# Transportation and logistics trends 2019

## The logistics segment confronts an onslaught of startups

Part of PwC's 22nd Annual Global CEO Survey trends series

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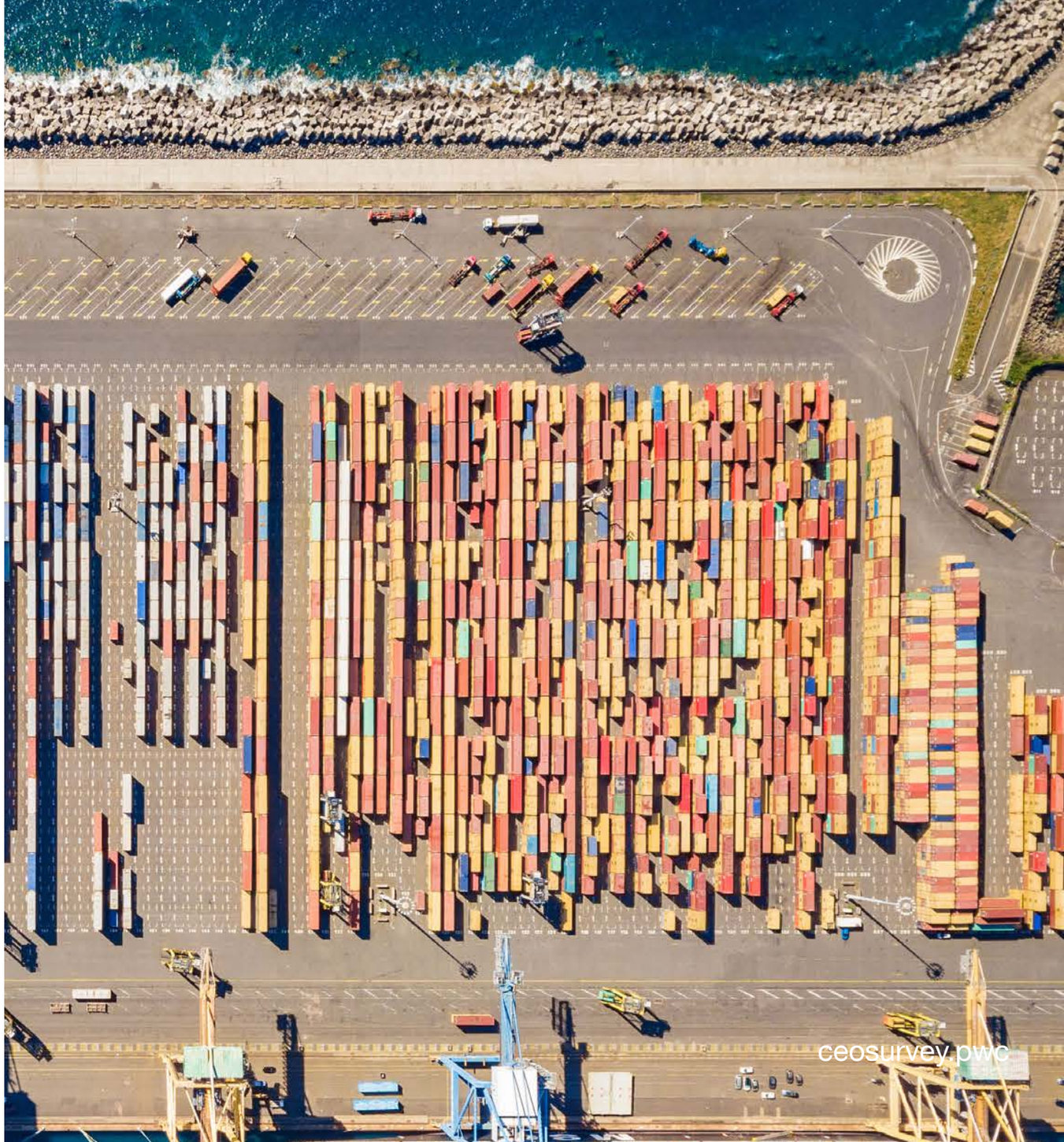

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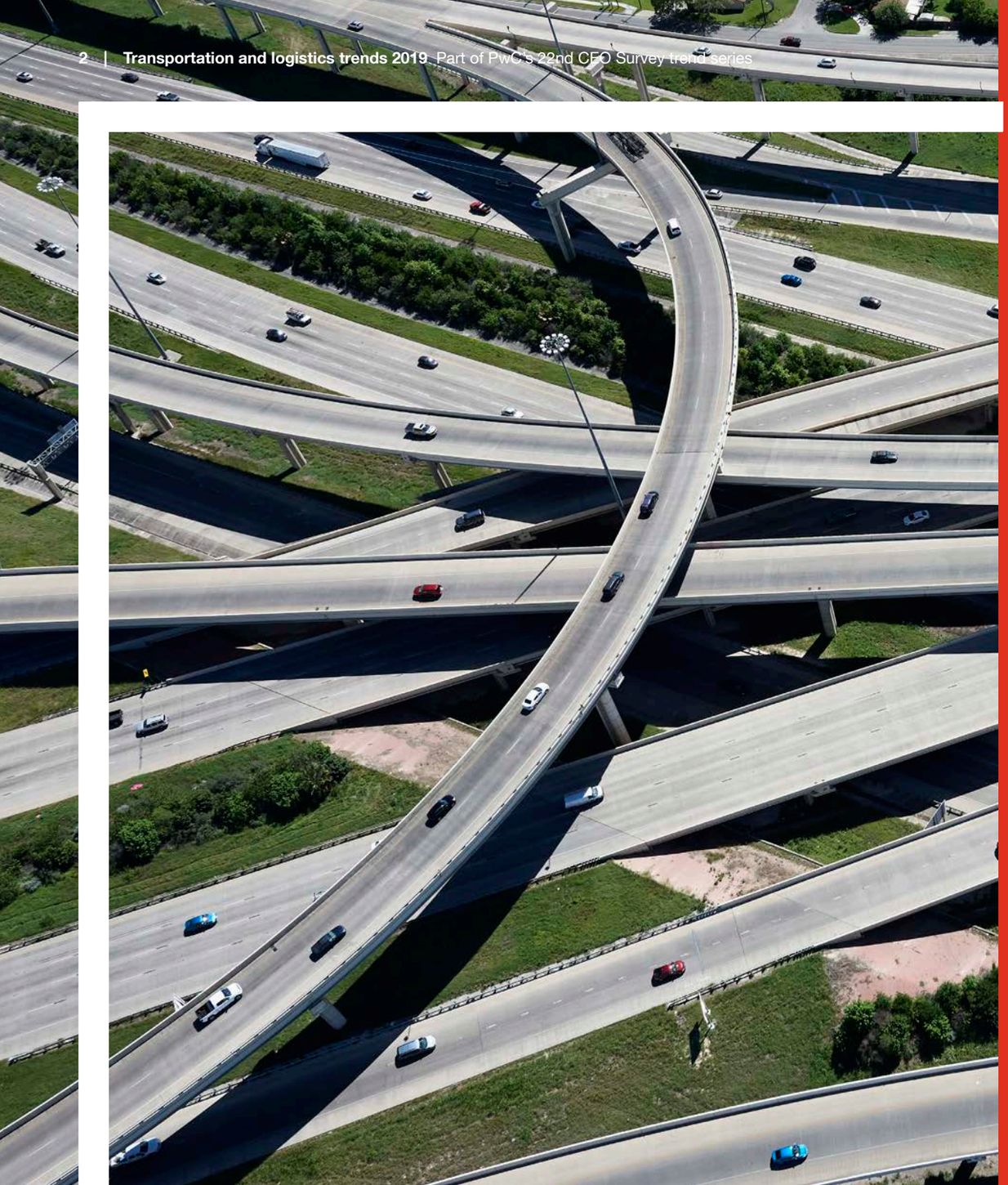

# Innovation in the fast lane

Fetchr, an app-based logistics service headquartered in Dubai, uses GPS to deliver packages to smartphone-equipped consumers wherever they happen to be. In Nigeria, where almost 80% of homes and businesses previously could not receive deliveries for want of an address, there is now a way to get a package through: a London-based company called what3words has divided the world into three-meter squares and given each a three-word label (the Nigerian Postal Service worked with the company in that country to accomplish this). Suddenly, you can specify any delivery location with a smartphone app. And in San Francisco, a startup called Flexport has set up a cloud-based platform that analyses real-time global trade data and activities from importers, exporters, trucking companies, ocean carriers, airlines, customs and terminals to specify the most efficient way to move goods through friction points, no matter where they are travelling.

These developments represent just a small sampling of the rash of innovation from new entrants in the logistics sector of the transportation and logistics (T&L) industry. These startups are mostly focussed on eliminating the many inefficiencies of traditional shipping and delivery business models. And although some of their specific applications are tailored to the requirements of local geographies, on the whole these disruptors are impacting logistics globally and are clearly a threat to legacy logistics companies. New technologies are targeting a variety of logistics services, including automated scheduling, the consolidation of deliveries from multiple shippers, on-demand trucking and carrier-based data analytics. The flow of investment, in itself, shows the scale and speed of this change. FreightWaves, a T&L data provider, recently reported that in the first three quarters of 2018, venture investment in the industry was larger than in all previous years combined and more than double the 2017 record of US$1.4bn.

The pace of innovation and the uncertainty it brings — including the threat of new competitors — explains why T&L CEOs are less than sanguine this year about the immediate future. PwC's 22nd Annual Global CEO Survey found that T&L chief executives' confidence in their own organisation's revenue growth over the next 12 months is at a five-year low, with only 29% stating they are 'very confident.' In 2017, 45% were safely in the confident camp.

This lack of optimism has led established T&L companies to scout around for fresh revenue streams that are at times only tangential to their core business. For instance, in 2018 Germany's Deutsche Post DHL opened a second factory for its manufacturing subsidiary, StreetScooter, which was originally set up to manufacture DHL's fleet of electric delivery vans. This new plant is slated to double StreetScooter's annual production to 20,000 vehicles with an eye towards sales to other logistics companies.

To be sure, steps like those might make sense in a time when competition is heating up. But the flurry of digital activity has reached such a tipping point that T&L companies cannot afford to ignore the potential impact of new technologies, nor can they put off determining how they can

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digitally transform their business models. The T&L sector may have been slow to change in the past, but the startups, apps and venture capital swirling around make it clear that for the logistics segment, at least, this is no longer the case. Incumbent companies, large and small, that fail to keep pace may find themselves in an industry they don't recognise in a few years.

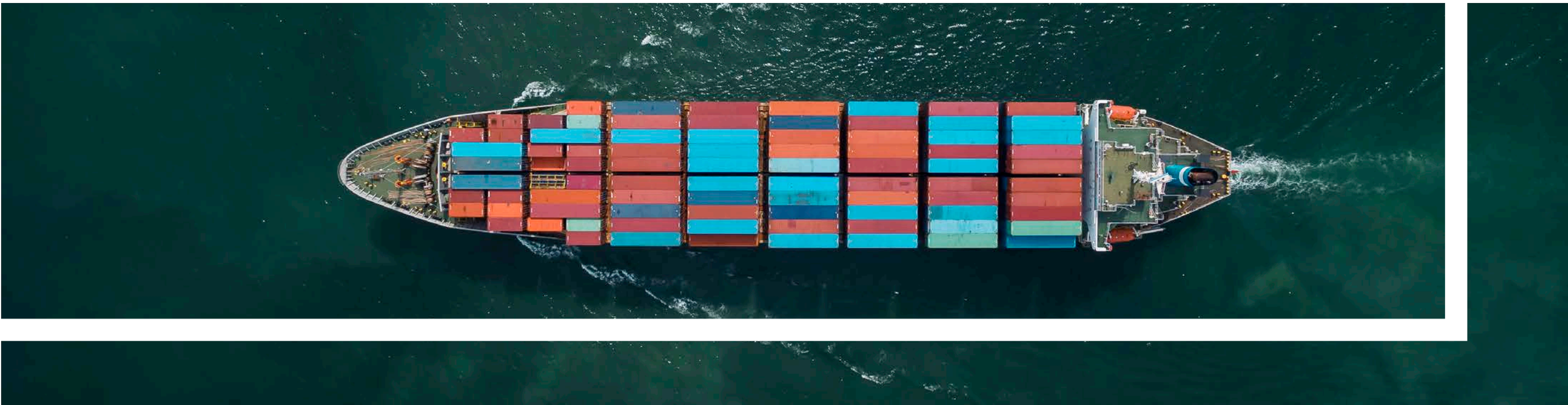
## The promise of blockchain

One technology that is relatively nascent yet holds meaningful potential for transport and logistics is blockchain. Bottlenecks in the logistics arena tend to occur because of lack of transparency and plenty of red tape. Often the precise location of shipments that are en route is unclear, which makes it virtually impossible to optimally schedule deliveries or provide guaranteed specific delivery times. Moreover, dozens of documents accompany most shipments and if a single bit of paperwork is missing, a shipment can be delayed for days.

Blockchain has the potential to eliminate most of these roadblocks because it can serve as an encrypted digital ledger tracking the movements of products from warehouse to customer and linking documentation directly to the shipment as it makes its way to the destination. Any possible irregularities that could upset a shipment's smooth passage would be readily visible through a blockchain logistics programme, allowing companies to rectify the problem immediately. In addition, blockchain could automate the process of managing customs protocols and payment to subcontractors.

Among T&L companies, interest in blockchain is growing, although usage is still lagging. In early 2018 IBM and A.P. Møller-Maersk announced a joint venture, TradeLens, to develop a blockchain-based platform for the T&L ecosystem. In late 2018, a rival initiative called Global Shipping Business Network debuted, with nine ocean carriers and terminal operators in its consortium. An industry group, the recently launched Blockchain in Transportation Alliance, already boasts more than 500 members globally.

Blockchain's biggest impact could be in reducing the inefficiencies in last-mile deliveries, driving up profit margins in a



part of the T&L business that is notoriously thin on returns and costly to manage. With the added advantage of knowing specifically where every shipped item is at any moment and whether any potential delays are foreseen, T&L companies can minimise last-mile problems by planning grouped deliveries to specific addresses or neighbourhoods virtually by the minute, a practice called synthetic package delivery.

UPS is developing such a system, slated to go online in the United States in 2020. Called Smart Logistics Network, it will use blockchain to continuously consolidate deliveries, with the goal of narrowing truck routes while expanding the number of packages each vehicle carries. Amazon is also making moves in synthetic delivery. Amazon Prime customers now can choose free no-rush shipping, which offers immediate order discounts or reward points for future purchases for people willing to wait up to six days for their items. The additional time allows Amazon to find the most cost-efficient delivery method.

## Smart artificial intelligence

T&L companies should also consider the use of artificial intelligence (AI); it can help them distinguish themselves from the competition, provide better service, cut costs and enhance day-to-day operations. For instance, fleet management could be greatly improved by the use of sensors inside trucks, ships and airplanes connected to AI programmes that monitor fuel consumption and recommend ways to minimise oil and gas usage, as well as programmes that suggest proactive maintenance activities before expensive and time-wasting major breakdowns occur. Perhaps as an indication of the potential for these AI-based applications, truck manufacturers such as Daimler and Isuzu have invested heavily and effectively moved into the logistics business by upgrading their vehicles with advanced cameras, sensors and software to automatically identify, scan and record packages as they are loaded. In addition, these programmes will suggest where items should be placed

according to size, destination, weight and impact on fuel expenditures. Just a small step from these machine-based capabilities would be autonomous equipment that continually assesses and adjusts climate-control systems in unique quadrants of the truck cargo area according to the requirements of different shipments. This would greatly expand a logistics company's market for special handling shipments, such as perishable food items, pharmaceuticals and chemicals.

And for scheduling, AI can tap networks of fleet sensors to forecast demand and optimally organise shipments while guaranteeing precise delivery times. This opens up the possibility of dynamic pricing. Just as travel companies adjust prices based on demand, seeking to generate the highest possible return for each ticket, so too could T&L companies charge more from one moment to the next on the basis of pickup, shipment and delivery volume in a circumscribed area. To do this, T&L companies would have to implement AI programmes that can accurately measure supply and demand in snapshots of time rather than solely through a long view.

Still, despite AI's promise, on the whole the technology does not seem to be a priority for T&L CEOs, which may be a mistake but also may be a function of their caution about spending money on expensive programmes when their margins are crimped. In PwC's CEO Survey, 40% of T&L respondents said they had no plans to pursue any AI projects, compared with only 23% of CEOs from all major industries.

## Machines are us

The logistics sector is becoming very familiar with machines — particularly robots — handling warehouse inventory management and loading dock activities. Some of these machines use AI to help them with repetitive tasks, but in many cases their applications are so limited that a high degree of intelligence is not necessary. The research firm Tractica forecasts that worldwide shipments of warehousing and logistics robots will grow from approximately 194,000 units in 2018 to 938,000 units in 2022. For T&L companies, even if these machines are used solely for inventory management, their impact on the bottom line can be significant, especially in improving workforce planning and managing head counts to minimise costs.

However, no one expects autonomous equipment used in the logistics sector to remain solely focussed on relatively menial and simple applications. Already there are signs that advanced machines that could handle complex deliveries are on the cusp of becoming a reality. For instance, Japan's SoftBank Vision Fund has invested nearly US$1bn in Nuro, a startup that makes self-driving vehicles for local shipments and is already experimenting with delivering groceries in Scottsdale, Arizona. And Amazon pioneered the testing of drones for last-mile delivery in 2016 — since then, the idea has captured the imagination of other T&L companies. Prominent in the European Union's experimental programme for commercial drone use are Unifly, an aviation software company developing transport and logistics drone management systems, and Helicus, which hopes to provide quicker delivery of critical medicine to hospitals. For logistics companies, creative use of machines will clearly be a defining feature of success in the coming years.

## Technology's influence on workforce strategies

Often lost in discussions about improving performance and results with digital tools is the positive, catalysing effect that new

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49%

said that it is preventing them from pursuing a market opportunity

technology can have on nontechnical parts of the business — for instance, on how workforces are deployed. Just as technology will allow companies to track and consolidate shipments, T&L firms can use the more robust and extremely granular location-by-location supply-and-demand data to develop flexible scheduling programmes for workers.

Currently, the larger T&L companies rely on short-hour workers to handle peak-time tasks. Although they work less than a full shift, generally these workers have the relative wages and benefits of other employees — and because they work predetermined hours no matter how much demand shifts from one day (or one hour) to the next, they are a direct cost to the business with little flexibility. The addition of digital tools that monitor incoming and outgoing shipments from one moment to the next would change this equation significantly. T&L companies would be able to hire carriers and warehouse workers in response to actual operational activity rather than often-inaccurate forecasts. This is one step below an on-demand workforce that uses freelance, or gig economy, staffers who compete with one another for T&L jobs at each station along a shipment's journey, from major hubs where products are put on container trucks to last-mile small depots where couriers bid on making deliveries door-to-door.

Partnerships or alliances linking startups with innovative technology ideas and established T&L firms may become more routine in the future, especially as a way to recruit talent that is able to conceive new ways to implement advanced technology both in operations and in improving services offered to customers. The need for these more technologically savvy employees is evident to CEOs responding to our survey. Fifty-five percent said they were 'extremely concerned' that this skills gap does not allow them to innovate, 53% said that it is causing them to miss their growth targets, and 49% said that it is preventing them from pursuing a market opportunity. But these sentiments are not yet resulting in much M&A or

joint venture activity among technology firms and incumbent T&L businesses, and virtually none among direct competitors in the industry. Indeed, only 37% of survey respondents anticipated entering into a strategic alliance or joint venture of any sort, and a mere 26% said they expect to collaborate with entrepreneurs or startups (see exhibit).

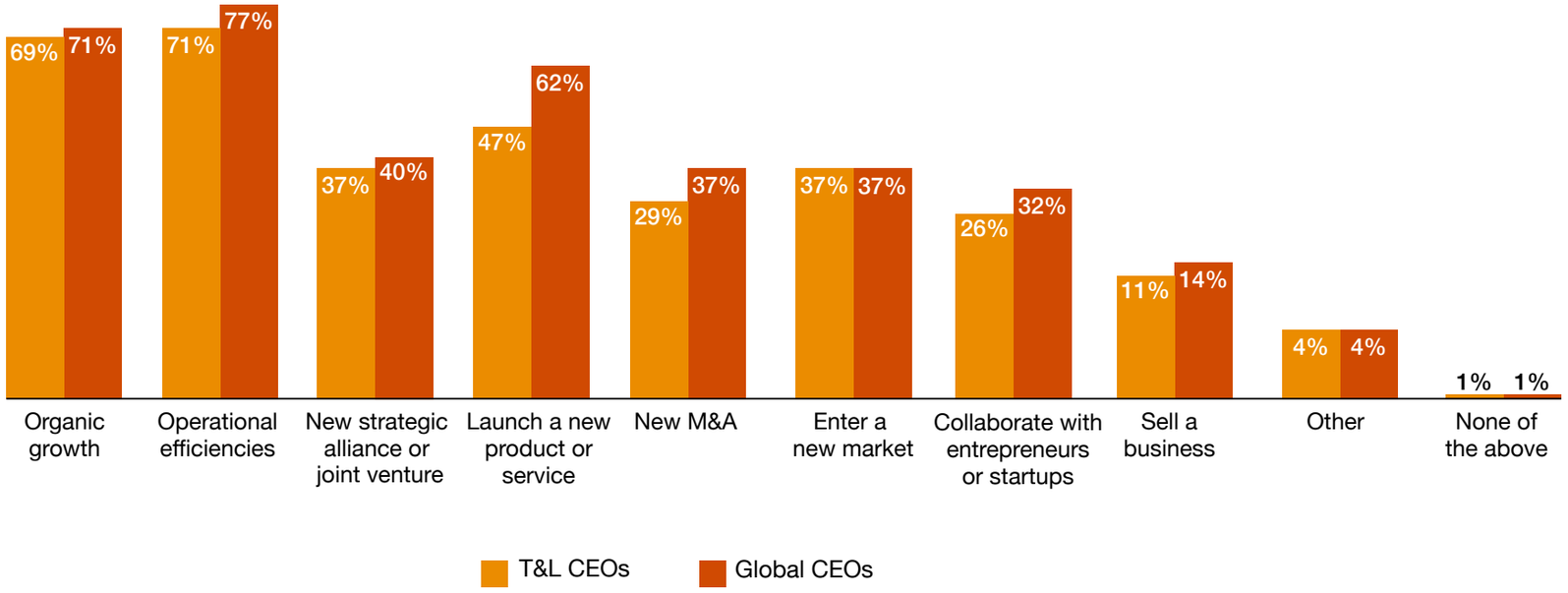
To survive in the midst of so much new competition and new technology simultaneously hitting the logistics segment of the transport and logistics industry, executives must be prepared to adopt new strategies more than they have been in recent years. Everything — including how operations are structured and managed, the way digital technologies are adapted for creative uses and approaches, and how the workforce is hired and deployed — is rife with change. The T&L business is generally not known for its technological agility or its propensity for rapid reinvention. Companies today shouldn't grow too comfortable with that old familiar way of doing business.

EXHIBIT

## Priority activities for T&L CEOs

QUESTION

**Which of the following activities, if any, are you planning in the next 12 months in order to drive revenue growth?**

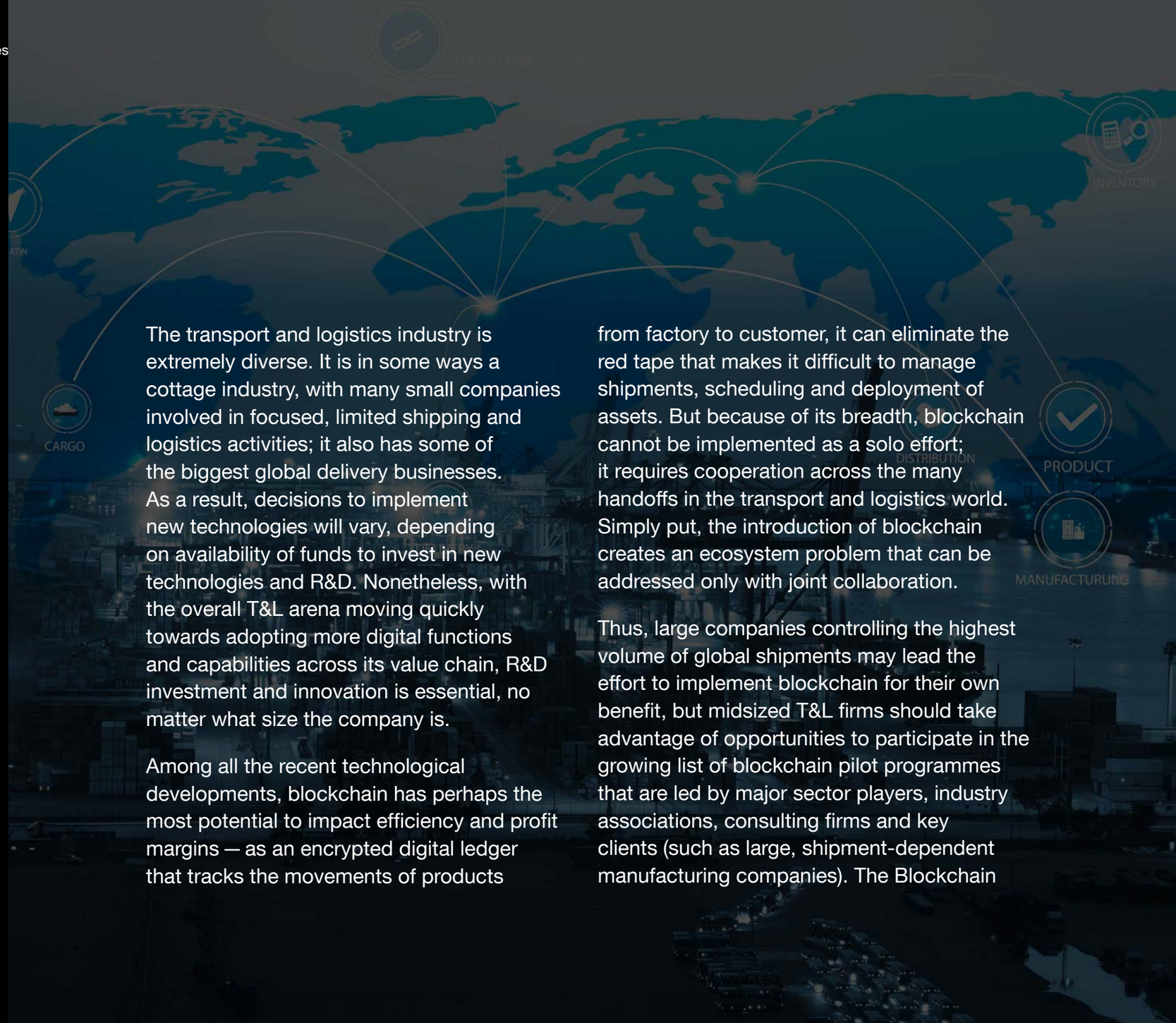



Source: PwC, 22nd Annual Global CEO Survey

Base: T&L CEOs (143); global CEOs (1,378)

# Strategy made real

**What are the best strategies transportation and logistics companies can use to adopt new technologies such as blockchain and artificial intelligence?**




The transport and logistics industry is extremely diverse. It is in some ways a cottage industry, with many small companies involved in focused, limited shipping and logistics activities; it also has some of the biggest global delivery businesses. As a result, decisions to implement new technologies will vary, depending on availability of funds to invest in new technologies and R&D. Nonetheless, with the overall T&L arena moving quickly towards adopting more digital functions and capabilities across its value chain, R&D investment and innovation is essential, no matter what size the company is.

Among all the recent technological developments, blockchain has perhaps the most potential to impact efficiency and profit margins — as an encrypted digital ledger that tracks the movements of products from factory to customer, it can eliminate the red tape that makes it difficult to manage shipments, scheduling and deployment of assets. But because of its breadth, blockchain cannot be implemented as a solo effort; it requires cooperation across the many handoffs in the transport and logistics world. Simply put, the introduction of blockchain creates an ecosystem problem that can be addressed only with joint collaboration.

Thus, large companies controlling the highest volume of global shipments may lead the effort to implement blockchain for their own benefit, but midsized T&L firms should take advantage of opportunities to participate in the growing list of blockchain pilot programmes that are led by major sector players, industry associations, consulting firms and key clients (such as large, shipment-dependent manufacturing companies). The Blockchain

strategy&
*Part of the PwC network*

in Transportation Alliance has more than 500 members globally, primarily T&L firms. The group's goal is to develop T&L industry blockchain standards and support new applications.

AI requires a different strategy because it is an internal innovation that T&L companies can implement only if they have investment resources, a technical workforce and a sufficiently robust data network. In those cases, AI, or machine intelligence, can serve in key roles in an organisation that can improve overall performance. For instance, an AI system can manage real-time decision-making for optimal carrier selection, routes and scheduling based on massive amounts of historical information. Or it can do predictive analysis, using inferences from the available data to plan the most efficient asset deployment and inventory management.

Because of the complexity and cost, AI systems in their broadest definition are not likely to be a major fixture in transport and logistics companies in the short term. However, small and midsized T&L companies should certainly make initial moves towards eventually integrating AI into their organisations by adding advanced robotics systems to their warehouses, shipping depots and inventory management programmes. Not only do these systems improve picking, packing and shipping activities, but they also make determinations about how to optimally store items and load trucks on the basis of factors including size, destination and perishability.

These suggestions could be viewed as ways to start small, using AI to build gradually towards creating a more innovative future. Even so, they should have an immediate payoff in enhancing efficiency, customer service and operational profit margins.

# Authors and contacts

**Germany**
**Peter Kauschke**
Director, PwC Germany
+49-211-981-2167
peter.kauschke@pwc.com

**Middle East**
**Dominik Baumeister**
Middle East Aviation, Transport & Logistics Leader
Partner, PwC Middle East
+971-54-793-4243
dominik.b.baumeister@pwc.com

**United States**
**Jonathan Kletzel**
US Transportation & Logistics Leader
Principal, PwC US
+1-312-298-6869
jonathan.kletzel@pwc.com

**Andrew Tipping**
Principal, PwC US
+1-312-298-4916
andrew.tipping@pwc.com

**Italy**
**Paolo Guglielminetti**
Partner, PwC Italy
+39 348 4020558
paolo.guglielminetti@pwc.com

**Guido Sirolli**
Partner, PwC Italy
+39 348 2740405
guido.g.sirolli@pwc.com

# About PwC's 22nd Annual Global CEO Survey

PwC conducted 3,200 interviews with CEOs in more than 90 territories. There were 143 respondents from the transportation and logistics industry; 14% of participating T&L CEOs reported an annual revenue greater than US$1bn, with 2% of these reporting more than US$10bn.

Notes:

- Not all figures add up to 100%, as a result of rounding percentages and exclusion of 'neither/nor' and 'don't know' responses.
- We also conducted face-to-face, in-depth interviews with CEOs and thought leaders from five continents over the second half of 2018. The interviews can be found at ceosurvey.pwc.
- Our global report (which includes responses from 1,378 CEOs) is weighted by national GDP to ensure that CEOs' views are fairly represented across all major regions.
- The research was undertaken by PwC Research, our global centre of excellence for primary research and evidence-based consulting services: www.pwc.co.uk/pwcresearch.

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