:*

- *Dividing the market into 'power-levels" - to have one solution for long-haul, one for middle-mile, etc. each with their own optimized drivetrains - to align with customer needs, while achieving some level of homogeneity.*
- *Working with partners to acquire components and assemble different kinds of power trains, as well as modular batteries that can be assembled into packs."*

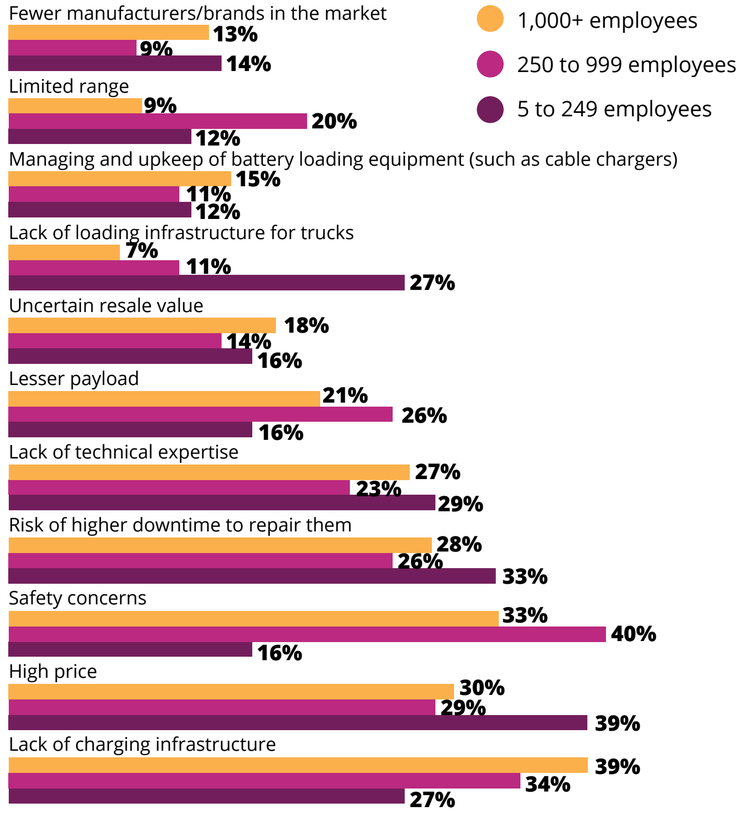
**quote from truck OEM in-depth interview**

# Transportation companies embracing electric trucks aim to reduce fuel expenses, maintenance costs as well as the risk of accidents by providing drivers with downtime during recharge

## Expected benefits of **ELECTRIC** truck solutions




## Concerns of **ELECTRIC** truck solutions




***Lack of charging infrastructure and higher price of trucks are the main barriers to scale adoption.***

*The company is "determined" to be carbon neutral by 2050 but said that electrifying its entire fleet will take time "due to the lack of sufficient and reliable charging infrastructure. This is why we will need to continue working with our customers and partners to explore ways to overcome such obstacles in order to help us make the switch."*

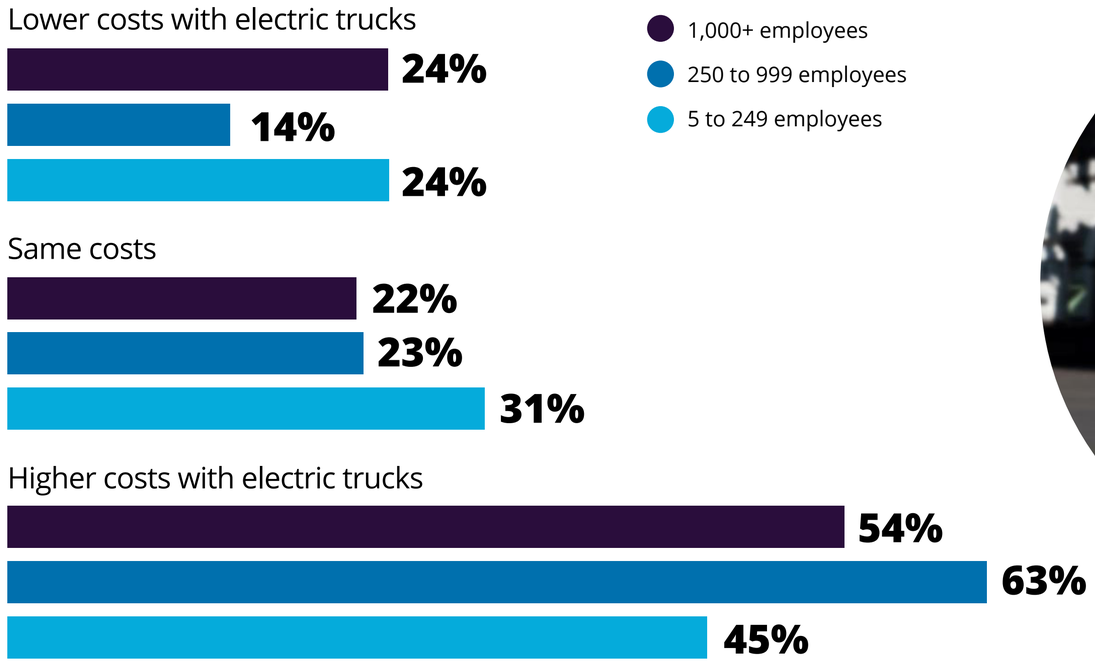
**Interview with Niklas Andersson, Executive VP and Head of Logistics Division, Denmark-based DFDS (from Supplychaindigital.com)**



IDC EMEA, Logistics & Transportation Survey, Capgemini, August 2022 – N = 151

# OEMs cannot turn latent demand into active demand alone. Government intervention to promote infrastructure investments and fleet replacement are necessary to make the TCO equal to or lower compared with ICE

**Expected total cost of operations of electric trucks compared with ICEs (diesel) by 2030**



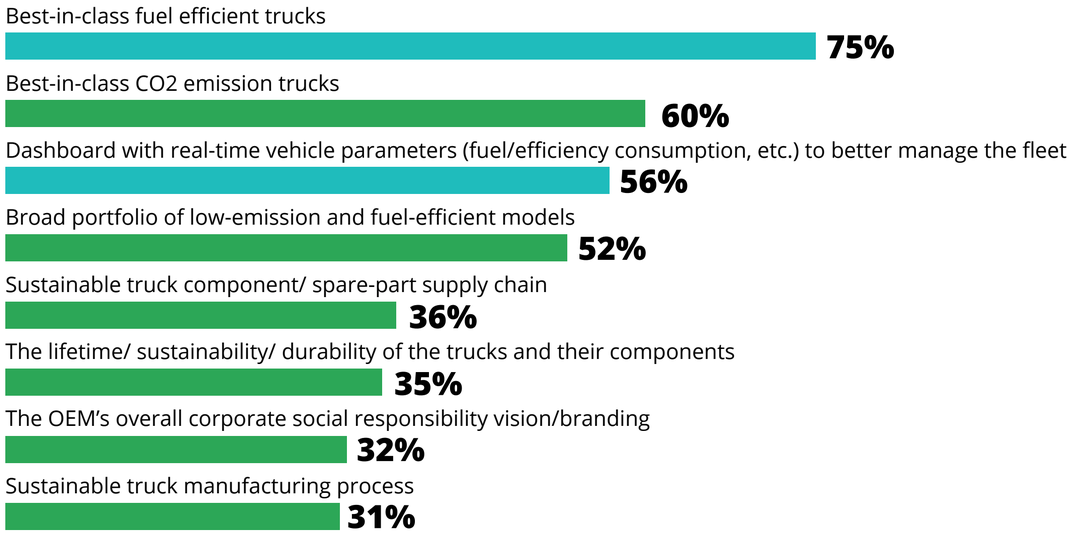

*"The technology for electric is there, it's now just a matter of rolling them out and it's a matter of convincing the transportation companies to buy into it, also through incentives from government. Otherwise, the cost structure is not there yet; many transportation companies can only afford 5-10 electric trucks in their fleet as a test"*

**quote from truck OEM in-depth interview**

# Although “to improve environmental sustainability” is not the top expected benefits of connected, autonomous and electric trucks, a change of mindset is happening in the transportation industry, as more and more top executives are making it a strategic priority.

**Environmental sustainability criteria that European transportation and logistics companies may consider when selecting a truck manufacturer**

(% of respondents that rated the criteria as 4, on a 1 to 4 scale)




**Factors that make an indirect impact on environmental sustainability**

*“...logistics service providers need to take responsibility towards our customers, employees and society at large – and embed sustainability in the way we do business. For me personally, sustainability is my top priority. I believe that to achieve meaningful change, we need to drive a change of culture and behavior in our industry”*

**DB Schenker’s CEO 2021 blog**

**OEMs can accelerate the shift towards environmentally sustainable trucks by showing the impact on the bottom line, through increased fuel efficiency, compliance with CO2 emission targets, and real-time dashboard.**

*“We are aiming to buy only green electricity to power up manufacturing. We are figuring out how to buy green steel”*

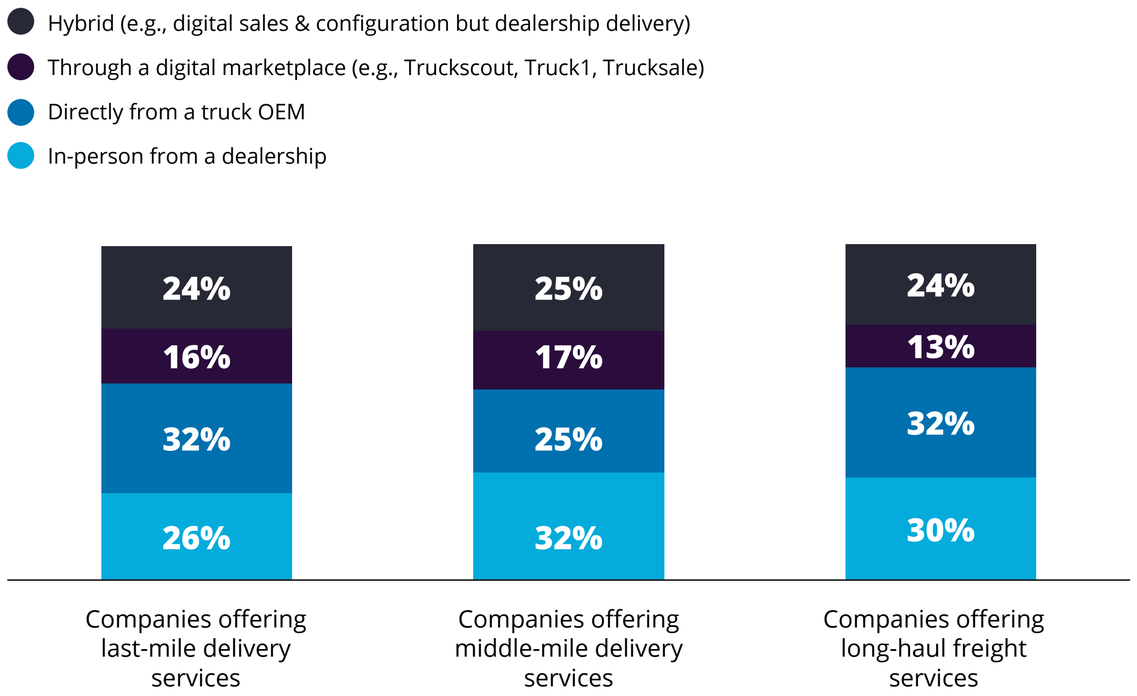
**quote from truck OEM in-depth interview**

*“We are collaborating with tier 1 and tier 2 suppliers to change the way the products are designed to make them easier to assemble, so that the manufacturing process consumes less energy and products are delivered faster.”*

**quote from truck OEM in-depth interview**

# European transportation companies are looking to in-person relationships with OEMs and dealers to acquire the next generation of trucks; however, digital value-added services, such as financing and after market services are expected

## European transportation and logistics companies preferred channels to buy new trucks




**70%** of European transportation and logistics companies think that digital financing apps/services would make the purchase of new trucks more convenient AND...

**49%** expect digital after market support

***OEMs must expand their digital channel, but should continue investing in in-person trusted relationship with big fleet operators***

*"Trucks are big complicated products. There is a big pre-purchase consulting discussion to be had about type of business, topography of routes, etc. There's a relationship element in buying a 150K product"*

**quote from truck OEM in-depth interview**

# IDC Guidance

**OEMs that want to be seen as trusted partners that can deliver value for money throughout the life-cycle of the truck - from on-time delivery to maintenance services that extend the full cycle life-cycle must:**

1

**Solution** - Segment the transportation and logistics market, based on fleet operating model, delivery model, size of the organization, and topography of the territory where they operate, to identify homogenous needs and develop modular, software-enabled platforms to balance personalization and efficiency.

2

**Ecosystem** - Assess the opportunity to collaborate with a range of suppliers to enable operational activities, for example, around technology, fleet maintenance and management, and data monetization, and with suppliers that are willing to take an active reward- and risk-sharing approach.

3

**Talent** – Create a solution development competence center that brings together existing product development and engineering experts, with ICT/digital experts and go-to-market leaders, and nurture skills around the technologies that will accelerate the convergence of connected-autonomous-electric trucks, such as electric batteries and powertrains, AI/ML, 5G, IoT and edge computing.

4

**Go-to-Market** – Identify forward-thinking dealers and customers that are interested in testing new products, usage-based pricing packages, and whole-of-life-cycle services, such as predictive maintenance.

5

**Operations** – Work with product development and engineering experts to understand how to minimize the cost of energy and steel in next-generation truck assembly and implement advanced analytics to achieve real-time situational awareness on critical resilience and performance KPIs.

# About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications, and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.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