



SUCCESSFULLY DELIVERING THE NEXT GENERATION OF EFFICIENT, SUSTAINABLE, TECHNOLOGY-POWERED TRUCKS

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Introduction

The COVID-19 pandemic brought about massive change for the trucking industry. Supply chains were unsettled. Labor shortages were exacerbated. Embracing digital, not only as a business process enabler but as the kernel of value-adding products and services and new ecosystem data-centric business models, became a matter of survival for both OEMs and transportation companies. Environmental sustainability regulations were fast-tracked. In the post-pandemic world, inflationary pressures from rising energy prices, the shortage of components — particularly semiconductors — and international political volatility turned these changes into storms of disruption. Truck OEMs are caught in between.

Demand-Supply: Pull and Push

On the **demand** side, transportation companies are no longer content with buying commercial vehicles as mere products. They want to buy connected, autonomous, electric trucks as solutions that can help them reinvent their business and operational models. They must increase operational and financial resilience vis-à-vis skyrocketing fuel prices and driver shortages, fight competitive pressure from digital native companies that are stealing market share in the ecommerce-centric world of logistics, and bring competitive differentiation and operational efficiency together with the ability to comply with demanding carbon reduction targets.

AT A GLANCE

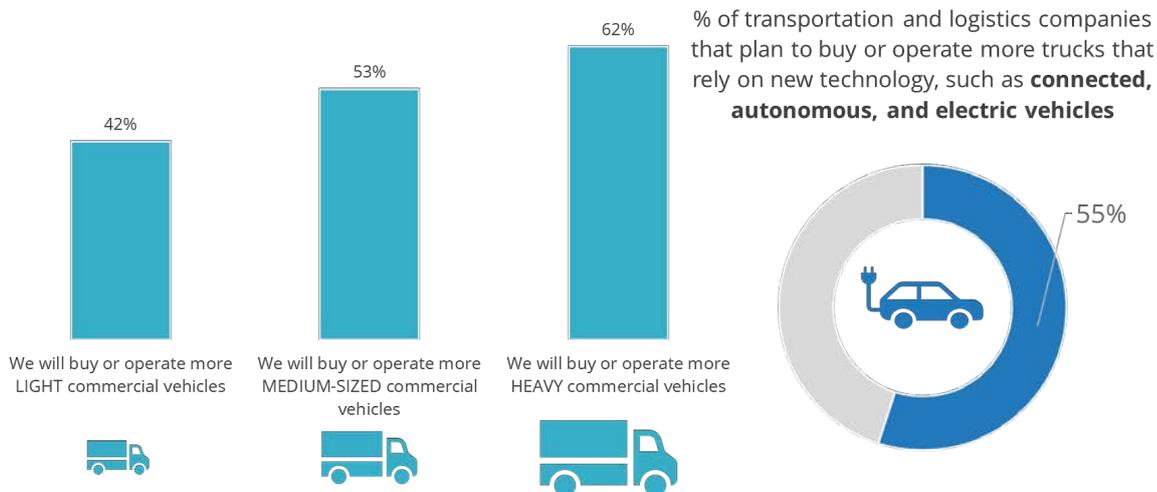
Truck OEMs are at the apex of the intersection of market forces and are further challenged with managing complex technology and vendor relationships to drive constant innovation and evolution while responding to ever-changing customer expectations.

KEY TAKEAWAYS

- To deliver the next generation of trucks, OEMs must master the convergence of the three big shifts in truck platforms — autonomous, connected, and electric
- The Top 3 truck purchasing criteria for European transportation companies: total cost of ownership (44%), truck performance and features (34%), and services provided by OEMs such as predictive maintenance (25%)
- Truck OEMs need to become trusted partners with their customers, delivering value for money throughout the life cycle of the truck

More than half of transportation companies plan to buy or operate connected-autonomous-electric trucks

FIGURE 1
How Business Concerns Will Affect the Composition of Truck Fleets



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

“It’s a mix of pull from customers and push from OEMs. The bigger transportation and logistics companies are the most forward-thinking and ready to try new things. They know a lot about their fleet operation. They want to get to the next level of situational awareness. Those are the customers that we work with to develop new solutions, to then scale; the model is usually that we provide the connected truck at the cost of the traditional truck, but then ask to get access to all the data for free. V2X and V2V connectivity and data science capabilities and competencies are necessary to make all of this happen.”

From an in-depth interview with a leading Truck OEM

On the **supply** side, the historically linear relationship between component suppliers, truck OEMs, dealers, and customers, with big OEMs clearly in the lead because they were the main concept designer and supervisors of the whole value chain, does not work anymore. Now, as more and more technology, such as IoT, 5G, AI, extended range, and modular batteries, becomes embedded in the next generation of trucks, the value add is shifting upwards and downwards in the value chain. To tap into the demand for more connected, electric, and autonomous trucks, suppliers, be they Tier 1 or Tier 2, are now becoming strategic partners of OEMs, where the value stream is based on jointly sharing a product development road map and the related risks and rewards. At the same time, dealers and the OEMs’ direct sales and service relationships with the largest customers are strategic to delivering a bundle of digitally enabled products and services that increase the yield of trucks throughout their life cycle in alignment with the needs of different customer segments (e.g., small vs. large, operators of owned fleets vs. operators that lease their vehicles, last-mile delivery vs. long-haul freight).

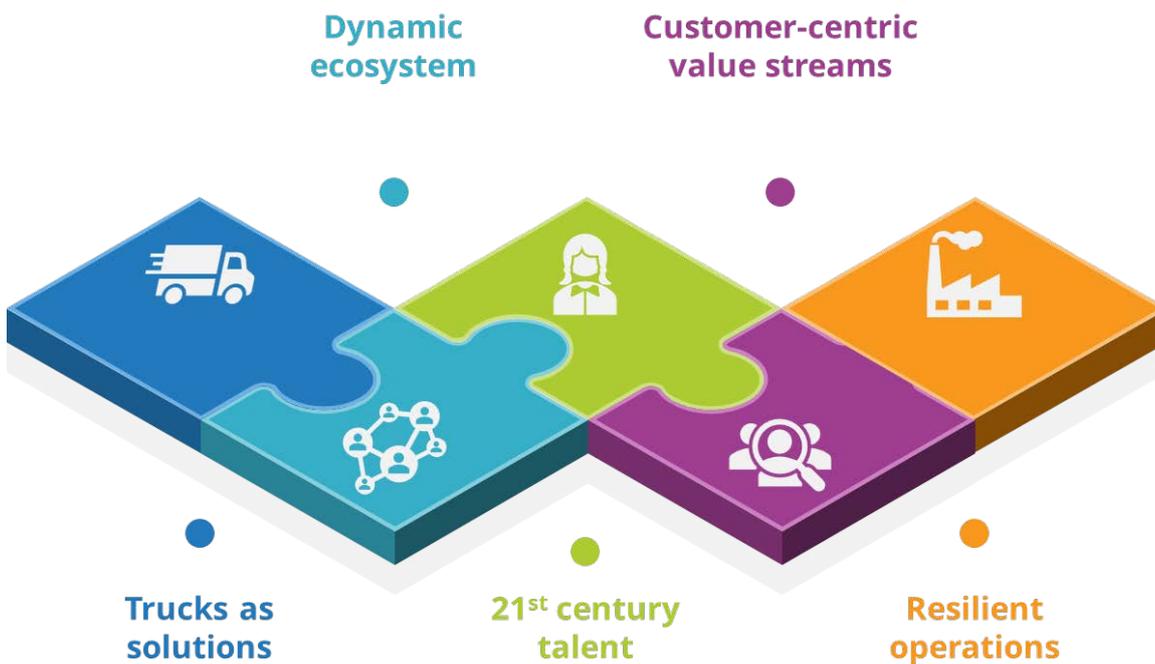
“In the future, it would be solutions and not products that will be sold. In the long run, we might sell miles. Key questions are — how much do transport companies want to buy, how to service and so TCO will be more and more important for us? The truck will be very expensive to produce or sell, so low Kilowatt consumption and TCO will be low so it will benefit manufacturers in what they earn on money. Yes, we are testing and working on these ideas — price per mile. We don’t talk about product development; we are talking about solution development. What we need to sell to the customer.”

From an in-depth interview with a leading Truck OEM

The Next-Generation OEM

OEMs that want to not only weather these storms of disruption but also capture market share in the fast-growing market for next generation connected, autonomous, and electric trucks must focus on five critical success factors:

FIGURE 2
Five Critical Success Factors to Capture Market Share



Source: IDC Industry Insights 2022

- 1. Rethink trucks as solutions rather than products.** The three big shifts in truck platforms — autonomous, connected, electric — are taking place in parallel, and the value will come from the convergence of technology innovations such as IoT, 5G, AI/ML, edge, cloud computing, autonomous driving, and electric batteries with extended range.
 - a. Connected** — The trucking industry is accelerating its usage and focusing to build around connected vehicle architectures and capabilities. The industry understands it

needs to do more and is working to establish its connected vehicle foundation on top of platforms and ecosystems to maximize its investment. Connected trucks contain software, sensors, and IP-enabled connectivity designed to enhance the business yield of the commercial vehicle through route optimization and predictive maintenance. Furthermore, forward-looking OEMs aspire to a long-term vision in which trucks become software-defined "data hubs." In this vision, the final customer is not "just" whoever operates the truck, but whoever monetizes the value of the data that the truck generates.

- b. Autonomous — The vision of self-driving trucks making roads more efficiently utilized and safer and reducing fuel and driver expenses is appealing. OEMs must collaborate with suppliers, customers, and regulators to scale from test vehicles to widespread adoption of levels of autonomy all the way up to level 5. Internally, this means dealing with higher levels of technology complexity that require bringing together traditional mechanical engineering skills with computer science. But technology is not the only factor to deal with; before autonomous vehicles can become mainstream, a great deal of regulatory and legal work needs to be done in areas such as emotional acceptance based on new models of responsibility and insurance liability and a great deal of infrastructure instrumentation that can only happen in partnership with policymakers.

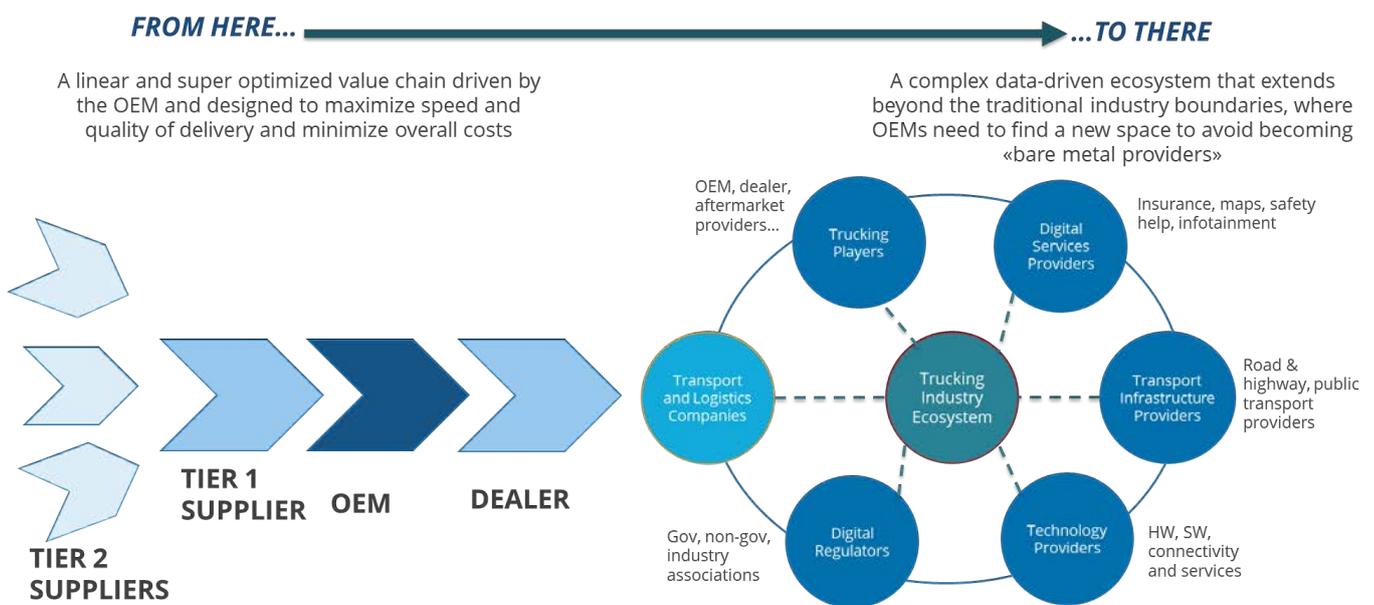
“Autonomy requires a level of latency/reliability of connectivity and complexity of data processing that is theoretically possible from a technical point of view, but nobody has done it at scale yet. There is an emotional element — “are we willing to have a 40-ton robot truck carry flammable material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

From an in-depth interview with a leading Truck OEM

- c. Electric — Selling electric trucks is becoming a mandatory target given the stringent carbon emission regulations. Electric trucks require a completely new development cycle. Battery technology becomes central, and it impacts choices about drivetrains and their whole procurement, manufacturing, and life cycle management. The coexistence of different product lines (electric, hybrid, hydrogen fuel cells) until the market fully matures will be necessary, although in the long-term electric will prevail. Electric trucks also have fewer moving parts. Traditionally, OEMs have managed to curb prices and relied on parts replacement for the circulating fleets for their long-run profits, and with electric trucks this is much more difficult to achieve. Revenue has to come from other sources, such as the initial sales price, SW add-on, and value-added predictive maintenance services that are dependent on connected solutions. And similarly to autonomous driving, market penetration for electric trucks is greatly influenced by the availability of charging infrastructures and government incentives.

2. **Be Open to Dynamic Ecosystems.** As the automotive and transportation ecosystem continues to evolve and work together more closely, IDC expects new business models to emerge around shared data and insight, shared and codeveloped applications, and shared operations and expertise. Working in this open, shared, collaborative way, trucking OEMs, transportation companies, and public organizations will ensure that ideas, vision, and innovation are turned into products, services, and customer experiences that meet opportunities, needs, and the mission of the industry ecosystem.
- OEMs need to innovate in partnership with tier 1 and tier 2 suppliers, including telcos and technology specialists that bring together critical, low-latency connectivity, with agile start-up innovation in ADAS, battery management, radar-lidar-video AI, etc.
 - Integrating data feeds from the technology-laden trucks into an organization's supply chain ecosystem facilitates improved visibility and speed by which decisions can be made. Incorporating this data into predictive and prescriptive models optimizes operations by automating decisions.

FIGURE 3
The Automotive Value Chain in Transformation



Source: IDC Industry Insights, 2022

The rate at which the digital automotive and transportation ecosystem matures depends on the ability of data to traverse across authorized internal and external systems, applications, and functions. OEMs require a dramatic shift in the mindset from technologies, projects, and resources to business outcomes, products, and talent.

3. **Revamp the Talent Pool**

- Truck manufacturers continue to struggle with talent gaps, accelerated by the pandemic. They also recognize that new sources of creativity and innovation are needed within the organization, and hence are beginning to look to their ecosystem for support and enablement. Skills required are rapidly changing and new training is

required, while older workers are retiring and knowledge voids cannot be filled quickly enough.

- b. Nurture skills in data and software that are different from the legacy mechanical engineering competencies. These must be compounded by new ways of working for more agile design and testing.

“For us and in the industry in general, there is one major hurdle to executing on these three priorities. That is the skills shortage. Large OEMs are partnering with start-ups and digital natives, like Waymo, to drive faster innovation cycles. They are the ‘swiftly moving boats’, while the large OEMs have the production and testing capacity to scale and engineer cars and trucks that can meet safety, delivery, and service requirements. In our product development teams, we need more IT specialists that are not necessarily traditional engineers.”

From an in-depth interview with a leading Truck OEM

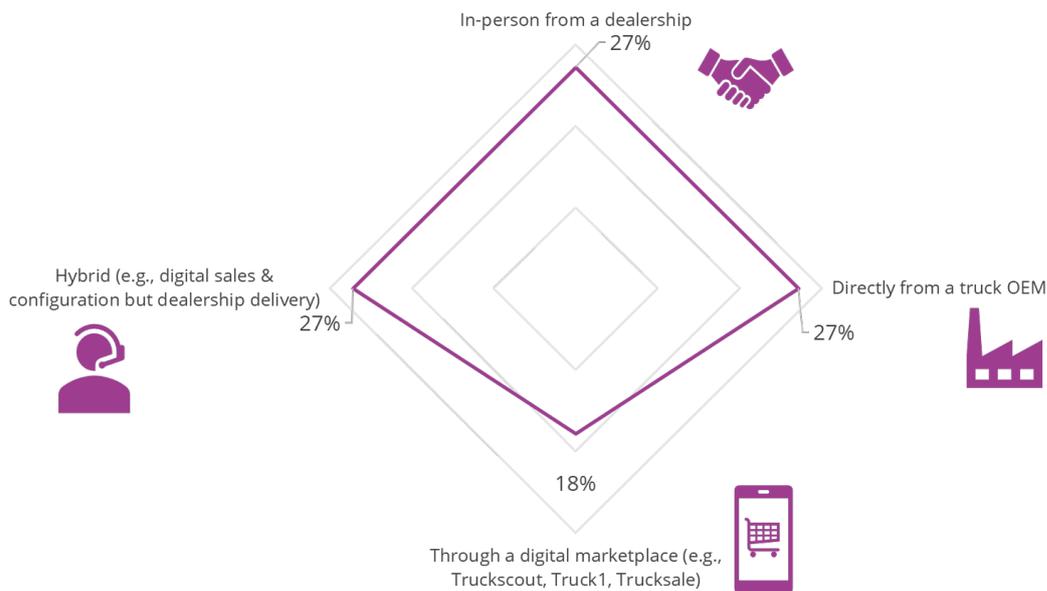
- 4. **Build customer-centric go-to-market value streams.** From product design to component procurement, to operations, all the way to after-market services and dealership network management, the OEMs must be able to support transport and logistics companies purchase, operate, and maintain the next generation trucks as a solution, not just as a product.

“E-marketplaces are still complicated because trucks are big, complicated products. There is a big pre-purchase consulting discussion to be had about the type of business and topography. There’s also a relationship element in buying a 150K product; fleet managers want to make sure the person will pick up the phone on Sunday morning if there’s a problem; the bigger transportation companies expect that we send the cavalry to repair engines. We have key accounts for every major customer. It’s a very different business from buying cars. So yes, there are configurators online, but there are hundreds of options and it’s only the very first stage of the purchasing process.”

From an in-depth interview with a leading Truck OEM

52% of the European transportation companies surveyed by IDC in Europe in August' 22 are willing to spend between 1% and 4% on top of the current price of trucks to purchase connected and autonomous capabilities from OEMs. About 17% expect to have it as a feature but are not ready to pay an additional price. However, more than 80% of transportation companies want in-person touchpoints when acquiring new trucks.

FIGURE 4
Transportation and Logistics Companies' Preferred Channel When Acquiring New Trucks



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

5. **Orchestrate resilient, dynamic, environmentally sustainable operations.** Product engineering, testing, and manufacturing operations must also be transformed to bring together efficiency, agility, and environmental sustainability.
- Connected, autonomous, and electric trucks must be designed to consume less energy not only on the road, but also on the assembly line. They must be assembled more rapidly, so that disruptions in the procurement of components do not result in delays in the delivery of products.
 - The fast evolution of technology makes it expensive to continuously renew trucks, so modularity of operational components (e.g., batteries and sensors that can be embedded in different models) and software-centric architecture will be necessary for interoperability and affordability. Modularity also helps to respond to different customer needs while maintaining a level of homogeneity that ensures good marginality and after-market serviceability.

- c. In the future, truck OEMs will sell solutions and not just products. Operations need to work collaboratively with product development and customer service to support solution selling.

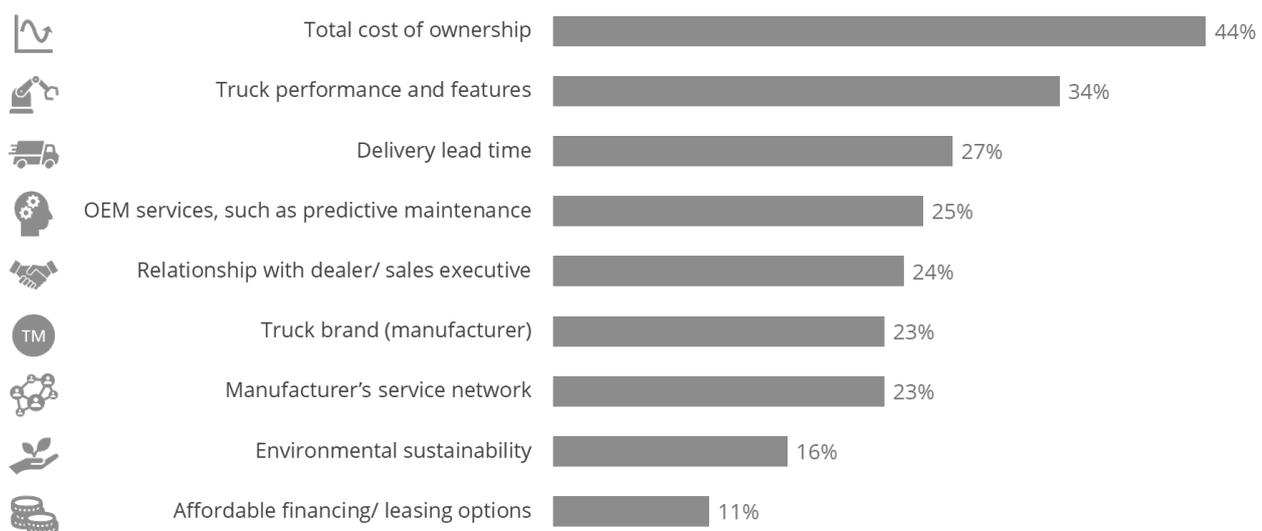
“Another uncertainty is around volumes — how fast their demand will come and will everyone need it. We don’t know that yet. When we need to take operational decisions, we are used to making them with the old frame of mind. And on top of that, we have policy pressure from Green Deal and other initiatives that are progressing at different speeds in different countries. We are trying to take away from these uncertainties. We are not going ahead with our own electrical engines but are buying them from a supplier. Also, for a battery, which is a very important part, we are buying battery cells but have decided to build our own battery packs. We are not sure what the battery cell will look like in future. Drivetrains for distribution trucks in the city compared to drivetrains for trucks that drive on, say, main roads in Sweden — it is very different.”

From an in-depth interview with a leading Truck OEM

Conclusion

Total cost of ownership (44%), truck performance and features (34%), services provided such as predictive maintenance by the OEMs (25%) rank as the top 3 purchasing criteria for European transportation companies, according to IDC survey data.

FIGURE 5
Transportation and Logistics Companies’ Criteria When Acquiring New Trucks



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

However, to make it worthwhile to operate the next generation of trucks, which will be more expensive, OEMs should become partners to their customers, delivering value for money throughout the life cycle of the truck — from on-time delivery to maintenance services that extend the full life cycle.

There are financial and regulatory barriers to adoption, particularly for autonomous and electric trucks, such as evolving road safety laws, the lack of charging infrastructure, risks of downtime, and reduced payload. Transportation and logistics companies expect OEMs to be their partners on the journey, from partnering to lobbying governments, to offering flexible pricing options, to offering personalized pre-sales advisory and aftermarket services.

OEMs that are designing and developing the next generation of trucks should:

1. **Solution** — Work with dealers and customers to understand the needs of different types of transportation and logistics companies based on fleet operating model, delivery model, size of the organization, and topography of the territory where they operate. They should cluster these needs into homogenous segments and develop modular, software-enabled platforms to balance personalization and efficiency.
2. **Ecosystem** — Identify technology suppliers in areas including 5G, AI, ADAS, routing, dispatching and other location-based services, batteries, and powertrains that are willing to take an active reward-and-risk sharing approach to product development.
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.
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.

OEMs that are testing and getting ready to scale production of the next generation of trucks should:

1. **Solution** — To ensure that most of the value from operations technology investments is achieved, consider licensing out the adopted technologies, as they may prove to be useful for other companies as well.
2. **Ecosystem** — Assess the opportunity of collaborating with a broad network of providers to enable operational activities, for example around asset and production machine maintenance, operational improvement knowledge sharing, and data trading.
3. **Talent** — Retaining and building core talent to support operations will be central, particularly around the creation of a center of excellence from solutions development and delivery competence.
4. **Go-to-Market** — Collaborate with customers such as dealers, fleet operators, and fleet managers to assess forecast quantity and requirements in the best way possible and align operational activities accordingly.
5. **Operations** — The key is to get the operating process right and understand and set up the right KPIs to measure performance and profitability for newer business models.

MESSAGE FROM THE SPONSOR

Over the past decade, the commercial vehicle industry has experienced tremendous changes across key megatrends like digitalization, connected, electrification, autonomous, and sustainability. This report shows and contrasts insights from Commercial Vehicle OEMs and transportation companies addressing recent and upcoming industry trends and changing customer needs.

Capgemini partners with companies to transform and manage their business by harnessing the power of IT and engineering. Capgemini's Commercial Vehicles Acceleration Hub (CVAH) is connecting the group's expertise in business and technology to offer tailored services in the new ecosystem of sustainable transportation. Furthermore, it is bringing together OEMs, suppliers, logistic companies, energy and infrastructure providers, technology start-ups and Capgemini to jointly build the future of the industry.

To know more visit <https://www.capgemini.com/industries/automotive/leading-the-transformation-of-commercial-vehicles/>

About the Analysts

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Gunjan Bassi has more than 14 years' experience working in the logistics and transportation sector. Her research focuses on supply chain, logistics, sustainability, and more broadly on manufacturing industry transformation. Before joining IDC, she worked with Transport Intelligence (Ti), a transportation and logistics research firm based in Bath, England, where she was responsible for vertical sector research covering qualitative and quantitative reports. She was also actively involved in the development of new research capabilities and product features of Ti's flagship market intelligence portal.

[Massimiliano Claps](#), Research Director, IDC Government Insights and European transportation industry lead analyst



Massimiliano (Max) Claps is the research director in European IDC Government Insights team. He has over 20 years' experience in the IT industry. His research empowers technology suppliers and public sector professionals to embrace disruptive technologies such as artificial intelligence, edge computing, and cloud, to realize the benefits of strategic initiatives such as smart cities and citizen-centric government services. He is also IDC Europe's lead analyst for transportation, advising stakeholders across the transportation ecosystem on topics like mobility as a service and intelligent traffic management.

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