

The Work Ahead in Transportation & Logistics: Delivering on the Digital- Physical Value Chain

Business execs in the T&L industry appear poised to accelerate their long-overdue modernization drive, as the pandemic points to a future driven by digital channel fulfillment and an increased need for agility and resilience, according to our study.

Executive Summary

While one-quarter of respondents said they are using digital technology to improve organizational agility today, 60% say they will do so by 2023.

It's always darkest before dawn. After a blistering 2019 and a tumultuous 2020 — in which global trade flows fell by 9.2%¹ — economies are now opening, consumers are regaining their appetite, and ocean and freight transportation is gaining momentum. But for transportation and logistics (T&L) companies, there is no going back, no business as usual. There are new opportunities, and only new paths to get there.

While the 7R rule of value chain success will remain,² the old mantra now has a new twist: the need to adhere to Logistics 4.0 standards³ and the deployment of intelligent, resilient supply and demand networks to capitalize on an expanding e-commerce market. This calls for innovation, agility and early detection, new thinking and the very smart deployment of digital technology and automation. If Nietzsche is correct, then that which did not kill T&L should make it stronger.⁴ It will need to be.

To understand the changing nature of transportation and logistics in an increasingly digital world enduring global pandemic disruption, we surveyed 4,000 business leaders around the world and across industries, including 287 T&L executives (see methodology, page 21). We found an executive class eager to apply advanced technologies such as Internet of Things (IoT) and intelligent machines to change how work gets done. It took a pandemic to accelerate this long-overdue modernization drive, but T&L companies are still in the fight, ready for new opportunities and the work ahead.



A number of key themes emerged from our research and analysis:

1 The pandemic has been particularly brutal for T&L businesses. Two-thirds of T&L respondents (67%) indicate the pandemic had a negative impact on their business performance. This is much higher than the global average of 46% (only the travel and hospitality industry fared worse). With global trade still under pressure, more than one-third of respondents said the COVID-19 crisis will impact their long-term strategy, and over half (52%) said it has accelerated adoption of new, digital, working practices.

2 Silver lining: e-commerce = deliveries. High costs and capacity challenges crushed T&L companies in 2019, with a record number of truck carriers going bankrupt.⁵ It was the worst year in the sector's history in decades. Looking forward to 2020, what else could possibly go wrong?

Turns out that as turbulent as the year was, the pandemic provided a lifeline: House-bound consumers in shut-down economies turned to online shopping with a vengeance. This shift in consumer behavior resulted in a spike in trucking and last-mile deliveries, further widening the e-commerce frontier for T&L companies.

3 Have drivers, but droneless. Turns out that society and T&L companies aren't quite ready for the world of autonomous vehicles and drones delivering packages to our doorsteps. With only 11% of respondents with some level of autonomous implementations in place, the pandemic made clear there are bigger fish to fry.

For instance, the T&L sector far outpaces all other industries with its investment in IoT, which

promises intelligent management of extended value networks when combined with other advanced technologies such as AI and machine learning. Sleeper technology to watch: blockchain, for secure business partner transactions.

4 Moving to Logistics 4.0 with 3.0 skills? Without question, the implementation of AI, machine learning and automation signals major changes for companies and workers. New skills will be needed to manage the change, and the technology itself. As T&L business opportunities change, that will require further investment into an employee skills upgrade. As of now, the T&L sector is behind the average of all other industries in terms of identifying important skills, and it looks to stay that way through 2023. Particularly, they lack focus on customer care and communications. This needs to be remedied for the industry to capitalize on e-commerce.

5 What we didn't learn after 9/11. Trucks stuck at borders. Medical professionals scrambling to locate personal protection equipment. Consumers fighting over hand sanitizer. Vaccinations sitting in storage rooms. Words like agile, responsive and resilient don't pack much punch with these glaring failures of the 7Rs and the 21st century value chain.

T&L respondents got the message. Over half (56%) said they need to redesign their supply chain to build in greater resilience to shocks (compared with 50% for all other industries). While one-quarter (25%) of respondents said they are using digital technology to improve organizational agility today, 60% say they will do so by 2023. Interestingly, almost half (48%) say they will re-shore some previously outsourced activities over the medium term in response to the pandemic.

Success is spelled with 7Rs

Those companies that had already embraced Logistics 4.0 and developed resilient value chains were better positioned to endure the disruption. No wonder over half of T&L respondents (52%) expect accelerated adoption of new, digital, working practices.



T&L companies thrive and compete on two basic drivers: cost and service. Adhere to the 7Rs, but do so at the lowest cost possible. It’s a simple formula, but it applies to a complex network of competing factors — many that are not entirely controllable by any given company.

T&L businesses rely on a sophisticated command-and-control structure to support an extended and vibrant chain of operations. Deep visibility and early detection provide the agility to respond to barriers and opportunities as they arise. Yet, as 2020 demonstrated, global trade disruptions, fluctuating fuel prices and a major shift in consumer behavior put T&L companies’ reflexes and abilities to the test.

In fact, aside from travel and hospitality, the T&L industry was the most negatively impacted by the pandemic in our study. A total of 67% of T&L respondents, in fact, reported a hit to business performance due to COVID-19, compared with the global average of 46%.

While 2020 was an extreme example, control is often a fleeting concept in T&L. Operations are always one storm, one breakdown, one unforeseen barrier away from needing adjustment and a new round of analysis and optimization.

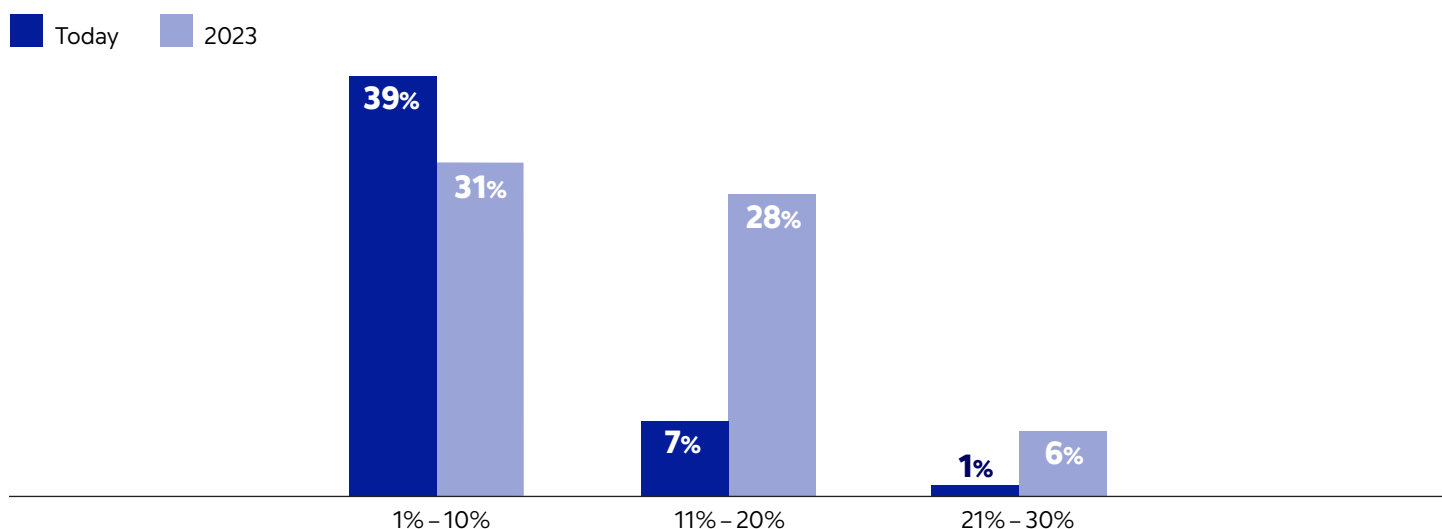
For this reason, those companies that had already embraced Logistics 4.0 and developed resilient value chains were better positioned to endure the disruption. No wonder over half of T&L respondents (52%) expect accelerated adoption of new, digital, working practices.

E-commerce turns the T&L tide

An externality of the social distancing and “shutdowns” has been the demand for home deliveries, which resulted in the accelerating growth of e-commerce. According to the U.S. Census Bureau, total e-commerce sales for 2020 were estimated at \$791.7 billion in the U.S., an increase of 32.4% from 2019. E-commerce sales in 2020 accounted for 14% of total sales, up from 11% in 2019.⁶

Big rise in digital channel revenue

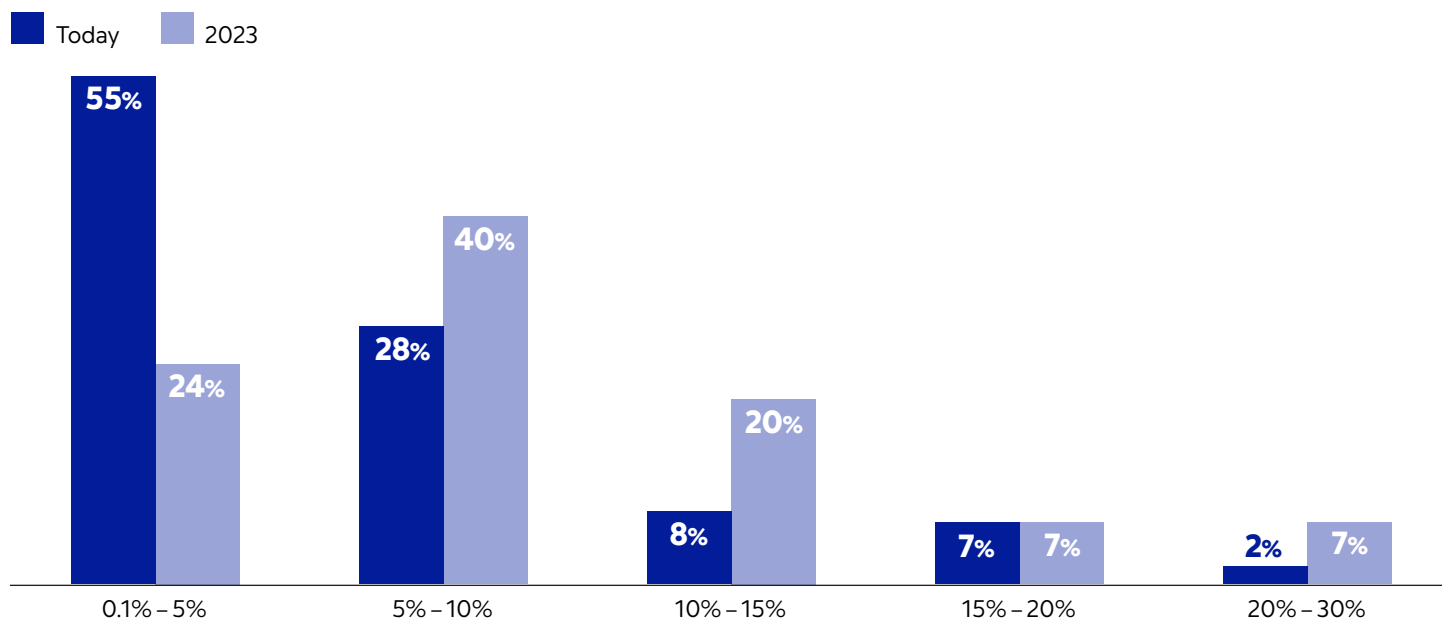
Respondents were asked what percentage of their total revenues were derived from digital channels. (Percent of respondents)



Response base: 287 T&L senior executives
 Source: Cognizant Center for the Future of Work
 Figure 1

Tech investments low but growing

Respondents were asked what percent of their total revenue is invested in technology. (Percent of respondents)



Response base: 287 T&L senior executives

Source: Cognizant Center for the Future of Work

Figure 2

That growth opportunity is finding its way into T&L digital channels. Currently, a plurality of respondents (39%) reports digital channels accounting for 1% to 10% of total revenues today, which is roughly equivalent to all other industries (see Figure 1). However, driven in part by the e-commerce opportunity, the plurality (28%) shifts to the 11% to 20% range by 2023, with another 6% looking at the 21% to 30% level, which is also equivalent to other industries.

While this dramatic online sales growth has been a boon for trucking and last-mile deliveries, it also raises expectations: As retailers focus on omnichannel strategies, it calls for a sophisticated, efficient digital channel strategy from T&L companies to meet these elevated order fulfillment and warehouse management requirements.

IT spending, however, has been relatively modest: Over half said their technology budgets were currently pegged at 5% of revenues or less, which is lower than the average of other industries. However, 40% said their budgets would move into the 5% to 10% of revenue range by 2023 (see Figure 2).

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Making the move to Logistics 4.0

Not surprisingly, the T&L sector outstripped all other industries in its implementation of IoT. Currently, over half of T&L companies have implemented IoT (vs. the cross-industry average of 42%), and among those, 20% have implemented it widely.



T&L businesses had begun laying the groundwork for a smart value chain ecosystem decades ago, connecting technology building blocks such as ERP and MRP systems, bar codes and RFID, forecasting systems and GPS to gain control over the movement of their assets and inventory. The next stage, to Logistics 4.0, is to incorporate digital technologies, including IoT, analytics, cloud computing and, increasingly, AI and machine learning.

Like Industry 4.0, Logistics 4.0 calls for using these advanced technologies to gain clear visibility into real-time location, detect demand signals, optimize inventory and automate warehouse functions. It's a big, but necessary lift. The interconnection of Industry 4.0 and Logistics 4.0 helps businesses move away from business-as-usual through technologies that automate, analyze, self-diagnose, self-configure and optimize virtually on their own. This approach provides visibility, agility, resiliency — the ability to identify and adapt to black swan events. Like pandemics.

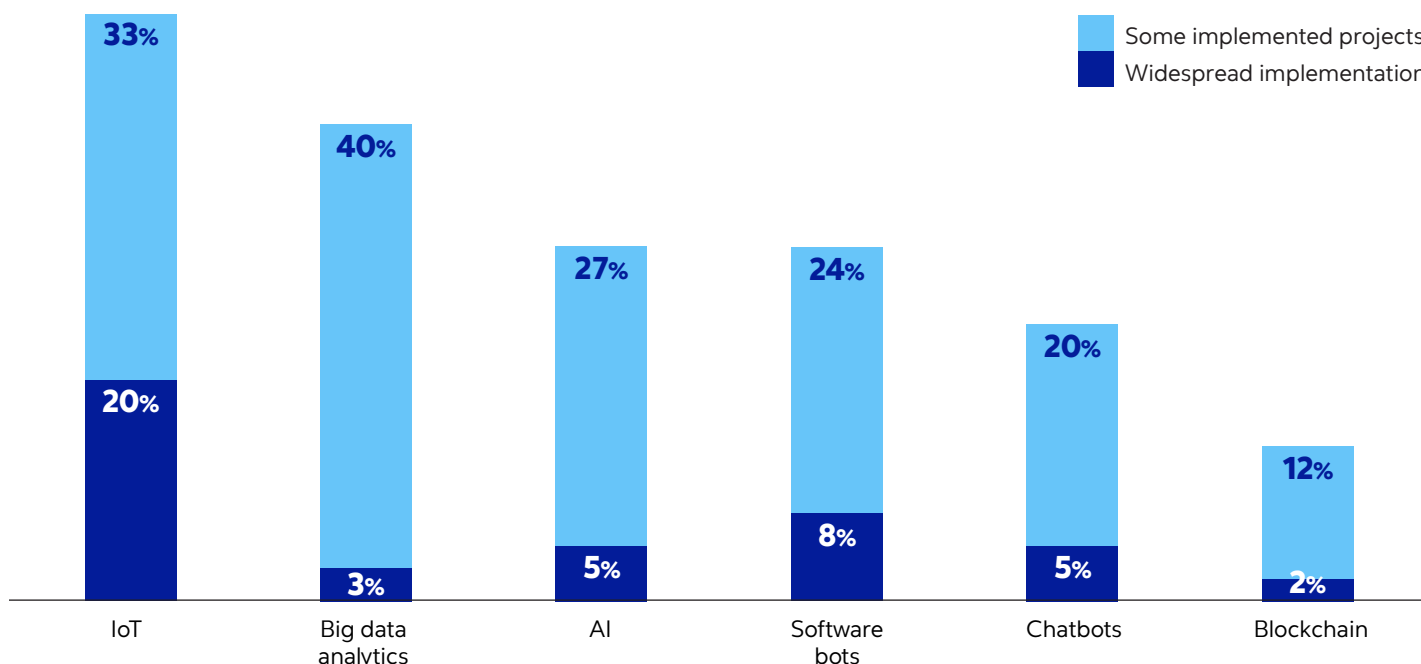
With the emphasis on Logistics 4.0, T&L companies, on average, had achieved a slightly higher level of digital technology implementation (23%) compared with the cross-industry average (19%). Not surprisingly, this sector outstripped all other industries in its implementation of IoT. Currently, over half (53%)

of T&L companies have implemented IoT (vs. the cross-industry average of 42%), and among those, 20% have implemented it widely (see Figure 3).

Because IoT generates data from devices that can be tracked from a remote location, it enables location tracking and route management of delivery trucks in real-time. This helps logistics managers identify and mitigate obstacles while optimizing fleet utilization. Leveraging IoT has also become a foundation for inventory management, as it is used to gauge and report on product levels and identify their location and status. It also can be used to perform condition-based management, which analyzes equipment performance parameters and operating conditions to determine maintenance needs prior to breakdown.

IoT and analytics lead in tech adoption

Respondents were asked to rate the progress they've made in implementing technologies to augment processes. (Percent of respondents)



Response base: 287 T&L senior executives
 Source: Cognizant Center for the Future of Work
 Figure 3

Another critical technology building block is big data, the lifeblood for analytics and forecasts. Data analysis has become essential to virtually every value supply chain process, whether it be operational information in warehouse management, location and distance data for fleet management, or production or stocking data for supply chain operations.

Since it is critical for performance analysis in value chain management, it's not surprising that 78% of all respondents said they expect business analytics to impact their work operations by 2023. Over 40% of industry respondents have a big data project in place, although only 3% have implemented it widely.

Going forward, T&L respondents indicate that blockchain has major potential, likely for digitizing partner transactions. Roughly one-third of respondents said they are now conducting blockchain pilots (33%), which is slightly above the norm for other industries (30%). The cryptographic security, distributed ledger architecture and network consensus mechanism enables point-to-point exchange of business information such as transactions and product specifications in a secure, accurate and timely manner.

Artificial intelligence up ahead

Currently, the uptake for AI is not as strong among T&L respondents as for other digital technologies. More than one-

third (32%) of respondents said they have an AI implementation (5%, widely). However, there is very strong potential to use AI to move to an opportunistic footing. An immense opportunity exists now for applying AI to e-commerce operations. Online consumers require instant access to information regarding product availability, shipping cost and time to delivery — all prior to purchase. AI will play a major role in not only generating these insights but also in predicting inventory levels and seasonality by locations and market segment.

While T&L respondents report modest AI implementation so far, they indicate the technology will play a greater role in their future operations. The vast majority (93%) said AI will have a meaningful impact on their work by 2023.

AI will also play a key role in another important component of e-commerce-enabled logistics: predictive demand and network planning. Demand planning enables companies to move to a proactive posture, where they can allocate resources, vehicles, warehouses and inventory to positions that enable them to seize market opportunities while optimizing resource utilization.

While companies have used demand forecasting tools for years, AI and big data enables them to analyze unprecedented data volumes and make previously impossible predictive calculations. By knowing what to expect, companies can align fleets with predicted demand, create higher confidence forecasts and, ideally, drive down operational costs.

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Intelligent machines prepare to deliver

Looking to 2023, respondents expect the largest growth areas for intelligent machine use will be in process automation, feedback, process improvement and the execution of routine, rules-based decisions.



Intelligent machines are already taking on more tasks for T&L respondents, with even adoption across all areas measured in this study (see Figure 4). This suggests that machines are already displacing elements of human work in routine, rules-based processes, while augmenting non-routine tasks such as complex decision-making and process improvement.

Using the median measure of adoption, respondents report that intelligent machines are executing, on average, 15% of the work involved across the range of tasks in our study (see Figure 4). That is expected to increase to 21% by 2023.

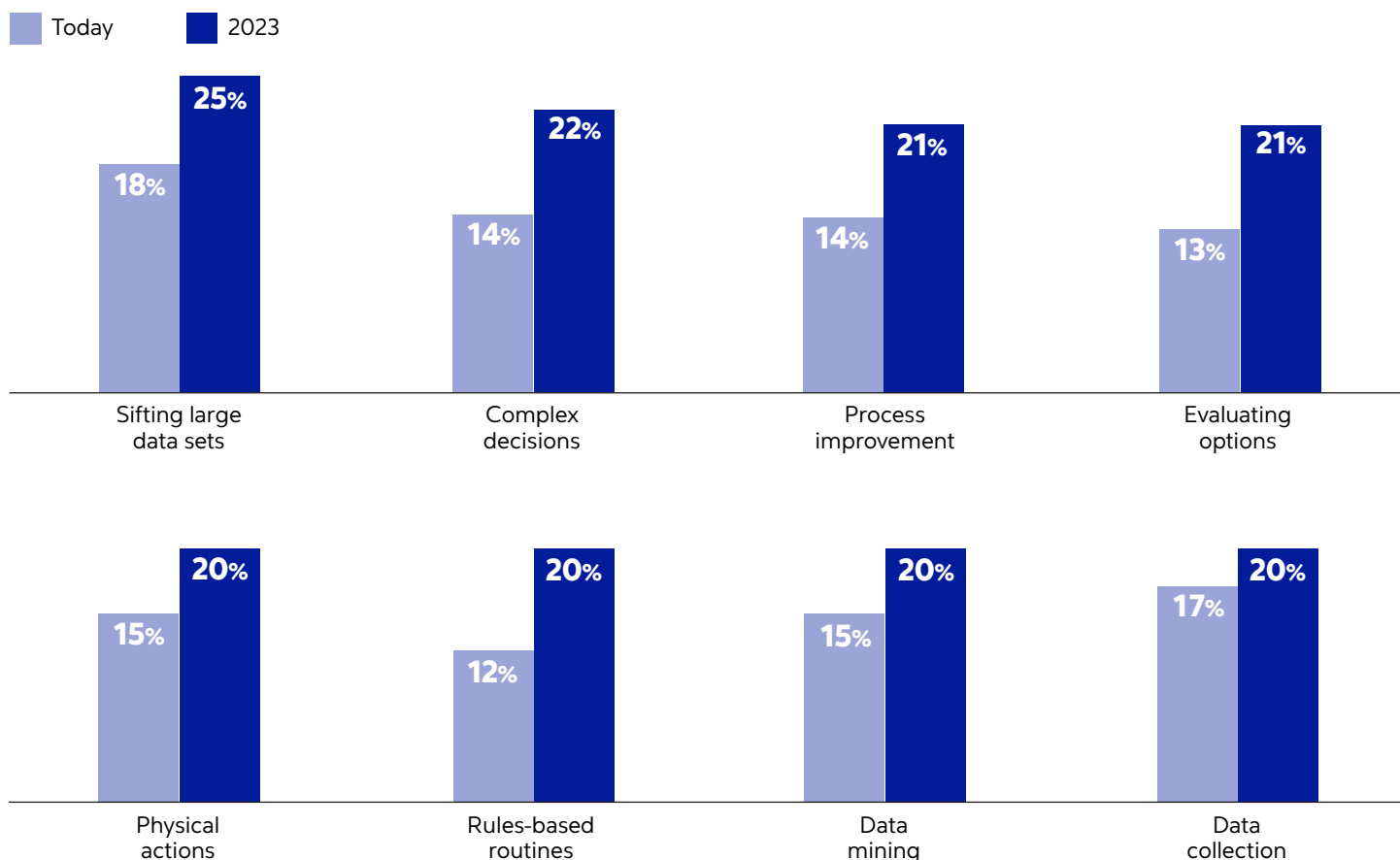
Machine learning offers great potential for T&L businesses, as interactions between suppliers and customers involve millions of transactional records and documents, which are then used to develop guidance for future value chain decisions. Using

algorithms to quickly sort and identify supply chain network data patterns, machine learning is astute at identifying the influential factors for decision-making.

Here, the combination of IoT, analytics and machine-learning algorithms can help T&L companies sift massive amounts of data, quickly. Using machine learning in this manner would mean drastically less human involvement in data analysis, while perpetually improving demand forecasting accuracy.

Machine adoption steadily advances

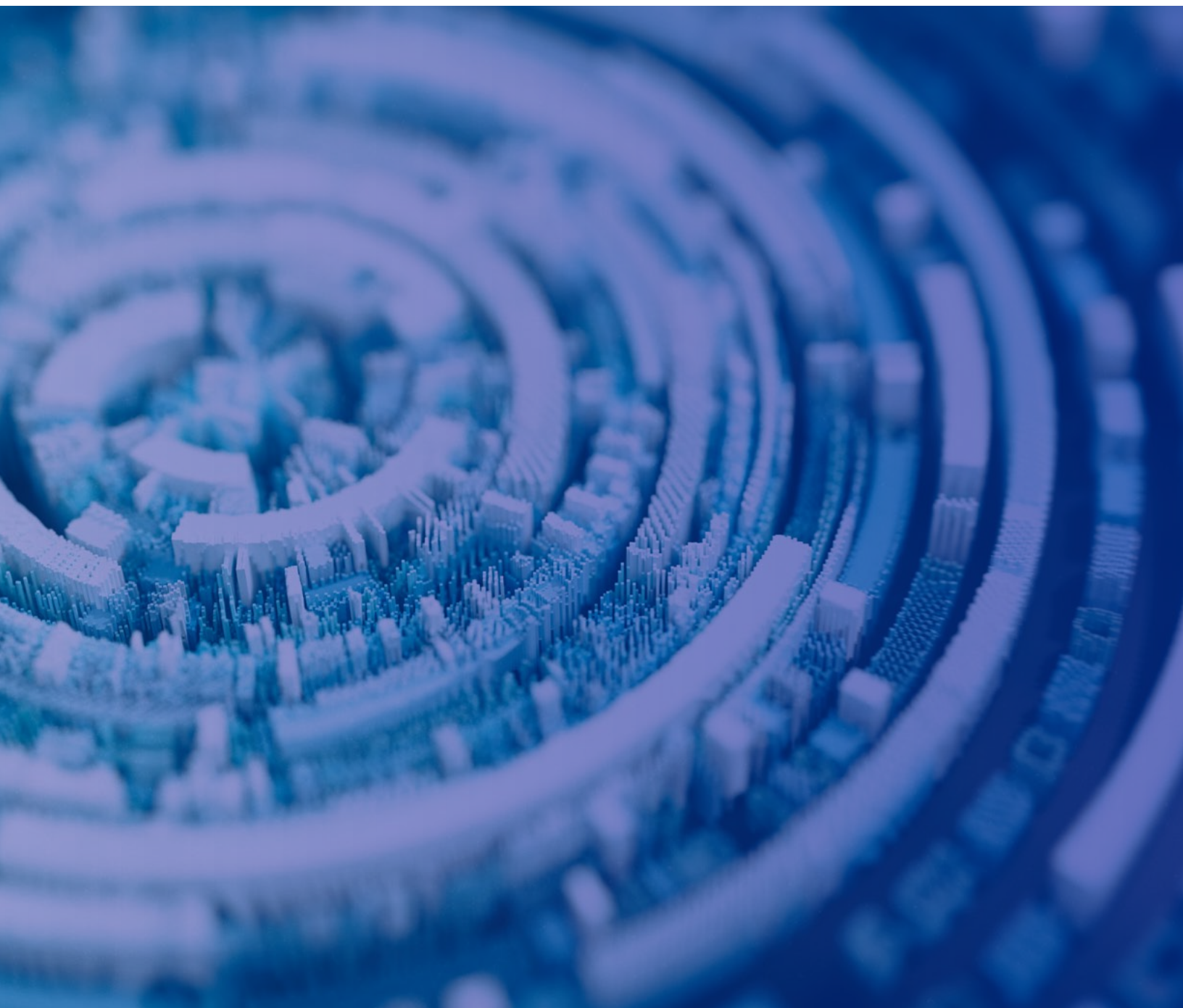
Respondents were asked to what extent the following activities are carried out by machines vs. employees, today and in 2023. (Median percent of work executed by machines)



Response base: 287 T&L senior executives
 Source: Cognizant Center for the Future of Work
 Figure 4

For example, by using AI to analyze data from various sources (including thousands of social media comments about weather or traffic), shipping companies can plug dozens of different data parameters (including associated anomalies such as weather and equipment maintenance) into a machine-learning model that accurately calculates the cost of shipping freight. One-half (50%) of respondents said they expect to have intelligent technology like this in place by 2023 to help with complex decisions.

Currently, the widest use of machines among T&L respondents is in sifting large data sets to filter and identify errors or actionable items. This is followed by the collection, curation and management of data and data collection. Looking to 2023, respondents expect the largest growth areas for intelligent machine use will be in process automation, feedback, process improvement and the execution of routine, rules-based decisions.



New skills: help wanted



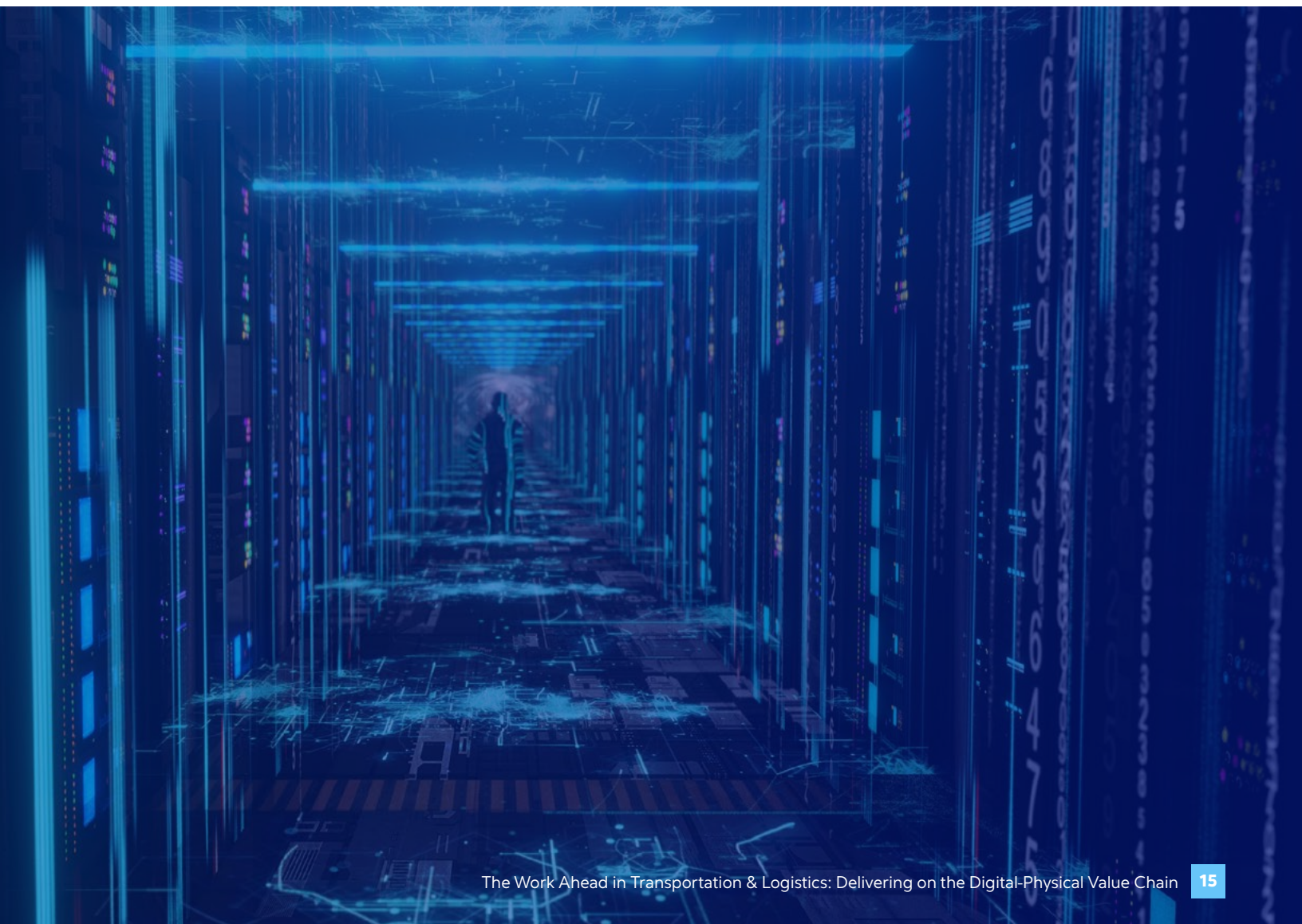
The T&L sector's immersion into e-commerce will affect skill demand. It will involve new sales and marketing skills among employees with direct involvement with manufacturers and warehouses. These roles will involve new products and services, faster product cycles, new terminology and culture, all while meeting the needs of new types of customers.

The automation-driven conversion to Logistics 4.0 represents a great deal of change for T&L organizations. Already, the impact is being felt as AI, robots and automation are being used to enhance and replace operational functions throughout the value chain.

Over half (57%) of respondents expressed concern about automated technology replacing workers. Of those, 12% said they were significantly concerned (one of the highest levels among all industries).

Conversely, less than half (43%) of respondents contend that digital technologies will help them stay employed, and only 39% (five percentage points lower than the cross-industry average) said they don't think digital technologies would protect them from being replaced by robots and automation. Further, a large majority (87%) said they will increasingly recruit "talent on demand," as permanent jobs become replaced with part-time or temporary workers.

Amid these concerns, a recent McKinsey & Co. study suggests that factors such as labor substitution, talent shortages, regulation and social acceptance have moderated some of the fears regarding AI and automation.⁷ Rather than emphasizing the job displacement that digitally enabled processes might cause, T&L businesses also need to focus on the change management and upskilling involved, as these automated processes will require multidisciplinary skills from various roles across the value chain, including IT, purchasing agents, distribution and operations managers, demand and supply chain managers, and company leadership. Talent gaps exist now across key areas, with 88% of respondents anticipating global talent shortages going forward as skills requirements change.



‘Learning’ joins decision making and leadership as a top skill

Respondents were asked to rate which skills had become more important than previously and which would become more important by 2023. (Percent of respondents)

2020	IMPORTANCE	2023
Decision making (39%)	1	(55%) Decision making
Leadership (37%)	2	(55%) Leadership
Analytics (33%)	3	(53%) Learning
Strategic thinking (35%)	4	(52%) Strategic thinking
Communication (26%)	5	(49%) Analytics
Customer care (25%)	6	(48%) Interpersonal
Interpersonal (20%)	7	(46%) Communication
Learning (17%)	8	(44%) Customer care

Response base: 287 T&L senior executives

Source: Cognizant Center for the Future of Work

Figure 5

It is also worth considering how the T&L sector’s immersion into e-commerce will affect skill demand. Online service is more than Logistics 4.0 technology and traditional logistics processes. It will involve new sales and marketing skills among employees with direct involvement with manufacturers and warehouses. These roles will involve new products and services, faster product cycles, new terminology and culture, all while meeting the needs of new types of customers. In short, it creates demand for new roles and new skillsets.

Specifically, T&L respondents are placing increased emphasis on leadership and decision-making, with both ranking as the most important skills heading into 2023 (see Figure 5). Customer care, which 25% of respondents rank as the top skill today, will also rise in importance, to 44% of respondents

by 2023. Still, it remains the lowest-ranked skill for 2023, which suggests the sector has yet to embrace the key skill requirements for an e-commerce-driven future.

The vast majority of respondents (89%) acknowledged that digital technology will cause jobs and skills to change to a great extent, while 90% said that work would require greater expertise. At the same time, most (89%) envision a work environment in which employees will collaborate with machines — rather than be displaced by them — to augment job effectiveness. To that end, some organizations are beginning to adopt “Robotics Quotient” measures, which scores employees’ ability to work effectively with robots, and to help ease the change management challenges that automation and AI present.⁸

Linking a resilient value chain

Over half of T&L respondents said they intend to redesign their supply chain to build in greater resilience to shocks such as those experienced over the past year. Accordingly, two of the highest and fastest growing areas of investment for digital technology are decision making and organizational agility.



As crises often do, the pandemic exposed the weaknesses and strengths of global supply networks. Evidence suggests that value chains with Industry 4.0 capabilities fared far better than those that did not.⁹

Over half of T&L respondents said they intend to redesign their supply chain to build in greater resilience to shocks such as those experienced over the past year. That ability would enable not only an agile response to factory shutdowns, border closings and spikes in consumer demand but also greater business efficiency.

Against this backdrop, however, only 18% of T&L respondents ranked supply chain and partner management as their highest priority for augmenting processes with digital technology. While that figure seems low, it is almost triple that of the cross-industry average (6%). Understanding the urgency going forward, over half (58%) of T&L respondents said they would prioritize supply chain operations for digital augmentation by 2023 (a 40 percentage point increase from today), compared with the cross-industry average of 18% (a 12 percentage point increase).

Meanwhile, an enduring principle of value networks is measuring operational efficiency via cost control. In lean operations, this focus is expressed as eliminating “muda,” the Japanese word for “waste.” Accordingly, two of the top three process areas targeted by T&L respondents for technology augmentation by 2023 include operational efficiency (e.g., cost savings, increased output, improved asset and inventory management) and operational effectiveness (e.g., higher quality, more reliable products and services) (see Figure 6).

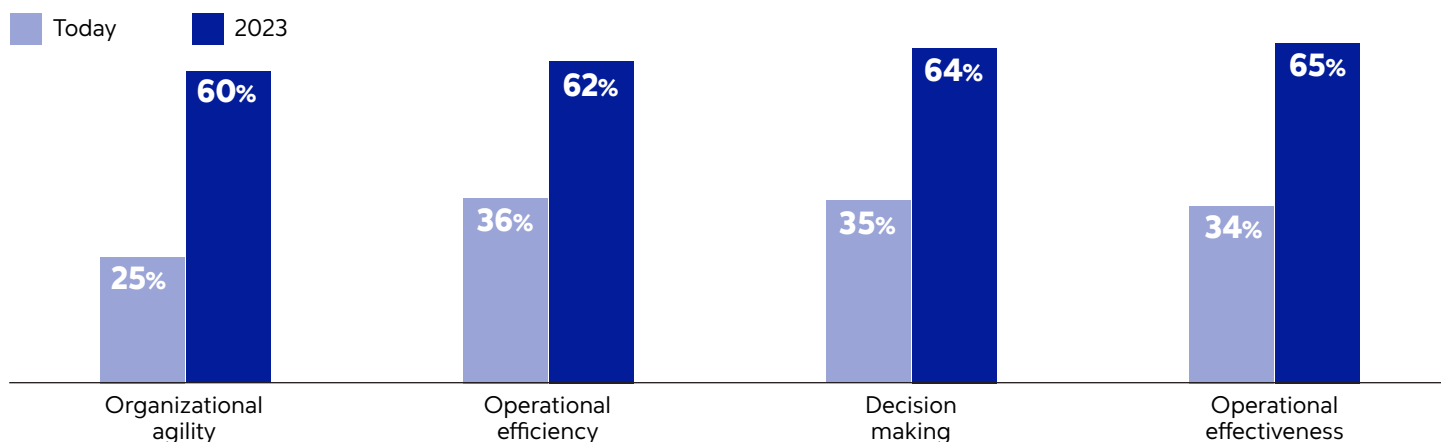
In each of these categories, the 2023 technology augmentation projections by T&L run about five to six percentage points higher than the average of all other industries.

Transportation and inventory represent the major cost categories, and are targets for optimization and cost reduction. In transportation, trucking represents the bulk of costs, which include fuel, maintenance, terminal handling, labor, capacity, utilization and regulatory compliance, among others. Addressing intense margin pressures, a majority (62%) of respondents said they will invest in digital technologies and approaches to drive operational efficiency and cost savings to eliminate waste. While many (48%) have seen modest gains as a result of these investments, nearly one-third report moderate (16%) or large (19%) performance improvements.

Moving toward resilience, two of the highest and fastest growing areas of investment for digital technology are decision making (e.g., more informed, accurate, intelligent) and organizational agility (faster and flexible decision making, product/service development). Over one-third (35%) of T&L respondents said they are using technology to augment decision making, while 64% say they will by 2023. Similarly, one-quarter (25%) now say they have augmented processes to achieve organizational agility, while that number more than doubles to 60% for 2023.

Agility is the greatest growth area for tech augmentation

Respondents were asked to describe their progress in implementing emerging technology to augment workforce performance in the following business processes. (Percent of respondents citing a large or very large increase)



Response base: 287 T&L senior leaders

Source: Cognizant Center for the Future of Work

Figure 6

Beyond planes, trains and automobiles

The implementation of IoT and big data provide a strong foundation, but Logistics 4.0 also calls for a greater use of AI, automation and machine learning to support and automate rapid, intelligent network decisions to achieve the 7Rs.



T&L businesses are ready to deliver digital technology improvement. A bill of lading for next-level change includes:

- Invest in your most important asset: employees. While leading-edge technology is a critical resource when pursuing digital transformation, it's only part of the story. The T&L sector is at the lower end of embracing the value of next-generation talent that will take the industry's digital transformation forward. As T&L moves into new spaces like e-commerce, it will call for new skills and roles that haven't been part of the traditional hiring chart. Businesses need to get creative, and use this opportunity to bring in talent that breaks down the existing silos.

- Manage organizational change.** Implementing AI, machine learning and software bots will ultimately result in many tasks being done by intelligent machines, particularly those that are rote and routine-based. This can be a threatening concept for many workers. Companies must acknowledge these concerns, and invest in the change management that will inform workers of plans, build trust and outline the path forward.

Doing so will require a higher sensitivity to automation-driven change. T&L leaders must think hard about how their staff will intersect with and use robots in their organization. New evaluation metrics that measure employees' ability to work effectively with robots should be explored to help ease the change management challenges that automation and AI present.

- Be bold.** The e-commerce deliveries stemming from a shift in consumer behavior has been a windfall for T&L. But just

as the sector must be nimble enough to circumvent delivery obstacles, it must do the same with its network infrastructure and operations. A vast majority (90%) of T&L execs said they expect the pace of industry disruption will only accelerate going forward. With the combination of shifts in consumer behavior and powerful new technologies already pushing digital transformation in the industry, leaders will be looking to get ahead of the curve.

- Use the cloud to cut costs.** Companies can achieve even greater operational efficiencies by consolidating and standardizing applications in the IT portfolio to reduce IT operating costs, while also moving to cloud-based platforms for non-core operations. A majority (69%) of T&L execs expect cloud delivery of services will further reduce delivery costs by 2023.

Emerging from the pandemic, T&L companies are ramping up their use of digital technology as they redesign and redefine their value networks. The implementation of IoT and big data provide a strong foundation, but Logistics 4.0 also calls for a greater use of AI, automation and machine learning to support and automate rapid, intelligent network decisions to achieve the 7Rs.

The future looks promising for digital technology to power autonomous delivery mechanisms now in development. Opportunity awaits those who get their people prepared for the work ahead in transportation and logistics.

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Methodology

Cognizant commissioned Oxford Economics to design and conduct a study of 4,000 C-suite and senior executives, including 285 from the transportation and logistics industry. The survey was conducted between June 2020 and August 2020 via computer-assisted telephone interviewing (CATI). Approximately one-third of the questions were identical to those included in the 2016 Work Ahead study, allowing us to compare responses and track shifting attitudes toward technology and the future of work.

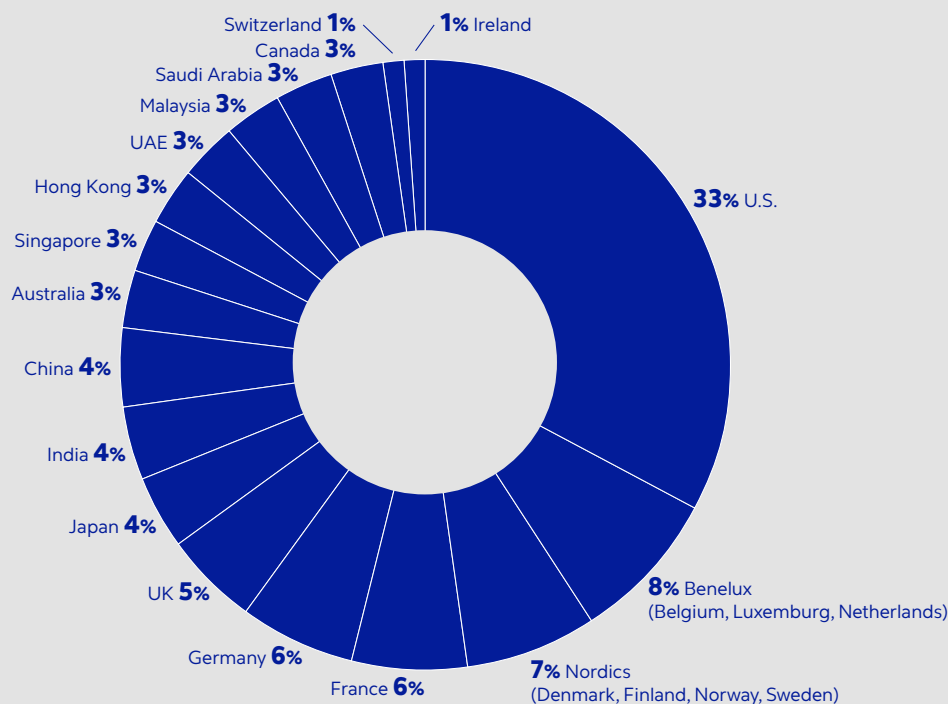
Respondents were from the U.S., Canada, UK, Ireland, France, Germany, Switzerland, Benelux (Belgium, Luxemburg, Netherlands), Nordics (Denmark, Finland, Norway, Sweden), Singapore, Australia, Malaysia, Japan, China, Hong Kong, India, Saudi Arabia and UAE. They represent 14 industries, evenly distributed across banking, consumer goods, education, healthcare (including both payers and providers), information services, insurance, life sciences, manufacturing, media and entertainment, oil and gas, retail, transportation and logistics, travel and hospitality, and utilities. All respondents come from

organizations with over \$250 million in revenue; one-third are from organizations with between \$250 million and \$499 million in revenue, one-third from organizations with between \$500 million and \$999 million in revenue, and one-third with \$1 billion or more in revenue.

In addition to the quantitative survey, Oxford Economics conducted 30 in-depth interviews with executives across the countries and industries surveyed. Interviewees who responded to the survey have a track record of using emerging technology to augment business processes. The conversations covered the major themes in this report, providing real-life case studies on the challenges faced by businesses and the actions they are taking, at a time when the coronavirus pandemic was spreading around the world and companies were formulating their strategic responses. The resulting insights offer a variety of perspectives on the changing future of work.

The following figures represent the demographics of the 4,000 respondents from the full global study.

Respondents by geography



(Percentages may not equal 100% due to rounding)

Respondents by role

- 13%** Vice President
- 13%** Chief Operating Officer
- 13%** Director reporting to senior executive
- 13%** Senior Vice President
- 12%** President
- 12%** Chief Executive Officer
- 12%** Chief Financial Officer
- 12%** Other C-suite Officer

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Euan Davis leads Cognizant's Center for the Future of Work in EMEA. A respected speaker and thinker, Euan has guided many Fortune 500 companies into the future of work with his thought-provoking research and advisory skills. Within Cognizant's Center for the Future of Work, he helps ensure that the unit's original research and analysis jibes with emerging business-technology trends and dynamics in Europe, and collaborates with a wide range of leading thinkers to understand how the future of work will look. Previously, Euan held senior analyst, advisory and leadership positions at Forrester Research, IDC and CEB.

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Endnotes

- 1 "Trade Shows Signs of Rebound from COVID-19; Recovery Still Uncertain," World Trade Organization, Oct. 6, 2020, www.wto.org/english/news_e/pres20_e/pr862_e.htm.
- 2 The 7Rs are aimed at getting the right good with the right quantity and right quality at the right time at the right place and in the right condition and at the right price.
- 3 Kesheng Wang, "Logistics 4.0 Solution: New Challenges and Opportunities," Proceedings of the Sixth International Workshop of Advanced Manufacturing and Automation," November 2016, www.atlantispress.com/proceedings/iwama-16/25862222.
- 4 Quote from philosopher Friedrich Nietzsche: "That which does not kill us makes us stronger." www.brainyquote.com/quotes/friedrich_nietzsche_101616.
- 5 "US Freight After COVID-19: What's Next?" McKinsey & Co., June 2, 2020, www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/us-freight-after-covid-19-whats-next.
- 6 Press release from U.S. Census Bureau, May 18, 2021: www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf
- 7 "Transforming Healthcare with AI: The Impact on the Workforce and Organizations," McKinsey & Co., March 2020, www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/transforming-healthcare-with-ai.
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Center for
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Cognizant's Center for the Future of Work™ is chartered to examine how work is changing, and will change, in response to the emergence of new technologies, new business practices and new workers. The Center provides original research and analysis of work trends and dynamics, and collaborates with a wide range of business, technology and academic thinkers about what the future of work will look like as technology changes so many aspects of our working lives. For more information, visit Cognizant.com/futureofwork, or contact Ben Pring, Cognizant VP and Director of the Center for the Future of Work, at Benjamin.Pring@cognizant.com.

About Cognizant

Cognizant (Nasdaq-100: CTSH) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build and run more innovative and efficient businesses. Headquartered in the U.S., Cognizant is ranked 185 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at www.cognizant.com or follow us [@Cognizant](https://twitter.com/Cognizant).

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