

Freight and Logistics

# Finding the right path to digital transformation



In the face of ongoing economic uncertainty, changing customer needs and new competitors, the Freight and Logistics (F&L) industry knows it needs to become more responsive, reliable and agile. Accelerating digital transformation is important, but not everyone is responding at the same pace or in the same way. Our research found some F&L companies are investing much more than others on digitalization—achieving a much higher and better-balanced digital maturity than their low-spending peers. But others in the industry are taking an alternative route. For half the investment, they have gained almost the same levels of digitalization.

**Which path is the right one for your organization?**

# Contents

<b>Executive summary</b>	<b>4</b>	Ocean carriers	26
<b>Digital state of play</b>	<b>5</b>	Port operators	28
<b>Find the right path to digital transformation</b>	<b>14</b>	Railroads	30
<b>Segment analysis</b>	<b>16</b>	Truck brokerage	32
Air cargo	18	Trucking	34
Contract logistics	20	<b>Contacts, Research team</b>	<b>36</b>
Courier, express & parcel	22	<b>About the research</b>	<b>37</b>
Freight forwarders	24	References	38

Characterized by low-margin business models, F&L companies have had very limited scope to invest in the digital initiatives advancing other industries. But the physical disruptions and economic shocks imposed by the pandemic, and even more recent geo-political impacts, have emphasized the importance for F&L players to rapidly accelerate their digital transformation.

According to our recent report, [Full Service. Full Stop](#), customers have strong expectations that the industry will lift its digital game to bring them greater transparency, better reliability, personalized experiences and end-to-end services.

Now, non-traditional competitors are delivering on these expectations. The logistics subsidiaries of e-commerce companies like Amazon and Alibaba are putting pressure on traditional F&L providers. By employing the full might of their digital power in logistics, e-commerce companies are raising customer expectations of the type of digital services F&L companies should offer.

At the same time, flush with increasing volumes of venture capital, eager start-ups are becoming formidable challengers. In 2021, the logistics sector attracted \$27.5 billion in venture capital—an increase of 80% over the previous year.<sup>1</sup>

To find out how the industry is responding to these challenges, in 2021 we conducted an extensive global survey of senior F&L executives to gain insights into their digital transformation progress and plans to further develop digitally driven F&L services.

### According to our research:

- While all respondents are increasing their spend on IT innovation, a small minority of Leaders, are investing heavily. These Leaders have already created competitive digital capabilities that put them well ahead of the rest of the industry—achieving a much higher and better-balanced digital maturity than their lower-spending peers.
- Another cluster, companies we termed ‘Efficient Followers,’ is hot on their heels. These companies

have digital capabilities at almost the same level as Leaders but achieved at half the cost. Meanwhile, a cluster of ‘Strivers’—who are spending significantly more than Efficient Followers—remain behind them in almost every measure of digital maturity.

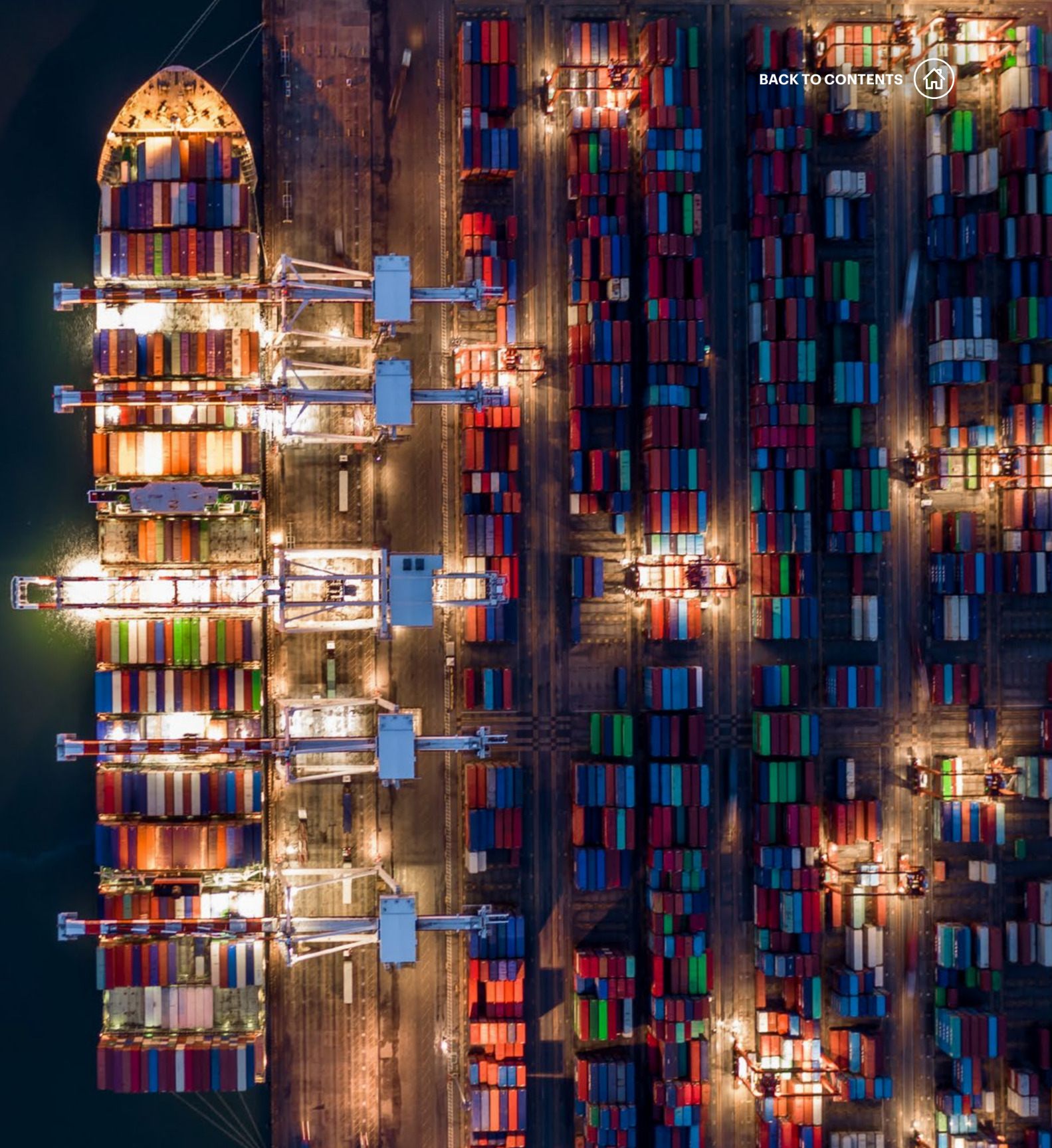
- The industry appears to be taking an inward-facing approach to digital investment, prioritizing internal data analysis and reporting over process automation or building a digital customer-facing front end.

This report explores the slow and uneven cadence of digitalization in the industry and offers strategic recommendations to F&L companies in different segments looking for smarter investment opportunities to accelerate their digital transformation.

**We hope our insights will help you on your digitalization journey.**

# Digital state of play

More than three-quarters of our survey participants believe the industry has historically lagged behind in digitalization maturity. 76% say that any F&L company not focusing on building digital capabilities will seriously endanger their business.



Over the long term, the F&L industry has operated in a low-margin yet highly dynamic and challenging business environment. It is therefore only natural for F&L companies to prioritize technology investments in operational process innovation above digital initiatives to tackle disruption.

But now these companies have no choice but to embrace digital innovation. Digitalization will become ever more critical as F&L companies try to conduct business in a perpetual state of volatility. The industry is being buffeted by lockdowns in China, rising fuel prices due to the Russia-Ukraine war, sky-high customer expectations, disruptive new entrants, the decarbonization imperative and the increasing threat of cyber-attacks.

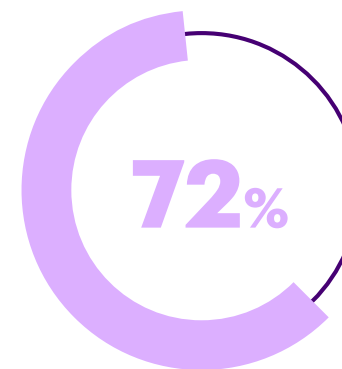
With the inflationary environment putting increasing pressure on margins, new digital capabilities will be essential to survival. F&L companies will need both operational and customer-facing digital capabilities to stay solvent and relevant. More efficient business models will be needed. Integrated, high-quality data will be required to meet customer demands for F&L companies to report on costs and operational performance, provide transparency around ESG metrics and orchestrate full-service logistics.

## Slow, uneven progress

Our research shows an industry in various stages of building the foundational technologies that will allow companies to respond to the above imperatives. According to 76% of our respondents, the pandemic has emphasized the importance of technological capabilities. The industry executives we interviewed are also mindful of the threat posed by the e-commerce giants, whose agile, streamlined, customer-friendly and cost-competitive logistics services are setting the benchmark.

Yet, to date, the industry’s digitalization progress has been patchy. Our respondents acknowledge that digital maturity varies widely between different functions—and a significant percentage of logistics companies have fallen behind their peers.

Even the industry’s most sophisticated digital leaders have functional areas or processes that still lag other industries with fully built-out digital capabilities. Many of those further behind have yet to get to grips with the transformation task ahead of them.



**of respondents agree: “Overall, at an industry level, there is not only an ignorance of digitalization, but also a lack of roadmap in terms of what needs to be done”**

# What do the industry's digital Leaders look like?

Based on their digital maturity, measured against 10 digital capabilities grouped into three transformation vectors, we identified 20% of our surveyed organizations who are ahead of the pack. A group we have named 'Leaders.'

## Digital Maturity Assessment

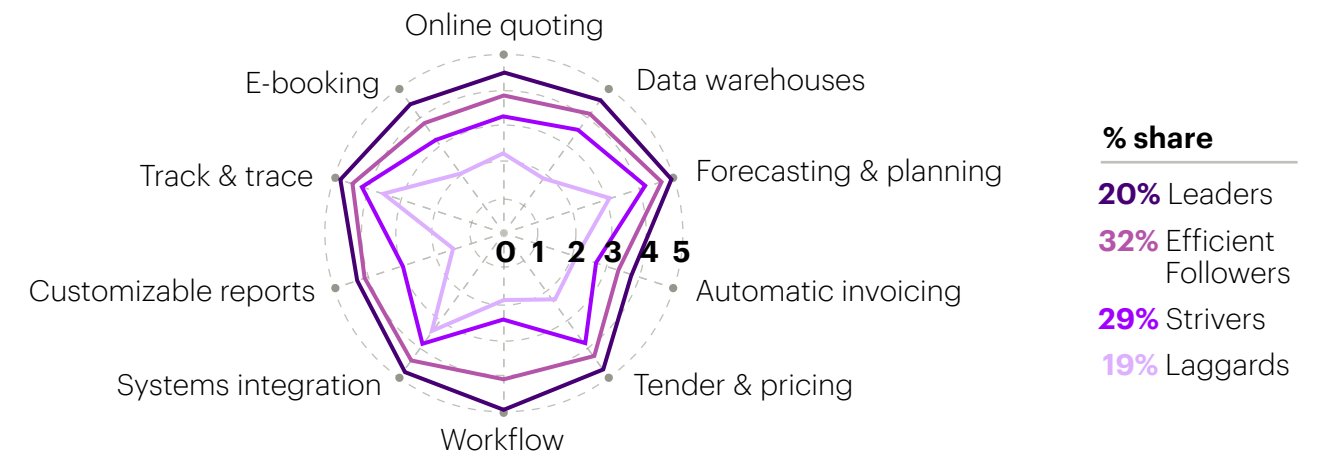
Three transformation vectors (and 10 capabilities)					
A	Customer front end	B	Process automation	C	Data management
1.	Online-quoting systems	5.	Systems integration	9.	Data warehouse
2.	E-booking systems	6.	Operational workflow management systems	10.	Forecasting & planning systems
3.	Track & trace functionality at the shipment level	7.	Automatic invoicing		
4.	Ability to customize customer reports	8.	Tender & pricing systems for freight eProcurement		

These companies may not quite have the convenient and attractive customer experience offered by the e-commerce giants. However, in terms of core F&L digital capabilities, Leaders are performing significantly better than their peers. With a digital maturity score of 4.60 (out of 5), they have advanced digital capabilities demonstrating a balanced transformation approach.

Leaders have developed their position by virtue of a large and growing investment in the percentage of IT spend allocated to innovation. Their proportion of innovation spend is currently 2.5x more than 'Laggards'—the 19% of respondents with the lowest digital capabilities across all metrics.

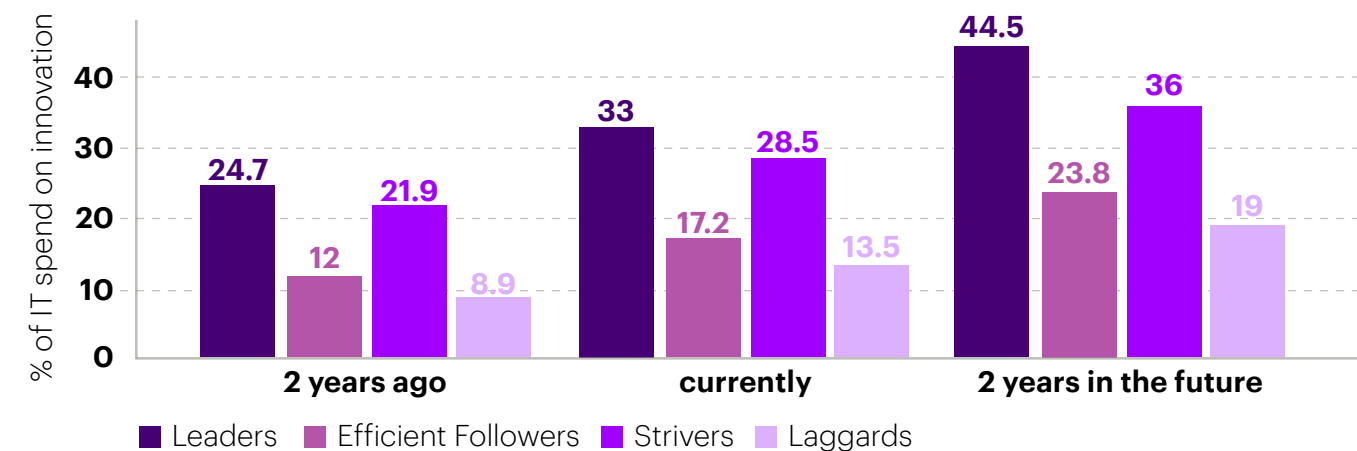
Interestingly, Leaders tend to be smaller companies (<\$1bn in revenue). They appear more frequently in the truck brokerage and contract logistics segments.

## Digital Maturity Profiles



Source: Accenture Freight and Logistics Digitalization Research, 2021

## IT Spend on Innovation by Cluster

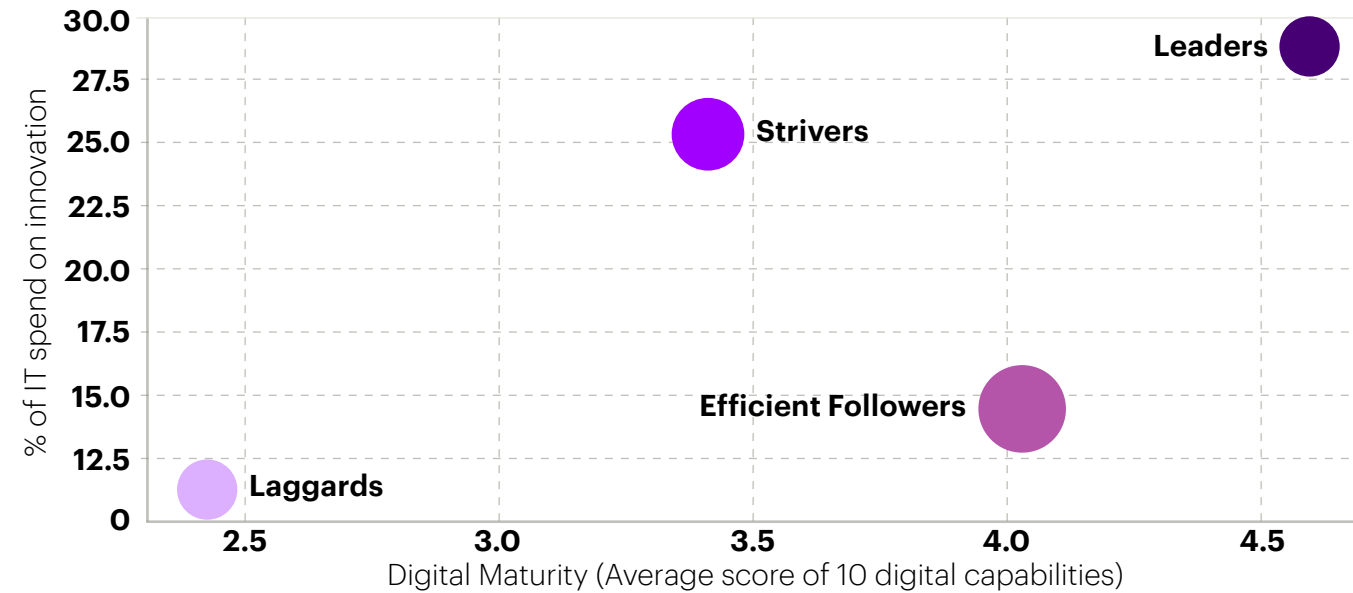


Source: Accenture Freight and Logistics Digitalization Research, 2021

## Uneven return on investment

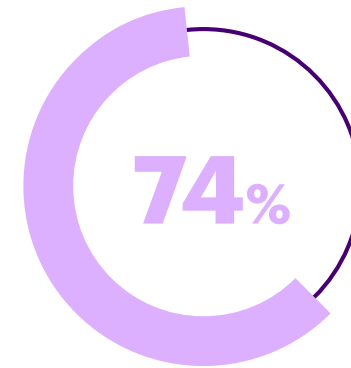
Not all innovation investment translates into strong digital capabilities, as evidenced by the 29% of respondents who fall into the cluster we termed ‘Strivers.’ These companies have been investing in innovation at almost the same levels as Leaders, but their digital performance remains low, with a digital maturity score of 3.41 (out of 5).

Strivers are equally distributed among the surveyed logistics segments and are not predicted by company size. But whether for cultural, structural or strategic reasons—their innovation IT spend is not fully translating into advanced digital capabilities and their transformation portfolio is unbalanced.



The bubble size represents the number of companies from the sample. The larger the bubble, the more companies in the cluster.

Source: Accenture Freight and Logistics Digitalization Research, 2021



of respondents agree: “Even the leaders of the logistics industry have functional areas or processes where they are far behind in terms of digital capabilities”

## Meet the Efficient Followers

Leaders aren’t the only cluster showing a strong digital maturity. Almost a third (32%) of the surveyed companies fall into the surprising cluster of ‘Efficient Followers,’ with a score of 4.07 (out of 5). These businesses have managed to achieve similar, if slightly lower, digital maturity levels to those of Leaders—but for less than half of their percentage of IT spend on innovation.

The cluster of Efficient Followers includes a high portion of middle (\$1bn to \$5bn in revenue) and large (>\$5bn in revenue) companies and they appear more frequently in the freight forwarders segment. They prove that building a well-balanced portfolio of digital capabilities can be achieved at moderate investment levels if companies take a strategic and efficient approach to transformation.



## Inward-facing digital priorities

Many F&L companies may perceive the pace of their digitalization progress as appropriate, but our research shows they have only scratched the surface. Most are focusing on improving internal operations. Not enough are addressing the need to digitalize customer-facing processes.

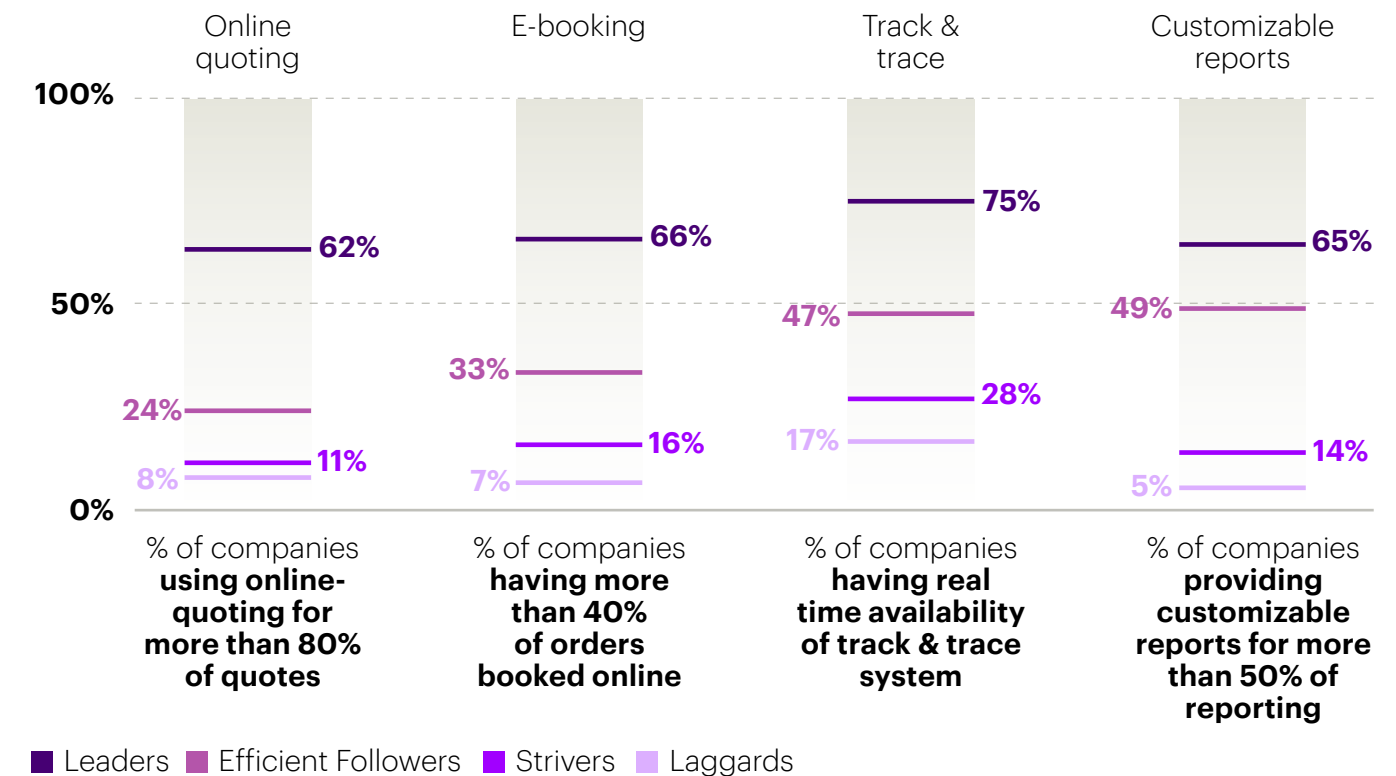
### Neglecting the customer front end

Research shows that improving the customer experience should be the industry's top priority. Indeed, 80% of respondents characterize investment in customer-facing automation as 'important' or 'very important.' However, they also say investment in customer front-end functionality is currently their lowest priority and only a few have fully built out a digitalized customer front end.

Clearly, this is an area where many F&L companies need to improve. As digital-first start-ups with an obsession for customer centricity make their presence felt, a clunky customer interface could soon become a liability. Analysis suggests that front-end digitalization efforts could usefully focus on:

- **Online quoting:** 62% of Leaders leverage their online quoting system for more than 80% of their quotes; whereas this is only true for a minority of Efficient Followers, Strivers and Laggards. For most companies in these lagging clusters, only 50-80% of their quotes are processed online.
- **E-booking systems:** Although the overall level of e-booking is not yet well developed, two-thirds of Leaders say more than 40% of their orders are

Customer Front End Maturity



Source: Accenture Freight and Logistics Digitalization Research, 2021

booked online. As for Efficient Followers, Strivers and Laggards, most have online booking levels of 30-40%.

- **Track & trace capabilities:** Real-time track & trace capabilities are crucial if F&L companies are to manage their logistics operations in an agile and efficient manner. Already, three-quarters of Leaders are using track & trace in real time. However, this capability is significantly lower in Efficient

Followers and, in particular, Strivers and Laggards, which typically have data available only after 24 hours.

- **Customizable reports:** Customized reporting is an increasingly important capability to better meet F&L customer needs. However, Leaders and Efficient Followers are the only clusters with meaningful percentages of companies offering customization on more than 50% of reporting. Most Strivers and Laggards provide customizable reports for only 30-50% of their reports.

### Still transitioning to digital processes

The F&L industry is lagging others in process automation. Three-quarters of our respondents still have a large percentage of analog office administration processes, including those for processing jobs, warehouse operations and accounting. Their plans to automate these processes are focused on the medium term (within the next five years), suggesting a lack of urgency to acquire entry-level digital capabilities.

“Logistics is an operations-focused industry. The talent we build is focused on operations. As an industry, we are relatively less customer focused. The core of the industry has focused its investments on execution and efficiency.”

—Neil Wheeldon, Chief Strategy & Innovation Officer,  
BDP International



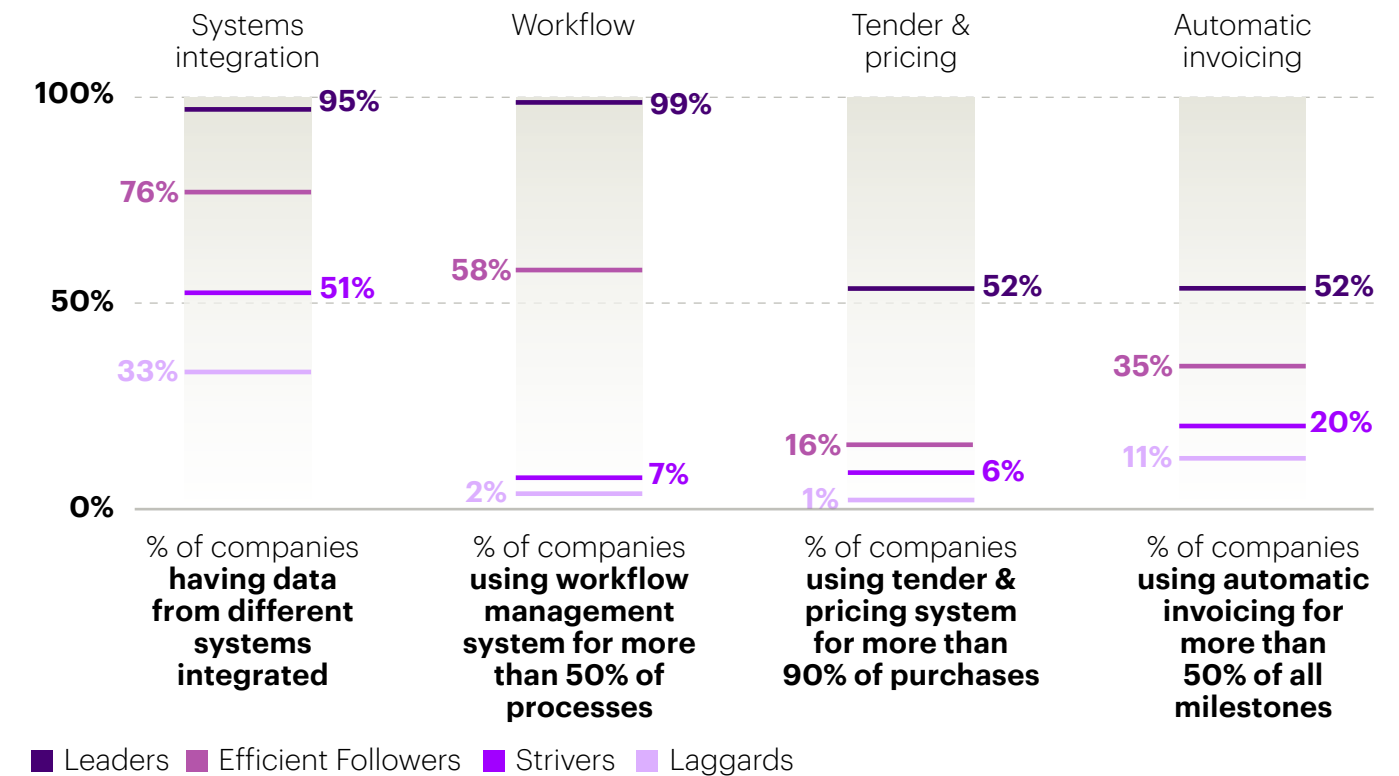
As a priority, F&L companies lagging in process automation should focus on:

- **Data integration:** 95% of Leaders and 76% of Efficient Followers say they have data from different systems fully integrated. Most Strivers and Laggards have not yet put in place this critical prerequisite for process automation.
- **Workflow management systems:** Almost all Leaders and 58% of Efficient Followers already use workflow systems for the majority of their processes. However, only very small numbers of Strivers and Laggards have workflow systems in place, with most using them for only 25-50% of their processes.
- **Tender & pricing systems:** Few F&L companies are managing almost all of their purchases using tender & pricing systems. Even in the Leaders cluster, only half have fully developed this capability. Most Efficient Followers, Strivers and Laggards use tender & pricing systems for 75-90% of purchases.
- **Automatic invoicing:** This capability is not yet well developed across the industry. Only 52% of Leaders and 35% of Efficient Followers are using automatic invoicing for more than half of their invoicing milestones. The majority of Strivers and Laggards use automatic invoicing for only 25-50% of their milestones.

### Struggling to visualize accurate and quality data

To date, most F&L companies have prioritized investment in data management over process automation and digital customer-facing systems. Across the industry, fleet management systems are common—and four in five of our

### Process Automation Maturity



Source: Accenture Freight and Logistics Digitalization Research, 2021

respondents use route management software. Many F&L companies also use forecasting & planning systems. But the question is to what level these are integrated with financial tools?

“At the moment, the holy grail of supply chain is digitalization. Data is there, but it’s not clean, not accurate and not in a useable format.”

—Freight and Logistics Industry Expert

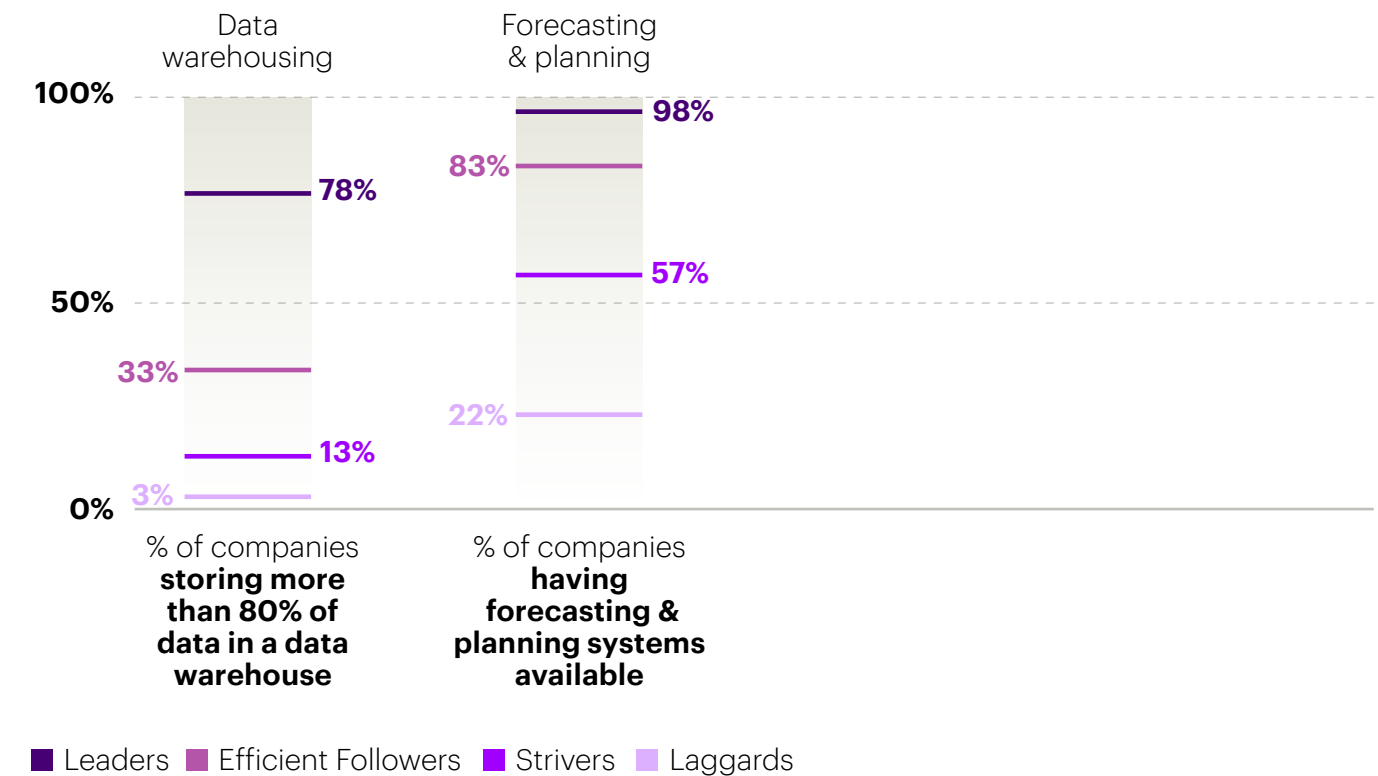
Our research found that many companies do capture sales data, trade lane information, shipment volumes and weights to support internal profitability reporting. However, data warehousing capabilities are lacking. Few F&L companies are able to capture data from a wide range of sources and use it to inform management decisions.

Hence, F&L companies need to enhance their data management capabilities in two areas:

- **Data warehousing:** This is a crucial requirement for robust analytics, but only Leaders are likely to store more than 80% of their data in a data warehouse. The other clusters, especially Strivers and Laggards, remain far behind. On average, these companies store only 50-80% of data in a data warehouse, making comprehensive analytics challenging.
- **Forecasting & planning systems:** Almost all Leaders, the vast majority of Efficient Followers and more than half of the Strivers already have forecasting & planning systems in place. In contrast, fewer than one in four Laggards have these systems.

As the industry digitalizes, producing consistent, quality data will be critical. All F&L companies need to invest time and resources in collecting, managing and governing data across the enterprise—and organizing it to collect actionable insights.

### Data Management Maturity



Source: Accenture Freight and Logistics Digitalization Research, 2021



**Industry change will arrive at scale when we have a coalition of partners working together around a particular digital use case.”**

**—Ho Ghim Siew, Head of Group Strategy & Cargo Solutions, PSA International**

## Key areas of focus for digital transformation programs

As well as closing any gaps in digital capabilities, interviews with F&L executives suggest all transformation programs should also look to enhance:

### Resilience

Technologies like automation, robotics and wearables, and multichannel logistics will help ensure service continuity in the face of labor shortages, pandemic outbreaks and black swan events.

### Sustainability

The hard truth is, the power required to run data centers to feed information into a digitally connected supply chain will increase the industry's carbon footprint. F&L companies must balance the need for real-time visibility of every milestone update with their sustainability goals. The sweet spot will be a system that uses renewable energy to generate just enough data to support ecosystem efficiency and optimize customer service.

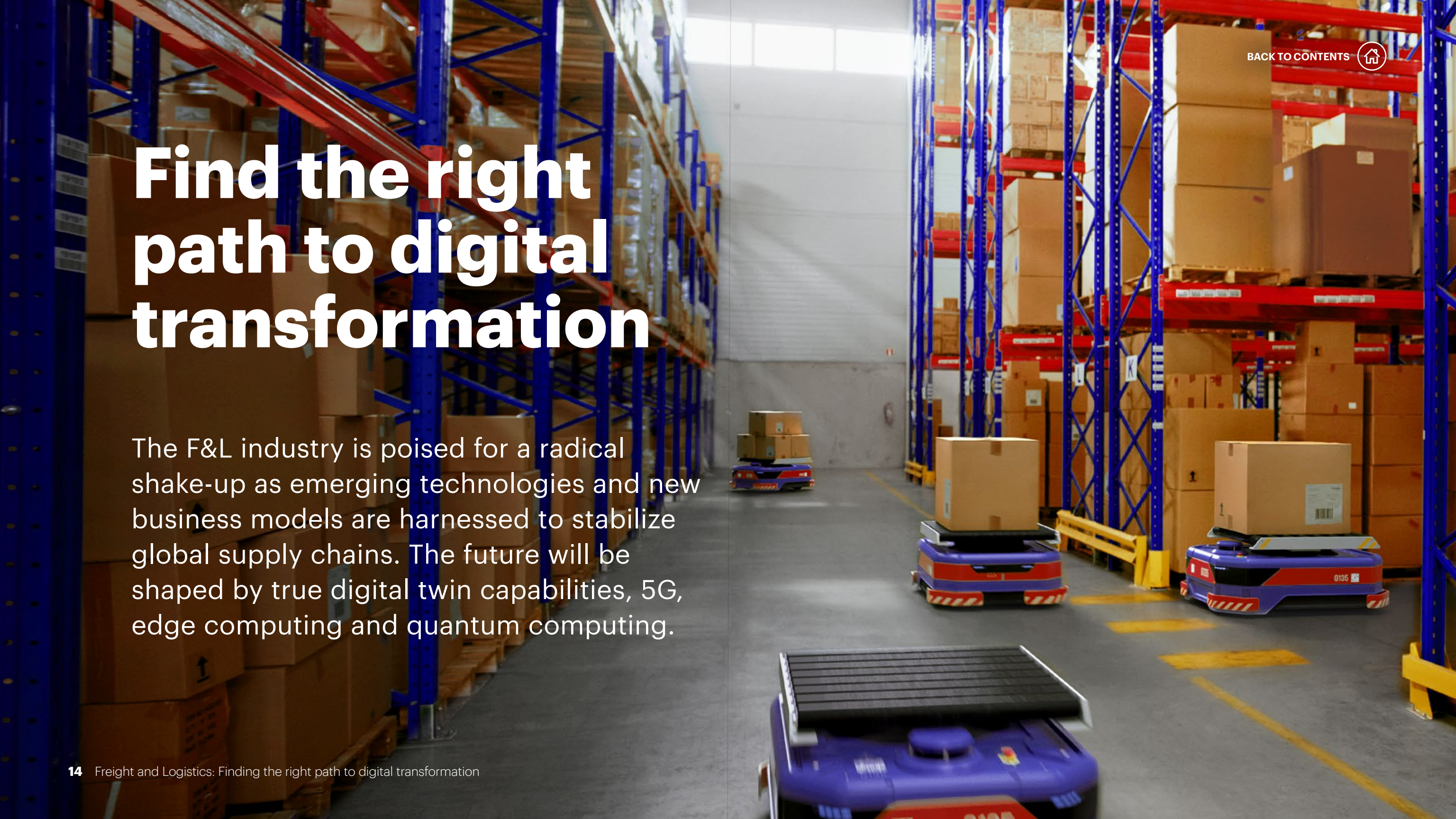
### Cybersecurity

For digitalization efforts to work, especially for ecosystem plays that require data sharing, cybersecurity will be increasingly critical.



# Find the right path to digital transformation

The F&L industry is poised for a radical shake-up as emerging technologies and new business models are harnessed to stabilize global supply chains. The future will be shaped by true digital twin capabilities, 5G, edge computing and quantum computing.



The potential is for F&L companies to optimize transport routes in close to real time and give all companies involved detailed information about delivery status, conditions and carbon footprint. Artificial intelligence (AI) and machine learning will support demand forecasting and help F&L companies understand how to unlock trapped transportation capacity, boosting efficiency and profitability.

But getting to this future will require the F&L industry to put the foundations of digitalization in place, automating and integrating business and logistics processes and ensuring data accuracy and quality. Only then will F&L companies be able to reap the benefits of big data and the transparency revealed by networking devices and companies.

Yet our survey found the industry with fragmented digital capabilities—and even Leaders behind other industries and the e-commerce giants. Our research makes it clear that many in the industry need to accelerate digitalization—taking care to gain the best return on their innovation investment, like the Efficient Followers.

**“Technology, processes, data and people: those elements need to be aligned together. If you miss even one of them, your digitalization agenda is going to fail altogether.”**

**—Eric Louet, Head of Digital Transformation, DHL  
Global Forwarding Americas**

As the industry works towards digital transformation, F&L companies can learn from the Leaders and Efficient Followers in their segments. We recommend the following steps to get started:

- 1 Take an honest look at your situation**  
Use our analysis of clusters and segments to understand where you fit compared with your peers. Be clear on your starting point.
- 2 Learn from the Leaders and Efficient Followers**  
Determine where you need to get to by looking at the best in your segment. Where are the sweet spots for quick wins?
- 3 Put the customer at the center of your investment strategy**  
Will you invest across the digital spectrum or decide which areas are most important to meet the needs of your customers? Would it be better to focus on fewer capabilities where you can rapidly achieve a meaningful improvement?

The F&L industry needs to find the fastest and most efficient route to digitalization. This is essential for the continuous adaptation needed to succeed in a future with ever growing customer expectations and where supply chain disruption and volatility have become business as usual.

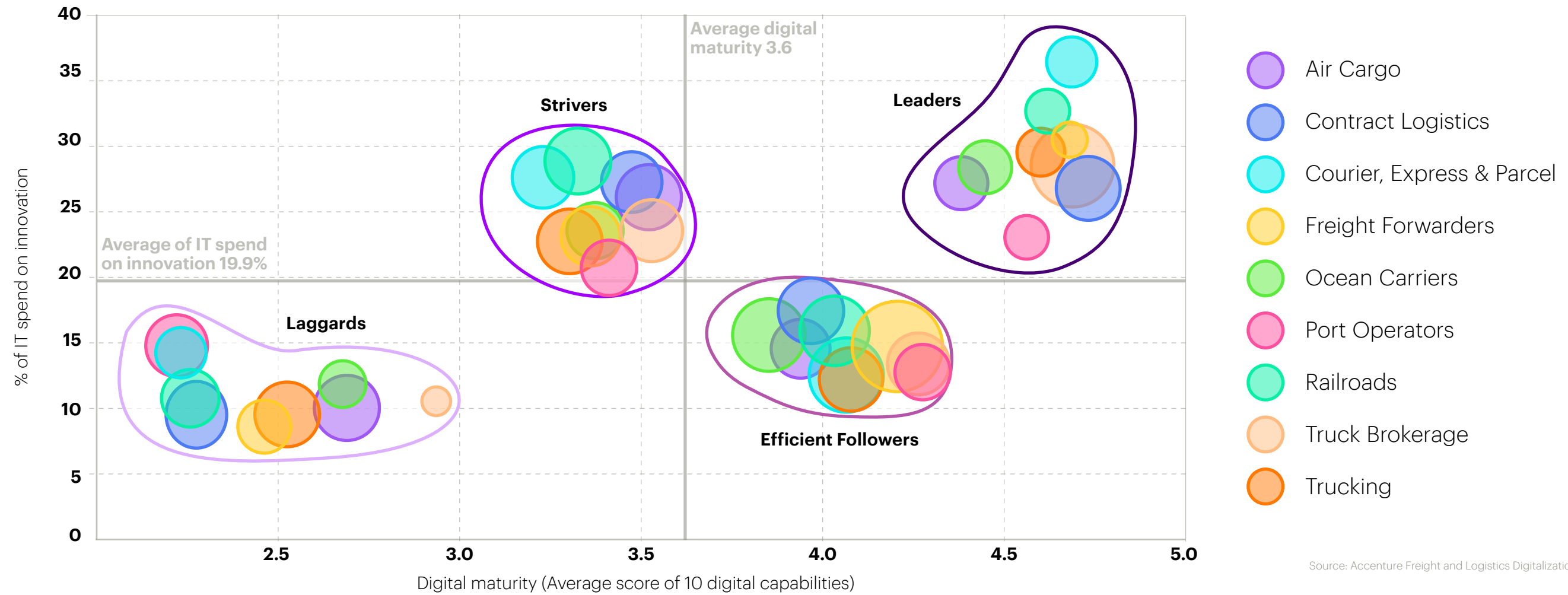
## Are you on the right path?

# Segment analysis

The following section takes a deep dive into the digital maturity of nine segments, drawing on research data, interviews with industry executives and Accenture's experience of supporting digital transformation in the industry.

Our detailed analysis of the industry segments shows which capabilities are mature and where the segment has opportunities to evolve.





Source: Accenture Freight and Logistics Digitalization Research, 2021

The bubble size represents the number of companies from the sample. The larger the bubble, the more companies in the cluster.

The distance between the clusters shows the differences in IT innovation spend and digital maturity scores.

**I don't think the industry as a whole can be considered as a laggard. There are pockets of excellence and there are segments that are much more technologically advanced than the others."**

**—Neil Wheeldon, Chief Strategy & Innovation Officer, BDP International**

# Air cargo

## Digital maturity score out of 5

**Air cargo: 3.56** ▼ Industry average: 3.66

During the pandemic, cargo became the centre of gravity for the airlines, as passenger aircraft were parked. Passenger flights had previously accounted for more than 50% of all air cargo.<sup>2</sup> With belly cargo capacity gone, dedicated air cargo freighters came to the rescue, albeit at much higher freight rates. Volumes transported by air cargo rose 6.9% in 2021 compared with 2019<sup>3</sup> and passenger-to-freighter conversions surged. From the previous norm of 50-70 per year, conversions are expected to more than double to 180 per year by 2025.<sup>4</sup>

Growing air cargo transport volumes and the rise of e-commerce are driving the need for digitalization in air freight. However, our research finds the segment, which contains some of the industry's largest companies, is lagging in its digital capabilities. IT spend on innovation is almost at the F&L industry average, but the predominance of Strivers indicates that much of this investment is not delivering the intended capabilities. Even Leaders are behind in some key customer front-end and process automation areas.

Other than Laggards, the segment is generally making good use of data warehouses and forecasting & planning systems. Air cargo carriers are also ahead in track & trace and systems integration, driven by the imperative for

real-time reporting when air freight became the critical delivery system for vaccines, pharmaceuticals and food items.

Leaders are investing heavily in workflow solutions as more processes are moving towards automation. However, the segment remains very operationally focused, lacking customer-facing portals and dashboards.

**Efficient Followers**

**24.6%**

**Strivers**

**30.8%**



**Leaders**

**18.5%**

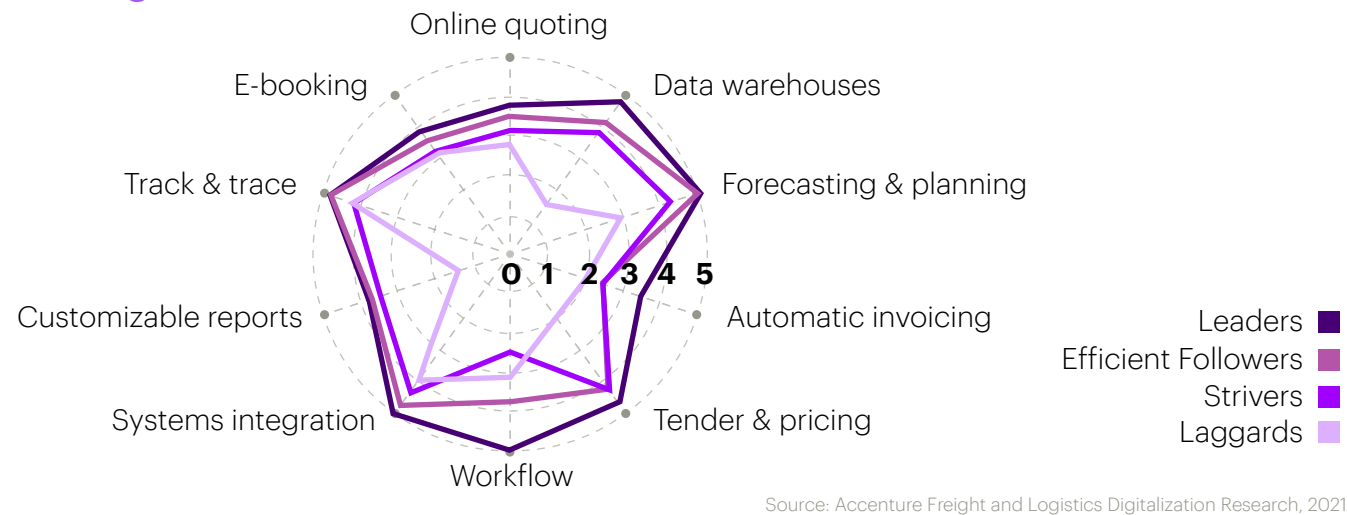
**Laggards**

**26.2%**

Source: Accenture Freight and Logistics Digitalization Research, 2021

## Digital maturity in 10 capabilities by cluster

### Air cargo

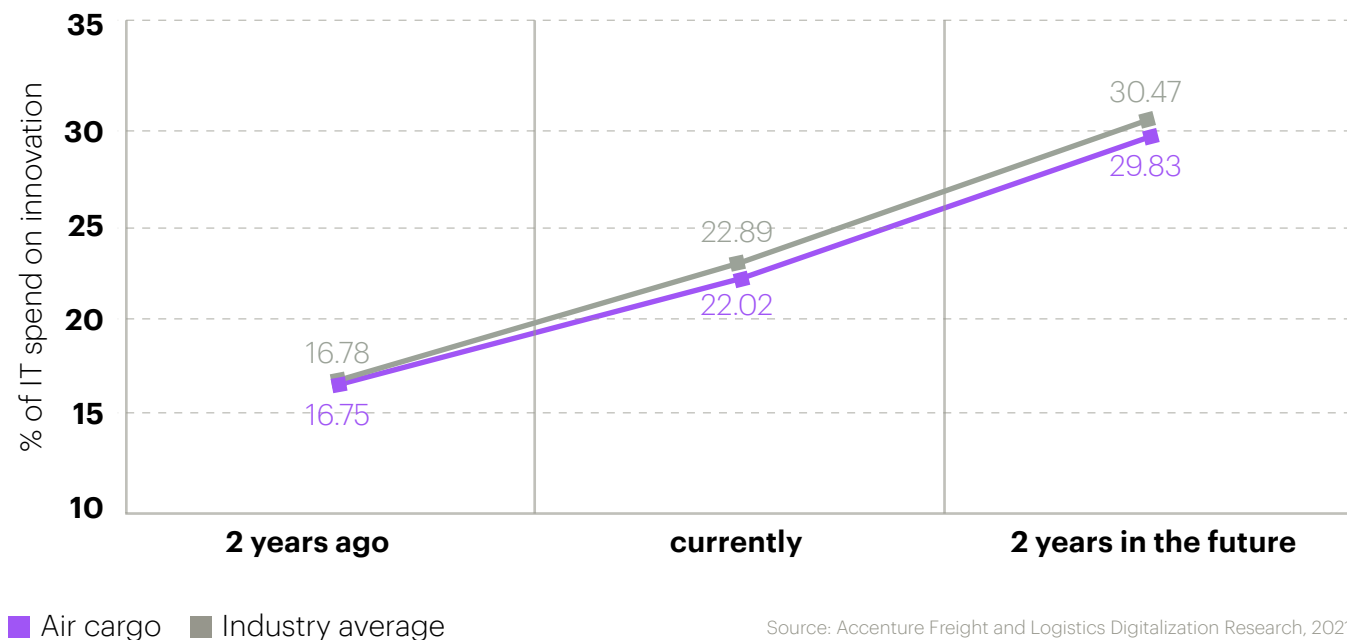


## Opportunities

On the customer side, air cargo booking remains a high-friction, one-to-one process, with carriers still relying on in-person negotiations and emails and phone calls, with limited use of digital booking platforms. Many carriers have responded by beginning or accelerating migration to online booking and sales through e-quoting systems, realizing that they cannot run their cargo operations effectively without digitalizing them.

Air cargo businesses have also started to explore opportunities in the long tail of small e-commerce businesses, looking to identify a more economical solution to service their overseas customers. The only way to address this market is to support smaller customers with online self-service capabilities for onboarding and shipment order processes, which have never previously existed in this segment.

## IT innovation spend against the industry average





# Contract logistics

## Digital maturity score out of 5

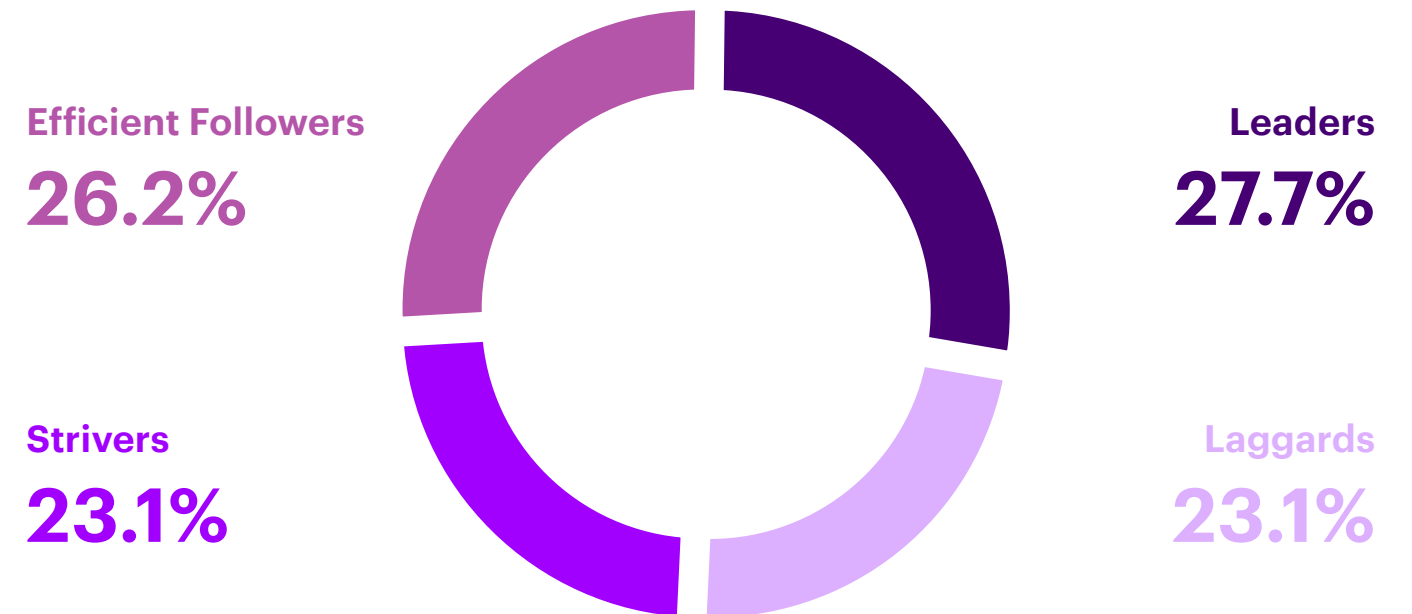
**Contract logistics: 3.67** ▲ Industry average: 3.66

The fragmented contract logistics segment is characterized by smaller (<\$1bn in revenue) companies with low market share. During the pandemic, contract logistics providers accelerated their digitalization. Within months, many implemented warehouse cleaning robots and wearables to enable touchless processes. Others harnessed robotics to supplement a depleted workforce and put in place Internet of Things (IoT) sensors to help maintain social distancing.

We were therefore not surprised to find this segment with strong clusters of Leaders and Efficient Followers. However, despite above industry average IT spend on innovation, our research found this segment's overall digital maturity around the industry average.

In general, the segment is ahead of the industry in process automation, prioritizing investment in systems integration, digital tender & pricing capabilities and forecasting & planning systems. But the use of workflow

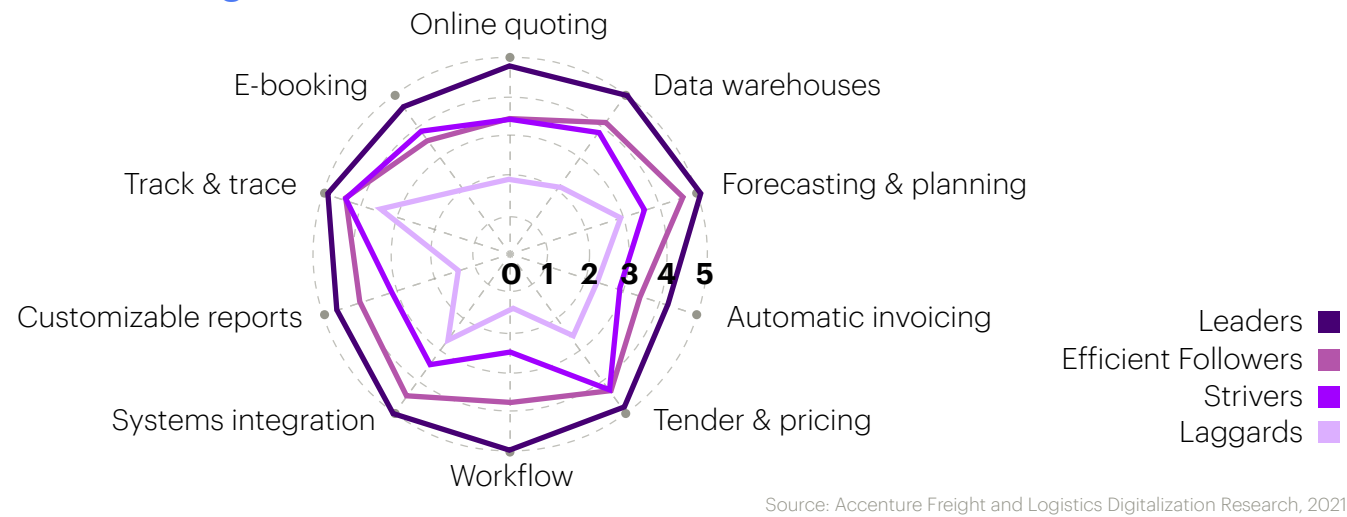
management systems is limited to Leaders and automatic invoicing needs to improve across the board. When it comes to customer-facing capabilities, the segment prioritizes track & trace and customizable reports, but only Leaders consistently have e-booking and online quoting capabilities.



Source: Accenture Freight and Logistics Digitalization Research, 2021

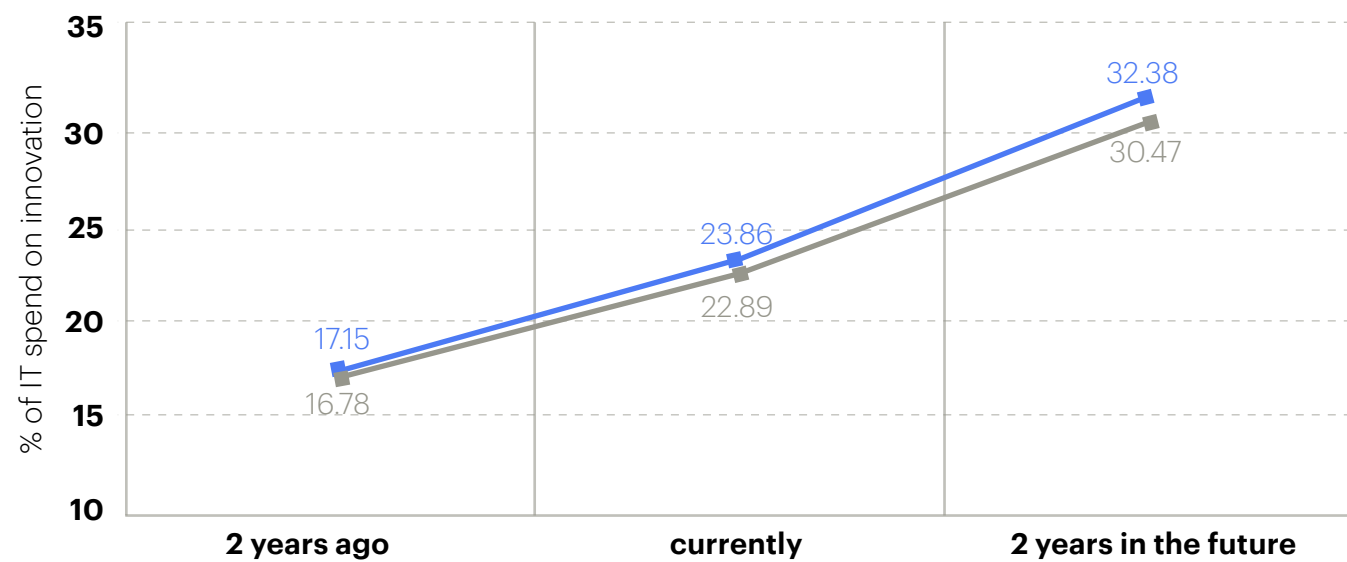
## Digital maturity in 10 capabilities by cluster

### Contract Logistics



Source: Accenture Freight and Logistics Digitalization Research, 2021

## IT innovation spend against the industry average



■ Contract logistics ■ Industry average

Source: Accenture Freight and Logistics Digitalization Research, 2021

## Opportunities

Companies in this segment span the full spectrum of digital maturity, from those just starting to deploy digital solutions in pockets of their operations, to instances of fully automated instant quoting and booking—leading capabilities that will surely become mainstream.

Many of the segment’s challenges—mitigating high labor costs, ensuring inventory accuracy and enabling end-to-end visibility—will be directly addressed by digital transformation. To this point, our survey found contract logistics providers’ highest digital priorities are improving client service and having the data and systems to support information exchange with partners, vendors and suppliers.

Except for Leaders, the rest of the segment lags in data warehousing capabilities, with many companies still using manual systems. With uneven data discipline across operational sites and multiple transport and warehouse management systems, data integration is challenging—especially when customers are themselves going through digital transformation.

However, this should not deter contract logistics providers from investing in data warehouse capabilities. Big data streams coupled with powerful analytics will allow contract logistics providers to streamline their operations, integrate with the rest of the logistics ecosystem and make data-driven decisions to optimize routing and support visibility.



# Courier, express & parcel

## Digital maturity score out of 5

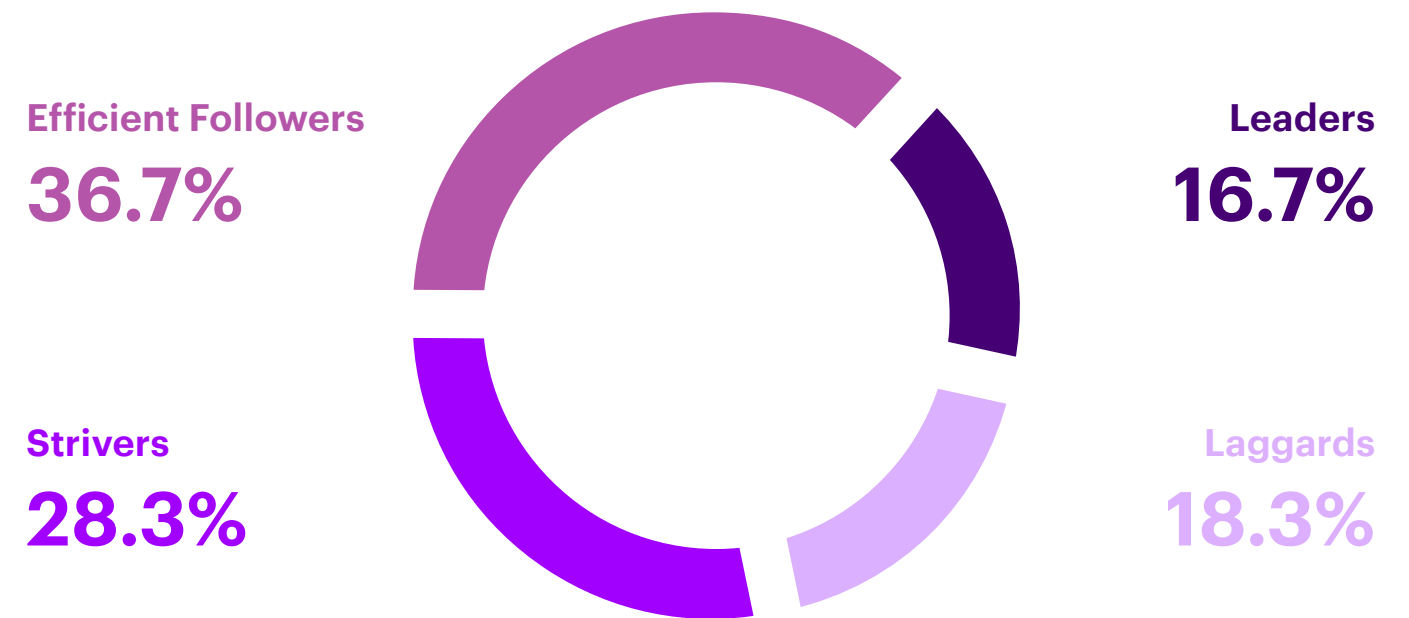
**Courier, express & parcel: 3.60** ▼ Industry average: 3.66

Technology has always been a critical enabler in this segment due to its large volumes, higher value product profile and time criticality. But the pandemic put the need for digitalization into overdrive. Initially, as borders closed, the international courier, express & parcel (CEP) market came to the rescue as passenger cargo capacity disappeared overnight. Global demand for vaccines and the e-commerce explosion resulted in many delivery services experiencing seasonal peak volumes every day.

Our research found the segment has fewer Leaders but more Efficient Followers than the rest of the industry, resulting in digital maturity slightly below the industry average. Its current percentage of IT spend on innovation marginally exceeds the industry average and is projected to align closely with the industry trajectory over the next two years.

While Leaders are taking a balanced approach to innovation, scoring consistently between four and five on all 10 digital capabilities, the rest of the segment has a more uneven focus on digitalization. Nine in 10 respondents in this segment strongly agree that their company has a wide range of digitalization across processes.

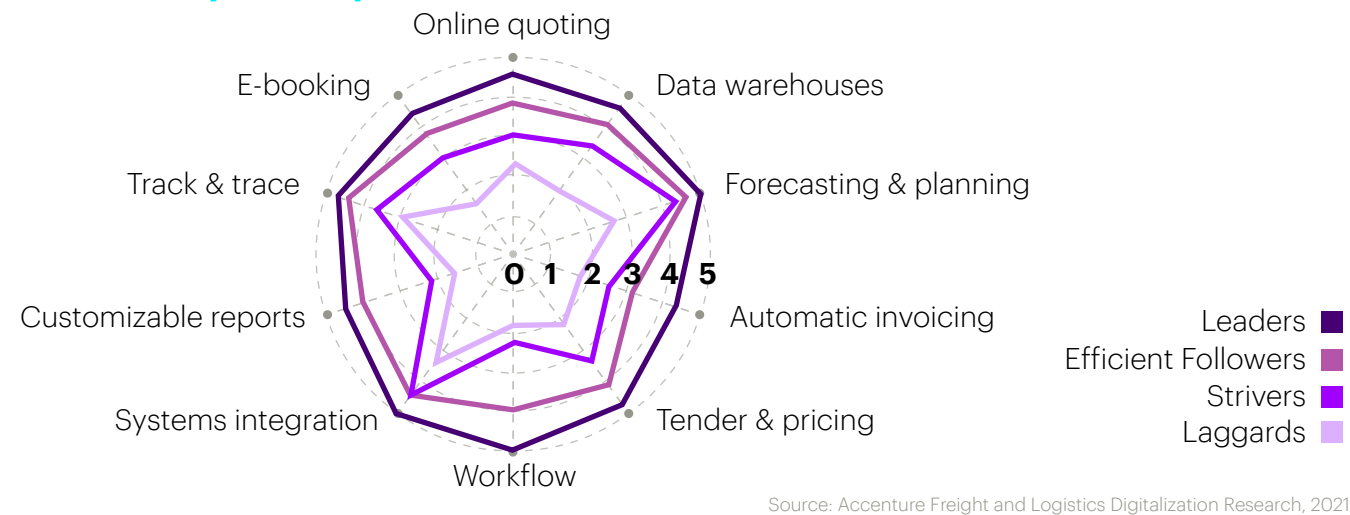
Although track & trace is a priority, and better than the industry average at the purchase order level, it is lower than average at the shipment, piece and SKU levels. For example, throughout the segment, track & trace functionality is only visible to all customers (door-to-door) at the shipment level.



Source: Accenture Freight and Logistics Digitalization Research, 2021

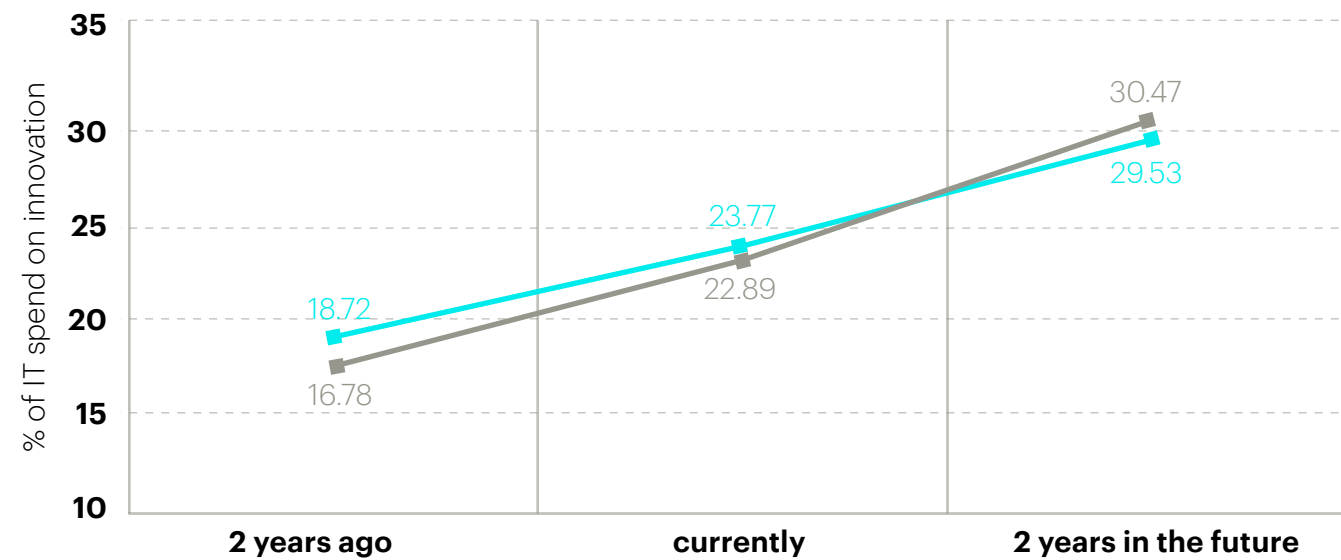
## Digital maturity in 10 capabilities by cluster

### Courier, express & parcel



Source: Accenture Freight and Logistics Digitalization Research, 2021

## IT innovation spend against the industry average



■ Courier, express & parcel ■ Industry average

Source: Accenture Freight and Logistics Digitalization Research, 2021

## Opportunities

Success in this segment depends on providers being responsive to end customers. Those CEP companies using application programming interfaces (APIs) to integrate their internal processes and enable them to connect with their customers' data streams will find themselves far ahead of the pack. Competitive advantage will also come from being able to run advanced algorithms fed by internal and external data sources to improve operational efficiency and customer intimacy.

In general, the segment is behind in process automation, especially around tender & pricing. It also needs to improve the customer experience by offering a more detailed level of track & trace capabilities and customizable reports. Leaders and Efficient Followers are leaps and bounds ahead in workflow automation, making this a differentiating capability in which the rest of the industry should quickly invest to close the gap.



As a priority, Laggards need to invest in e-booking, forecasting & planning systems and data warehouse capabilities, where they are substantially lagging the rest of the segment.



# Freight forwarders

## Digital maturity score out of 5

**Freight forwarders: 3.76 ▲** Industry average: 3.66

As capacity and demand disruptions create a bull-whip effect in the wake of the pandemic, freight forwarders are enjoying unprecedented growth in revenues and record freight rates. To capitalize on this growth opportunity, freight forwarders need to connect and exchange data with multiple ecosystem players, including F&L platforms, making digitalization an imperative in this segment—a trend highlighted in our research.

With the industry's highest percentage of Efficient Followers (52% versus the industry average of 32%), this segment has mastered the art of doing more with less, translating below average IT spend on innovation into above average digital capabilities. Freight forwarders are also taking an impressively balanced approach to transformation, with Leaders and Efficient Followers scoring well across nine of the 10 capability areas.

Given freight forwarders' success depends on internal operational efficiency and the ability to provide their stakeholders with accurate data, all segment players (even Laggards, to a lesser extent) have focused their digital investment on:

- **Systems integration:** More than two-thirds (69%) of freight forwarders claim that the data from their different systems (e.g., transport management, warehouse management, customs brokerage) is fully integrated.

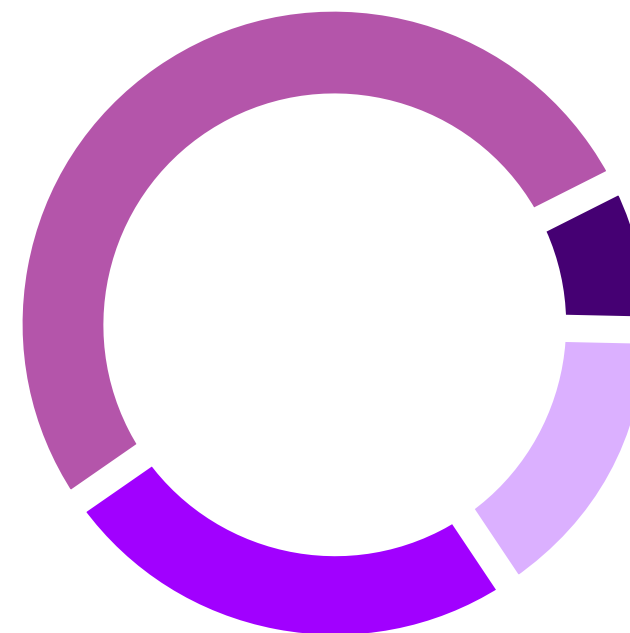
- **Track & trace:** The pandemic has made this capability essential to customer satisfaction, prompting strong investment to deliver capabilities in line with the industry average.
- **Forecasting & planning systems:** Four in five freight forwarders use automated systems to capture their internal sales forecasting and integrate it with financial systems.

Efficient Followers

52.3%

Strivers

24.6%



Leaders  
7.7%

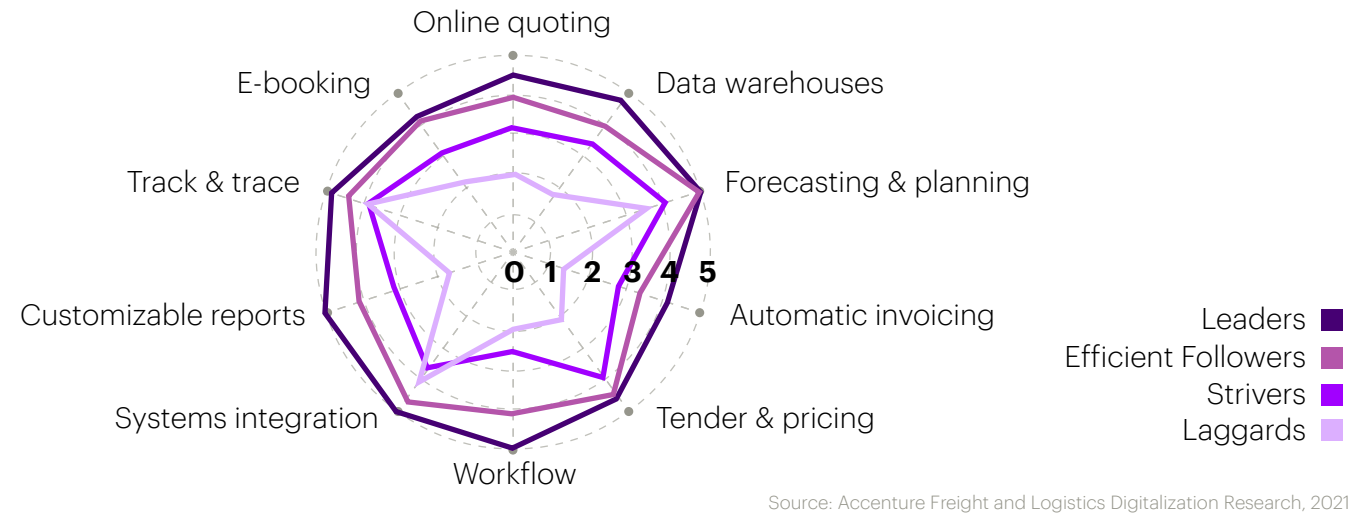
Laggards  
15.4%

Source: Accenture Freight and Logistics Digitalization Research, 2021



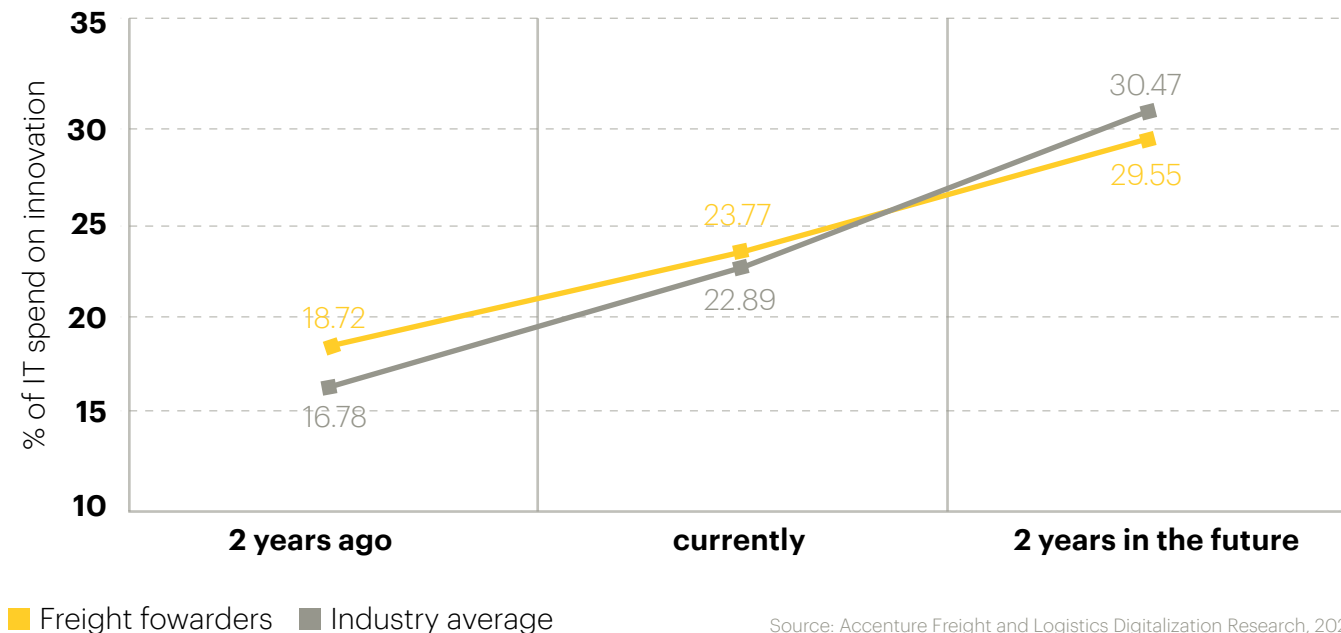
## Digital maturity in 10 capabilities by cluster

### Freight forwarders



Source: Accenture Freight and Logistics Digitalization Research, 2021

## IT innovation spend against the industry average



Source: Accenture Freight and Logistics Digitalization Research, 2021

## Opportunities

Leaders and Efficient Followers are somewhat ahead in developing their workflow management capabilities. However, even these better-performing companies only use continuous workflow monitoring for more than 50% of all processes, suggesting that this is still an important area for improvement.



To boost the customer experience, many freight forwarders need to build out their e-booking, online quotation and automatic invoicing capabilities. For example, while Leaders and Efficient Followers have more than 50% of quotes requested and provided online, few are storing these quotes in a database. All clusters, other than Leaders, should investigate the potential for offering customizable reports.

The segment also needs to increase its data warehouse capabilities. Freight forwarders require data ecosystems that can support the tracking of shipment lifecycle events and automatically update schedules. Winners in this segment will be those with the agility to mitigate unexpected incidents and the ability to produce more accurate, algorithm-based ETA predictions.



# Ocean carriers

## Digital maturity score out of 5

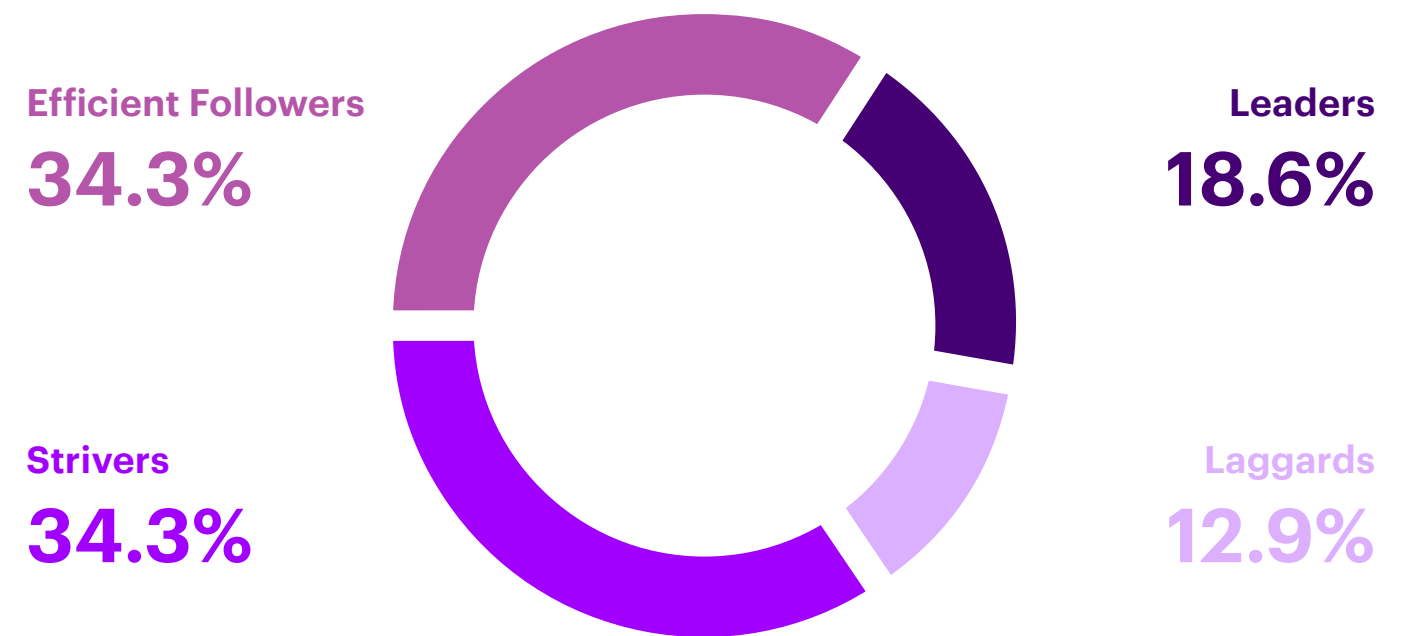
**Ocean carriers: 3.65** ▼ Industry average: 3.66

Around 90% of world trade happens on the ocean. So when ocean freight services were obstructed during the pandemic, shipping rates skyrocketed. In August 2021, the spot price per container on the China-US East Coast route—one of the world’s busiest container lanes—had climbed over 500% from a year earlier to \$20,804.<sup>5</sup> Experts believe that these and other increases in freight costs have contributed to driving inflation across the globe.

In March 2021, the vulnerability of this segment was thrown into sharp relief as the megaship, Ever Given, got stuck in the Suez Canal for six days, damming up worldwide shipping and freezing nearly \$10 billion in trade per day.

Our research found the digital maturity of ocean carriers—a segment characterized by large (>\$5bn in revenue) organizations, which typically have deeper pockets than smaller companies—is close to the industry average. This is despite the segment tracking slightly above the industry average percentage of IT spend on innovation. The apparent contradiction—higher spend with lower digital capabilities—can be seen in the large cluster of Strivers in this segment (34% versus the industry average of 29%).

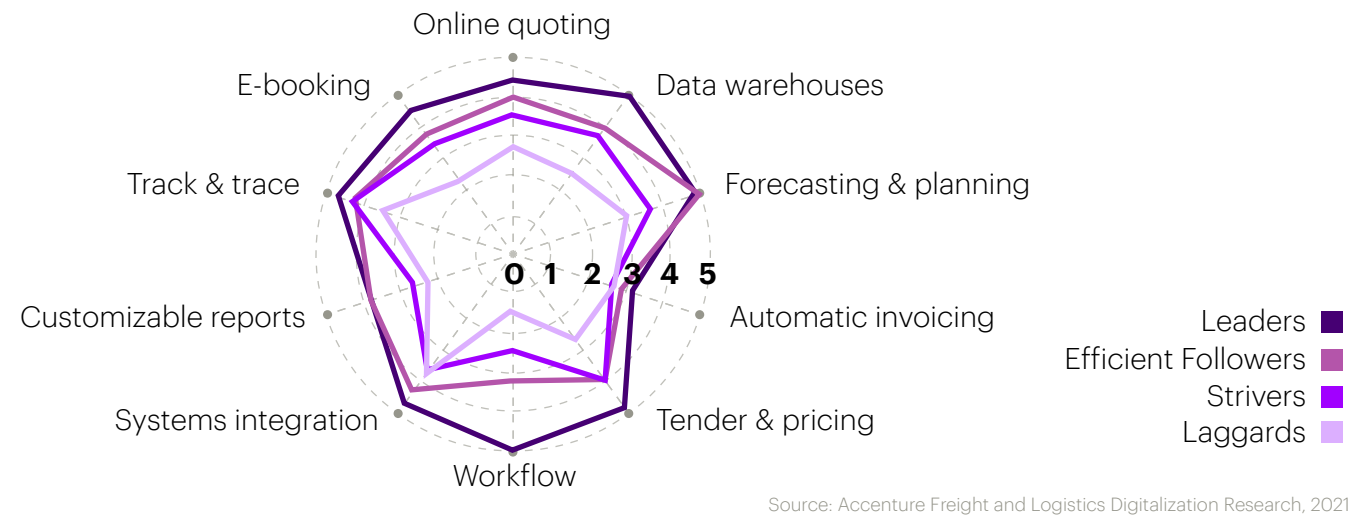
Ocean carriers’ top three digital capabilities are online quoting, data warehouse and e-booking, allowing Leaders to make increasing use of predictive analytics. Process automation capabilities are slightly below the industry average, but Leaders have good systems integration and well-established workflow and tender & pricing capabilities. Forecasting & planning is a differentiating capability, with a considerable gap between Leaders and Efficient Followers and the rest of the segment.



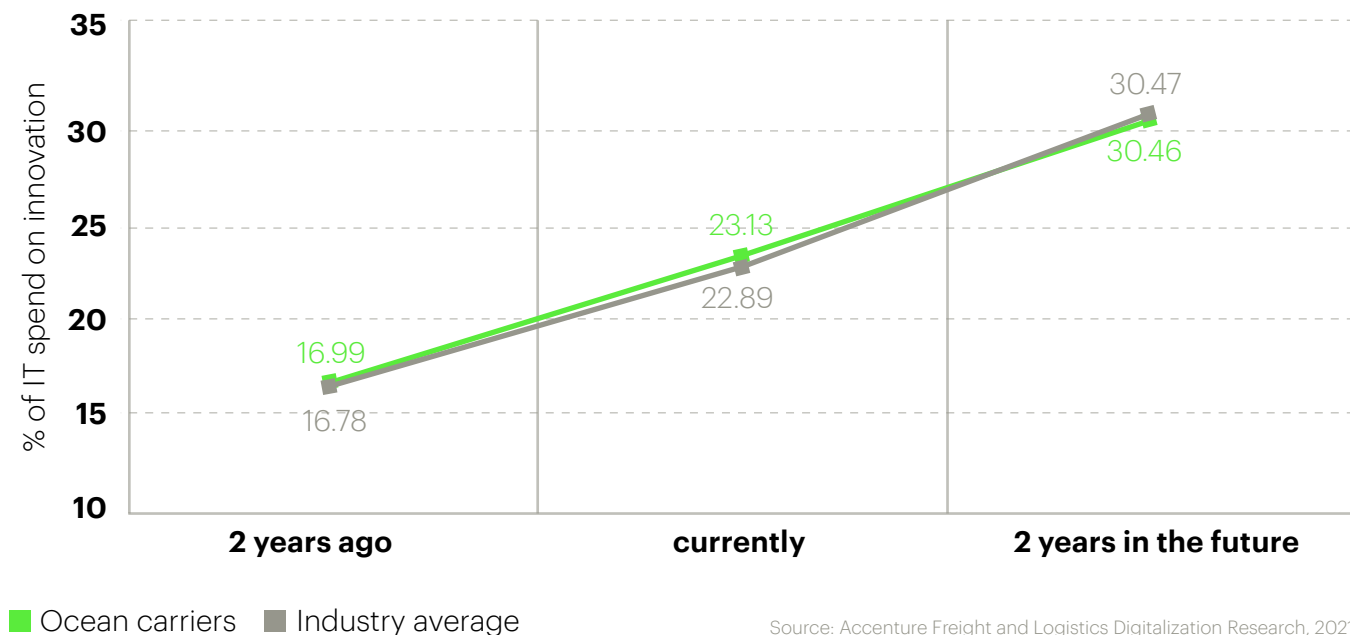
Source: Accenture Freight and Logistics Digitalization Research, 2021

## Digital maturity in 10 capabilities by cluster

### Ocean carriers



## IT innovation spend against the industry average



## Opportunities

Ocean carriers operate in a complex ecosystem of customs regulators, brokerage companies, truckers, port operators, shippers and consignees. With at least eight handoffs in physical product and paperwork along a rough and long journey across continents, digitalization has enormous potential to create transparency and enable data and analytics to support trade finance and risk management.

In general, ocean carriers need to focus their digitalization efforts on improving the customer experience with more digital touch points, enabled by e-booking, online quotation and customized reporting. Many in the segment will also drive efficiency gains by investing in auto-invoicing, where they are far behind, as evidenced by reports of customers complaining about inaccurate invoices.

Those outside the Leaders' cluster have multiple additional opportunities to improve operational efficiency, including by digitalizing workflow and introducing tender & pricing processes.





# Port operators

## Digital maturity score out of 5

**Port operators: 3.52** ▼ Industry average: 3.66

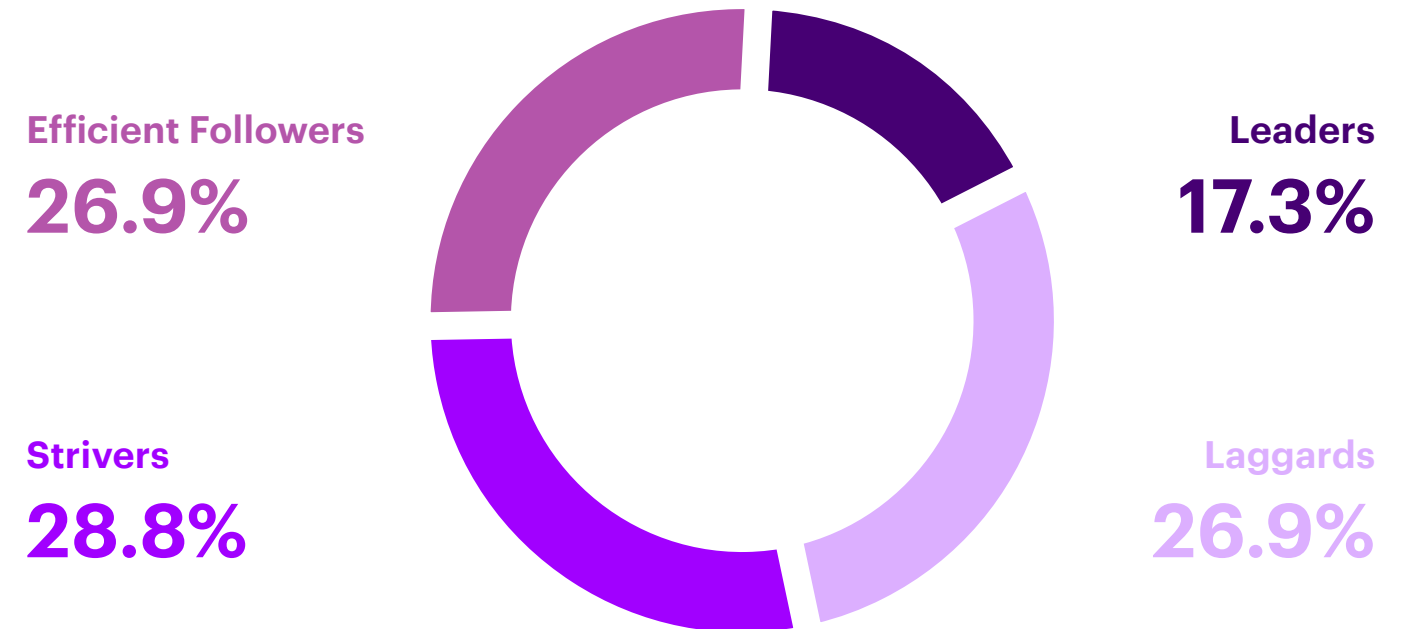
With increasing seaborne trade across the globe, by 2027, the Global Ports and Terminal Operations market is expected to reach a value of \$6.03 billion, growing at a CAGR of 9.9% in the decade 2017-2027.<sup>6</sup> The next five years will see the rise of AI-powered smart ports, as port operators respond to the need to curb operational expenses, gather real-time information and make data-driven decisions.

However, while many ports have ambitious plans involving digital twins and quantum computing, our research found the segment today in the early stages of digitalization. Digital capabilities are below the industry average, especially in data and analytics. The port operators we surveyed recognize this, stating that the most important areas for digitalization are their operating model and digital data backbone.

This segment rates its highest digital maturity levels in distribution & delivery—and its lowest in warehousing. Its digital capabilities are on par with the industry average in automatic invoicing, track & trace, prediction information and system use. Key differentiating capabilities (where there is a large gap between Leaders

and Efficient Followers and the rest of the segment) are workflow, systems integration, online quoting and customizable reports. Leaders are also way ahead in forecasting & planning and data warehouse capabilities.

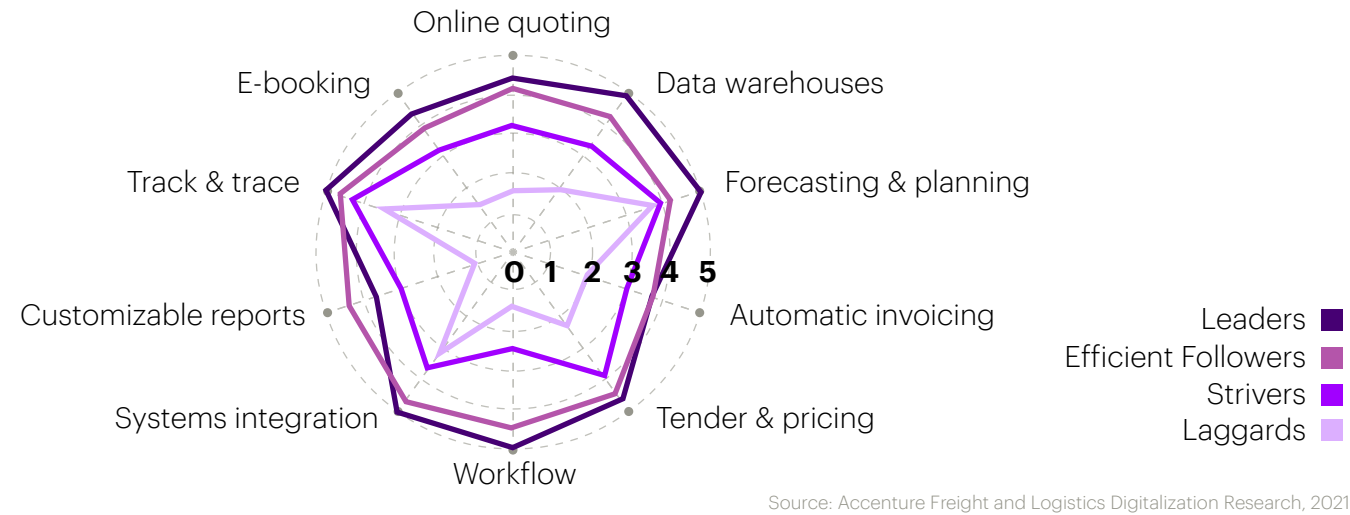
Despite plans to rapidly increase their percentage of IT spend allocated to innovation, ports continue to track below industry average spending patterns.



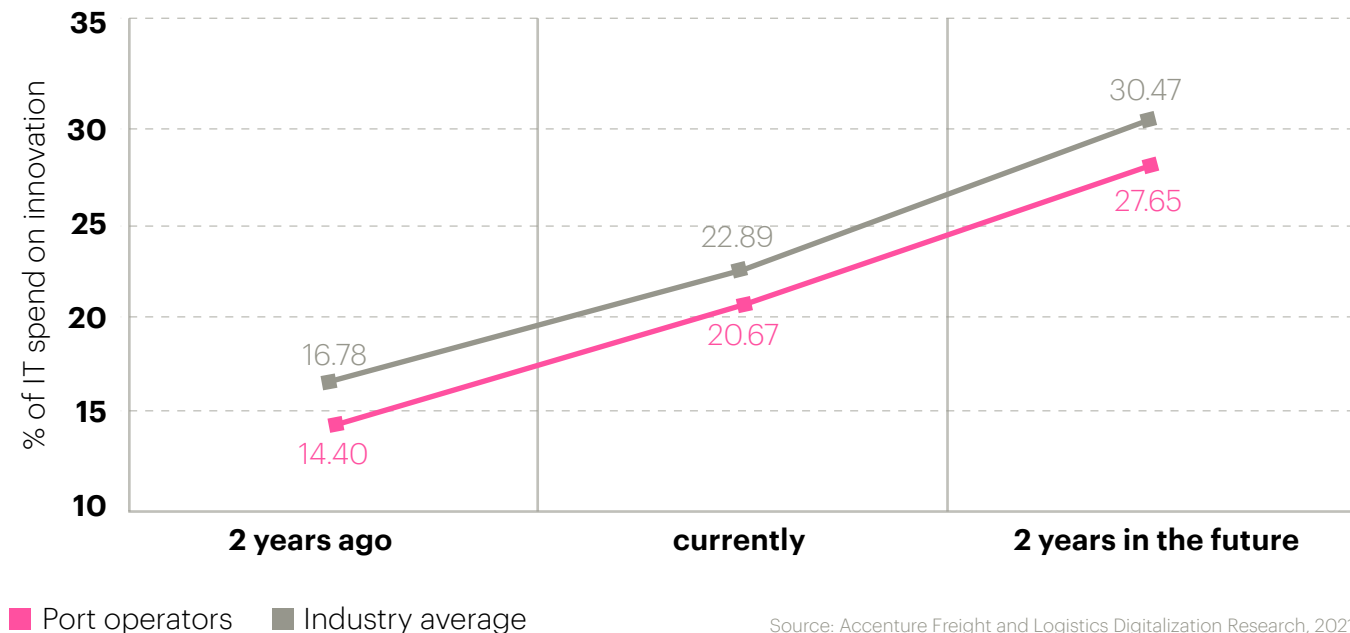
Source: Accenture Freight and Logistics Digitalization Research, 2021

## Digital maturity in 10 capabilities by cluster

### Port operators



## IT innovation spend against the industry average



## Opportunities

To stay competitive, modern port operators need to improve cargo flow using digital platforms. Through a value chain network, neutrally enabled by ports, investment in improved connectivity, autonomous systems, big-data analytics and automation will lead to greater reliability and efficiency—and enable ports to participate in connected trade lanes and digitalized trade flows.

In the future, smart ports will act as information nodes, gathering and providing information about the respective state of inbound and outbound consignments moved by different means of transport. Investment in capabilities like forecasting & planning, systems integration and data warehousing will be essential to support interoperability, allowing ports to connect multiple information-sharing environments. Leaders have the advantage of mature capabilities in these areas, but the rest of the segment must catch up.



Ports also have scope to improve capabilities like automatic invoicing, e-booking and online quotation. Focused spending in these areas will help to reduce operational costs and improve stakeholder engagement.

## Digital maturity score out of 5

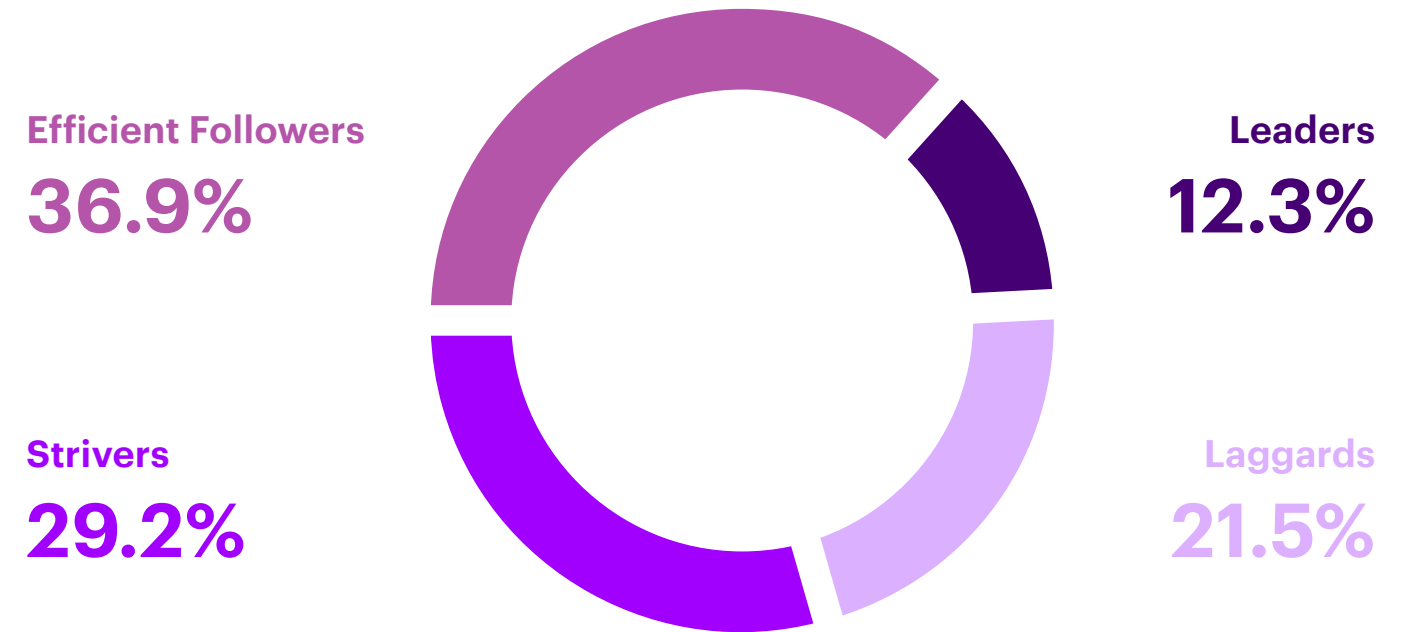
**Railroads: 3.51** ▼ Industry average: 3.66

Railroads are important as a sustainable and competitive alternative for freight transport. Digitalization is essential to harness its growth, with the potential to improve service quality and reliability, reduce operating expenses and increase capacity. Technology will also be key if railroads are to participate in efficient multi-modal solutions.

However, our research found the railroad segment with digital capabilities below the industry average, especially in data and analytics, despite an above average percentage of IT spend on innovation. Notably, railroad companies falling into the Efficient Followers cluster are further behind Leaders than in other segments.

All clusters, including Laggards, have the track & trace and systems integration capabilities essential to ensure cargo visibility and share data with ocean liners, inland container depots and dry ports. Even though the segment is ahead of the rest of the industry at the piece level, its purchase level, SKU level and shipment level track & trace capabilities are below industry average and behind other sectors.

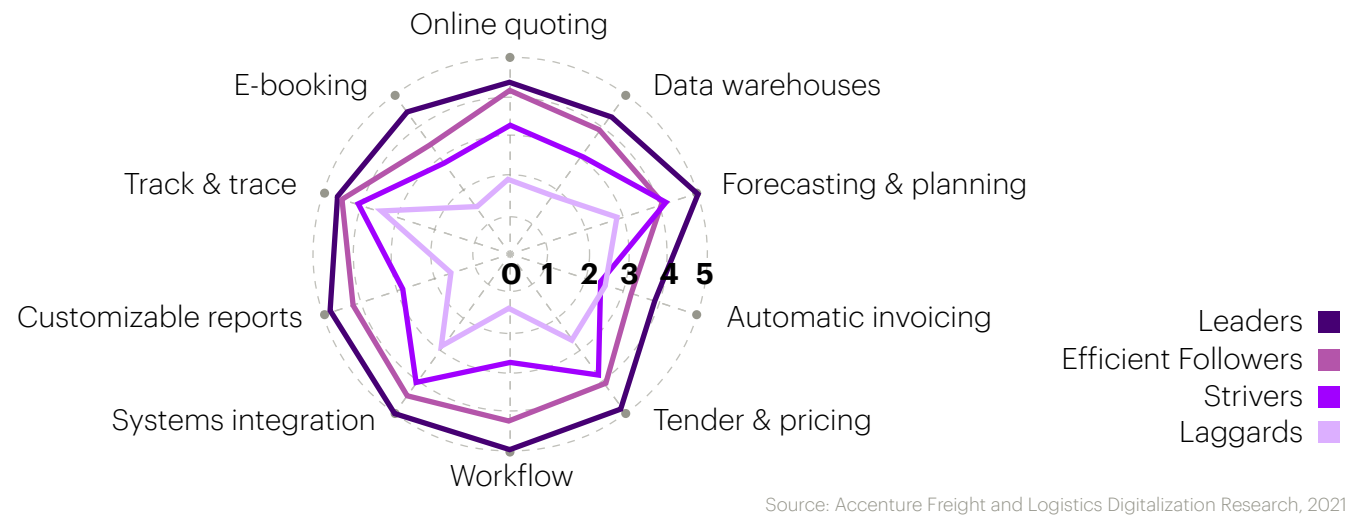
Looking two years ahead, the railroad companies we surveyed expect to continue to increase their percentage of IT spend on innovation in line with the industry average.



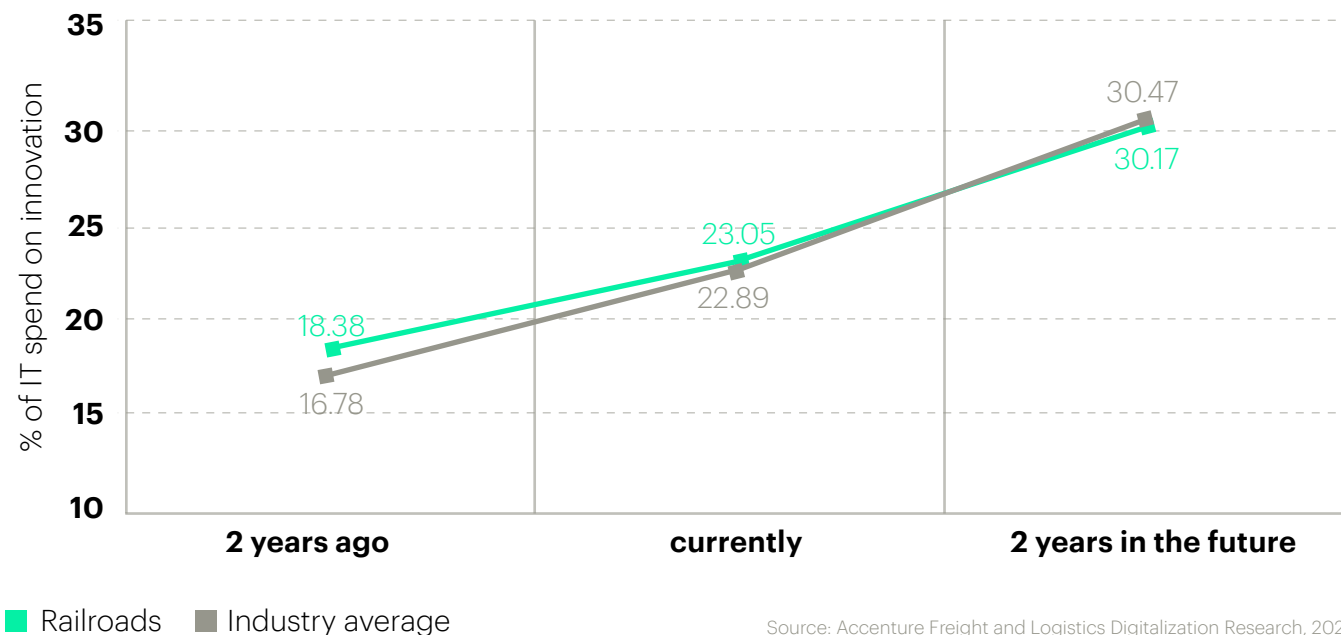
Source: Accenture Freight and Logistics Digitalization Research, 2021

## Digital maturity in 10 capabilities by cluster

### Railroads

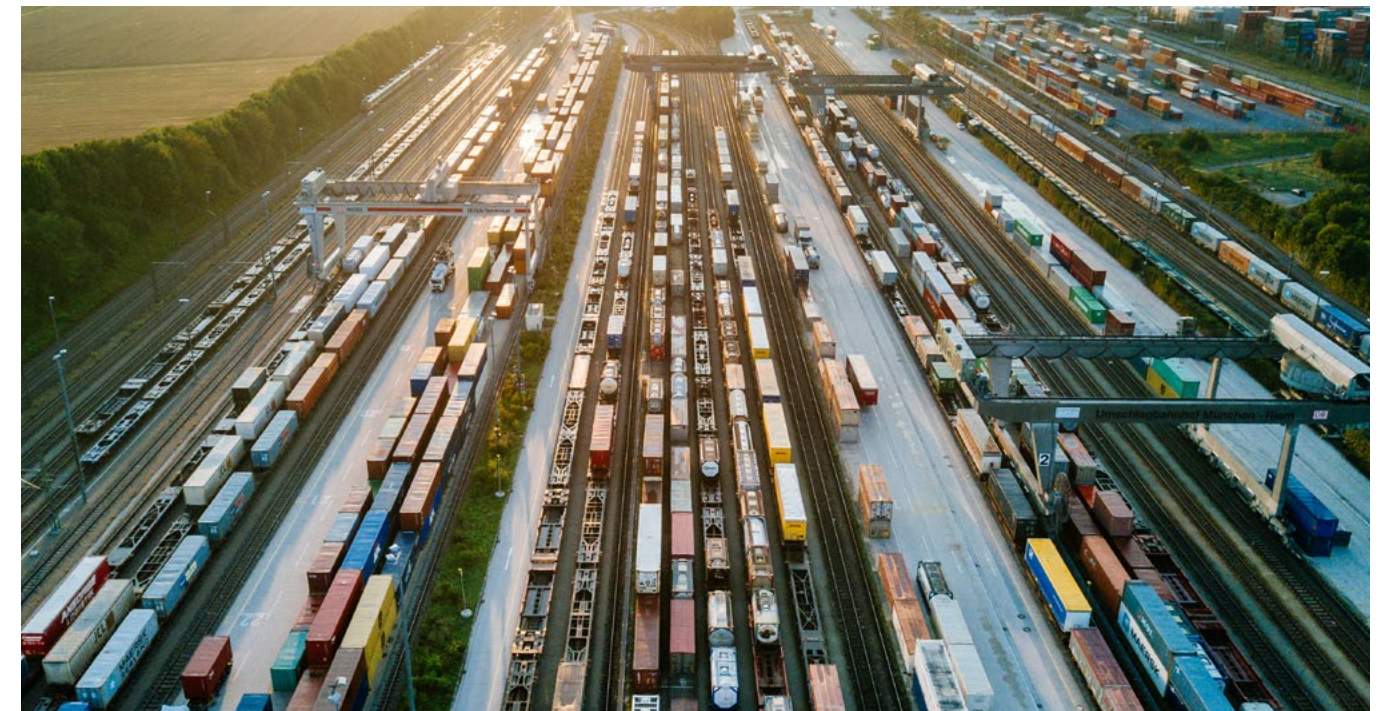


## IT innovation spend against the industry average



## Opportunities

While Leaders have achieved digitalization in important capabilities, other players in the railroad segment are yet to develop a cohesive, holistic digital strategy. The priority should be to identify capability gaps and develop a roadmap to drive rapid transformation. This is essential to ensure that near-term and mid-term investments build a bridge to take railroads into a digital future.



The primary focus for rail operators should be on fully digitalizing their operations. Immediate areas requiring attention include systems integration, workflow and forecasting & planning, which are the backbone of the business. At the same time, focusing on incremental investments in customer-facing capabilities, like automatic invoicing, e-booking and automated tender & pricing, will both help to create a differentiating customer experience and reduce operational costs.



# Truck brokerage

## Digital maturity score out of 5

**Truck brokerage: 4.20 ▲** Industry average: 3.66

The truck brokerage industry, which primarily operates on the back of personal relationships, has witnessed a drastic change in the last several years. Even before the pandemic, many brokers were digitalizing load tracking, truck capacity searches and load booking to protect margins.

In 2020, this investment made it easier to manage a remote workforce. The move to digitalization also allowed brokers to quickly share information with shippers, streamline communications with carriers, increase carrier utilization, reduce cost per load and scale up volume without increasing overheads. Today, digital freight-matching technology is being used to efficiently connecting truck brokers with carriers and their capacity.

Not surprisingly, our research found truck brokerage companies have the industry's highest proportion of IT spend on innovation and its leading digital capabilities. The segment is home to the industry's highest percentage of Leaders and only a tiny percentage of Laggards. All clusters (including Laggards) have high scores in track & trace, systems integration and forecasting & planning systems.

Drilling down into micro-capabilities, trade lane, transport management system, the ability to measure utilization and exception reporting all exceed the industry average. Almost 80% of truck brokers use software to measure utilization; almost 90% have high digital maturity in reporting and documentation. In customer experience, Leaders and Efficient Followers already offer e-booking and customizable reports—areas where the rest of the segment needs to catch up.

**Efficient Followers**

**24.6%**

**Strivers**

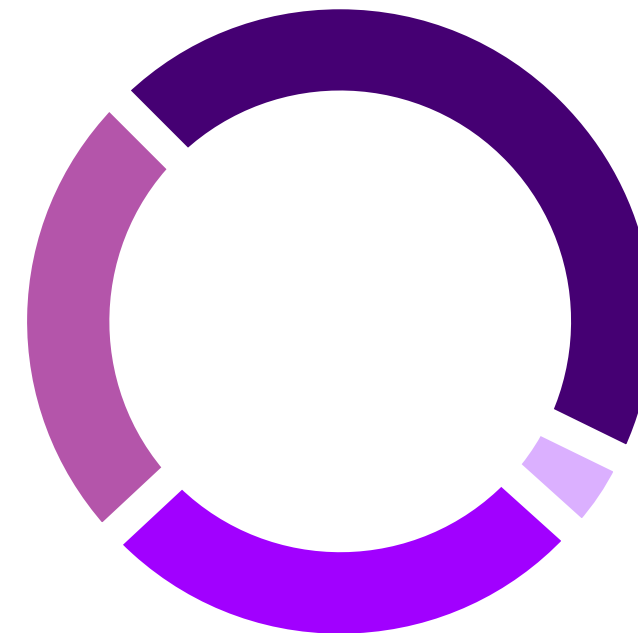
**26.2%**

**Leaders**

**44.6%**

**Laggards**

**4.6%**

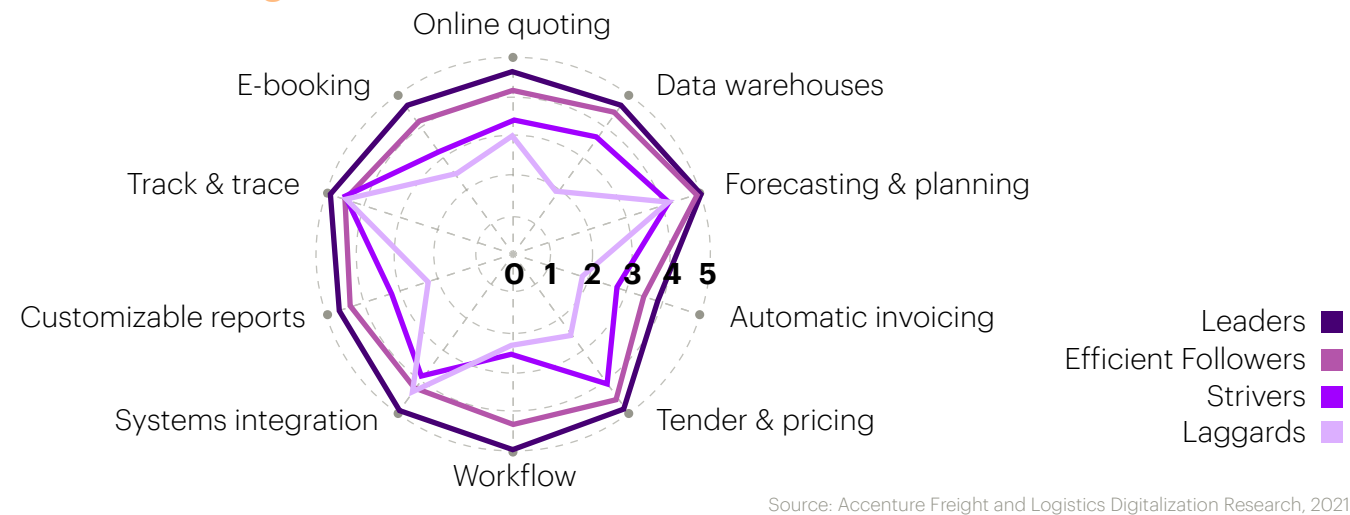


Source: Accenture Freight and Logistics Digitalization Research, 2021

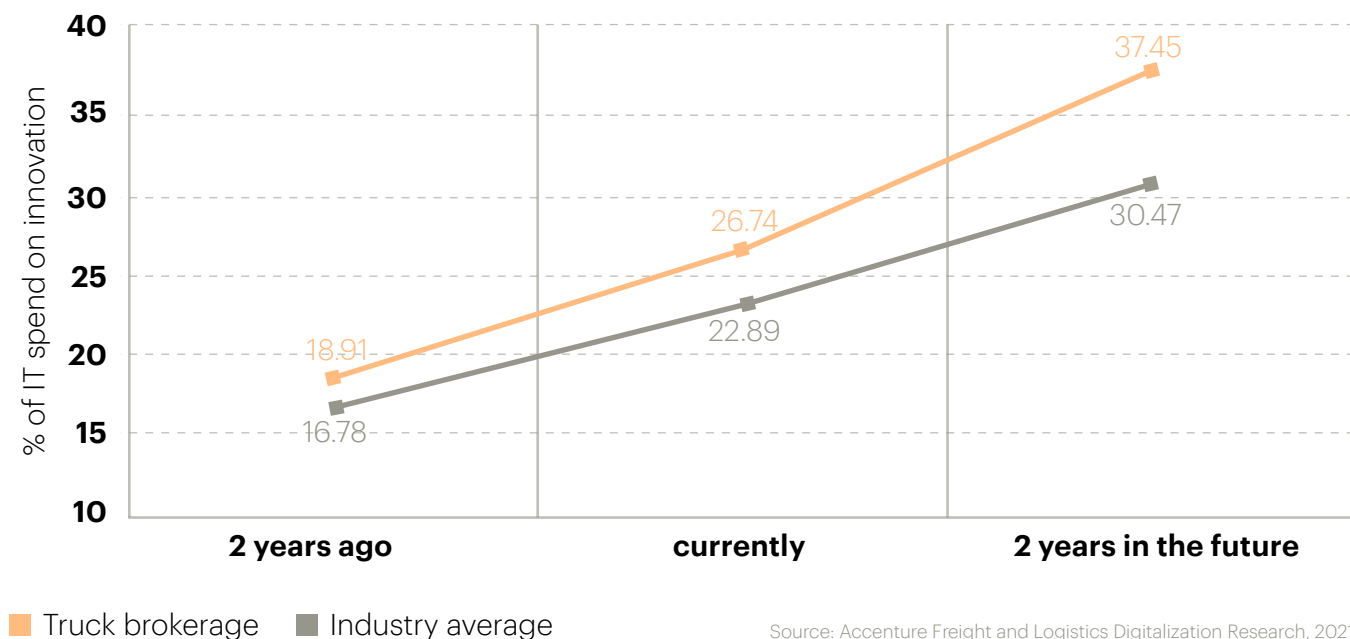


## Digital maturity in 10 capabilities by cluster

### Truck brokerage

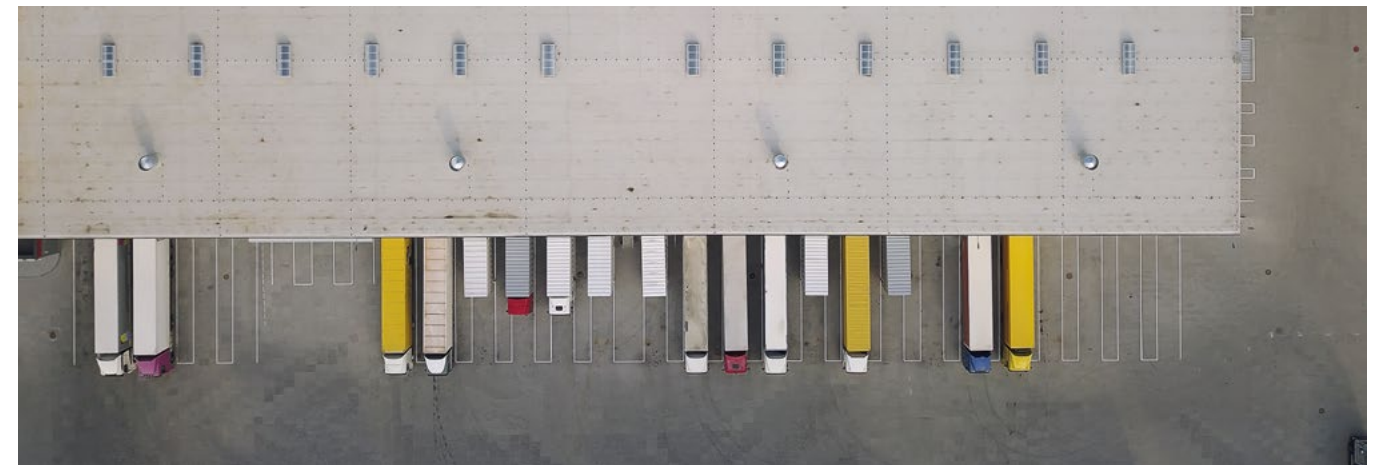


## IT innovation spend against the industry average



## Opportunities

The future of the segment is in platform-based providers that use data exchange and intelligent algorithms to provide load listing and instant carrier selection, pricing and bidding. Shippers are not only interested in competitive rates. They will increasingly focus on areas like payment assurance, cargo safety, service continuity and rate negotiation leverage.



The global market for digital road freight brokerage is projected to reach \$3.6 billion by 2027, growing at a CAGR of 38%.<sup>7</sup> To participate in this market, traditional truck brokers will need to use digital freight-matching platforms, via APIs and real-time data, to rapidly choose the right carrier and provide all necessary documents and scheduling processes in one action.

Digitally enabled truck brokers will also be able to apply analytics to determine how to balance assets and optimize routes based on market dynamics. Other digital opportunities include promoting enhanced customer service through more transparency and technology throughout the network and offering a platform service to completely outsource transportation management for shippers or carriers.

# Trucking

## Digital maturity score out of 5

**Trucking: 3.35** ▼ Industry average: 3.66

In trucking, the pandemic exacerbated labor supply issues in an already aging workforce as many drivers left the business because of concerns about COVID-19 and the complications of cross-border issues. Digital investment was important to both cut costs in the face of rising wages and improve driver safety and support, prompting a shift to paperless and contactless operations. Many fleets implemented app-based driver management systems. Some of the larger trucking companies experimented with 'uberizing' their fleets to give customers a platform-based experience while better matching supply and demand.

However, with the majority of this segment comprising Strivers or Laggards, our research found trucking companies have digital capabilities and a percentage of IT spend on innovation below industry averages. Across the segment, digital maturity is highly variable in all 10 capability areas.

Trucking is one of the industry's few segments where respondents said they prioritize customer-facing digitalization over data and process automation, yet customer-facing digital processes lack maturity. It remains to be seen how rapidly trucking companies can accelerate digitalization, given the segment's future spending plans are below the industry average.

Efficient Followers

**26.9%**

Strivers

**31.3%**



Leaders

**16.4%**

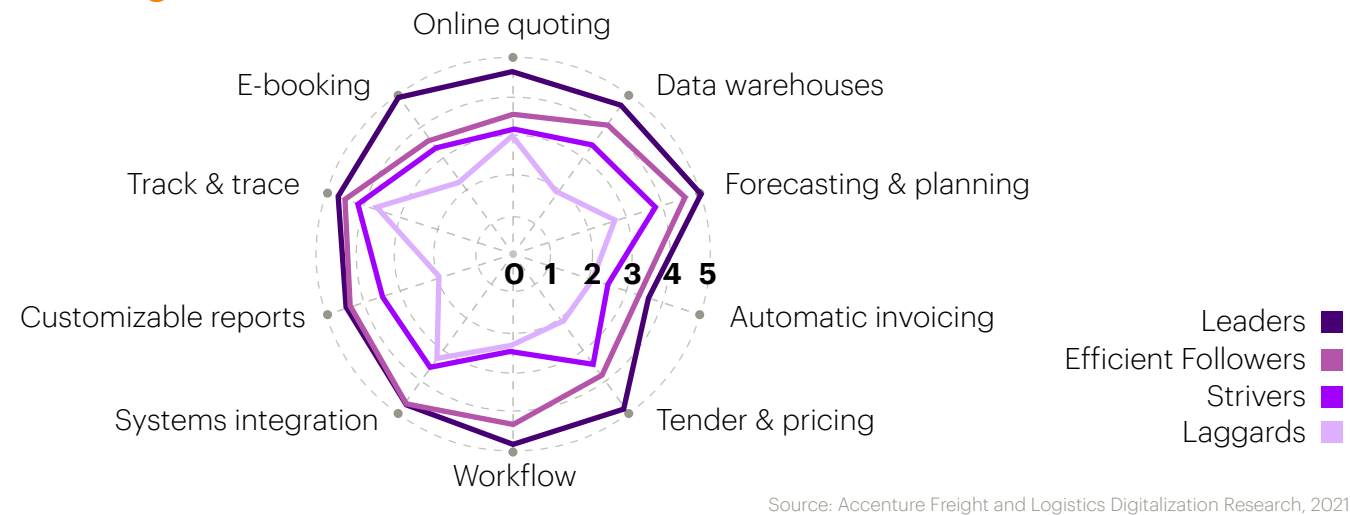
Laggards

**25.4%**

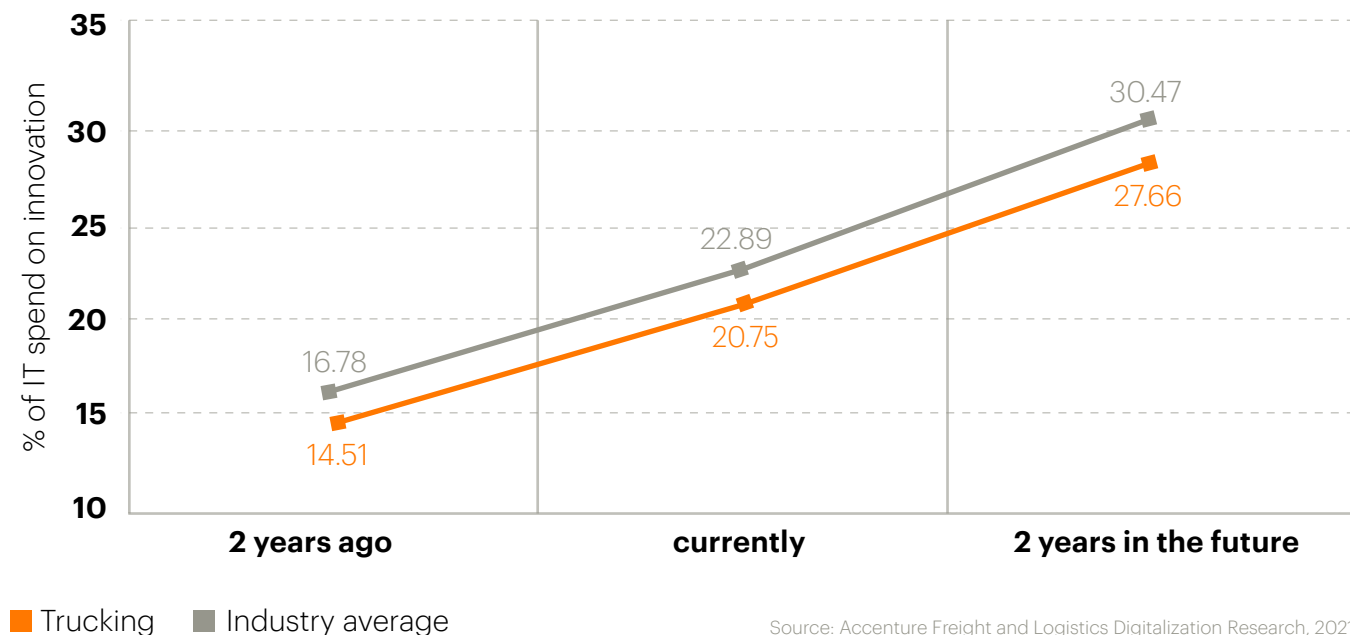
Source: Accenture Freight and Logistics Digitalization Research, 2021

## Digital maturity in 10 capabilities by cluster

### Trucking



## IT innovation spend against the industry average



## Opportunities

The global long-distance general freight trucking market is expected to reach \$826.54 billion in 2025 at a CAGR of 8.3%,<sup>8</sup> driven by the rise of e-commerce and improved last mile delivery solutions. But labor shortages will make it hard for trucking companies to expand to meet this expected growth in demand.



Eventually, trucking could evolve into an ecosystem of autonomous vehicles directed by a digitalized supply chain with automated freight matching. But the segment is a long way from this reality. With falling margins, and a highly fragmented industry, the imperative is to get the basics right, improving service levels and taking out costs via:

- Automated route optimization
- IoT-enabled, real-time track & trace
- Automated workflows, including automated invoicing and the use of tender & pricing systems to support e-procurement

Even then, it will take time for the benefits of digital investment to outweigh the cost of increased wages from driver shortages—an issue the segment will be grappling with for some time.

# Contacts



## Sarah Banks

### Managing Director—Global Lead, Freight and Logistics

Sarah has spent over 25 years in the logistics industry, including working with clients on complex and impactful solutions to transform organizations, processes and technology. She has seen first-hand the evolution of the industry including the pivot toward new technologies like IoT, Blockchain and Automation that have the promise to disrupt the way the logistics industry operates. She is passionate about the future of logistics and transformation of related service offerings and excited to be a part of shaping the possibilities to come.



## Mei Yee Pang

### Managing Director—Supply Chain Operations Offering Lead, Growth Markets

Mei has spent more than a decade transforming supply chains for some of the world's biggest companies. Working at the forefront of innovation, she is helping business leaders leverage new technologies and strategies to achieve sustainable growth for their investors, their employees and the planet.



## Ruuchi Chhabra

### Managing Director—Freight and Logistics Industry, Strategy & Consulting

Ruuchi has 17-plus years of freight and logistics experience, having spent more than a decade working with large ocean liners and freight forwarders. She has deep knowledge of various business aspects covering operations, senior client relationship management and strategic business development. She has led strategic transformation programs leveraging technology and apt use of innovation, helping clients transform linear supply chains into digital supply chains.



# Research team



## Matthias Wahrendorff

### Senior Thought Leadership Principal— Accenture Research, Global IIoT and Industrial Research Lead



## Michal Hadrys

### Research Specialist—Accenture Research Data Science Team



# Acknowledgements

Accenture collaborated with Ontegos for the development of the survey. Special thanks to Beat Simon, ONTEGOS AG and Oliver Gritz, ONTEGOS GmbH, for their support.

To learn more about how we are helping Freight and Logistics companies visit [www.accenture.com/freightandlogistics](http://www.accenture.com/freightandlogistics)

# About the research

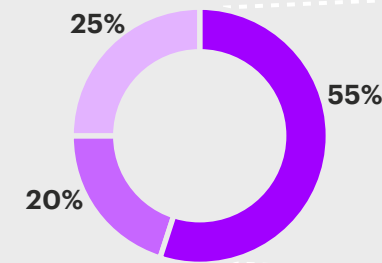
To assess the industry's digital maturity, between October and December 2021, Accenture surveyed more than 600 C-suite executives, vice presidents and directors from leading F&L companies (revenue size between \$0.5bn and \$30bn+) in 10 countries, representing a broad cross-section of F&L segments. The quantitative survey was flanked by a series of 14 in-depth, qualitative interviews with executives from industry leaders in North America, Europe and Asia-Pacific.

## Methodology

The survey and interview results were analyzed with the help of Accenture's data science research experts who applied an agglomerative clustering methodology, based on 12 variables. A clustering algorithm allows us to identify commonalities among survey respondents while emphasizing the differences across groups. To run the algorithm, we selected 10 variables related to digital capabilities and included two additional metrics to account for company-specific factors. In the survey, each of the 10 digital capability questions was scored and scaled on a range from 0 to 5. Two other variables capture the percentage of IT budget spend on innovation activities—we use this measure related to two years ago and the present to identify potential changes that occurred in a company's strategy. These two variables were also scaled from 0 to 5 in order to match the range of the digital capability metrics.

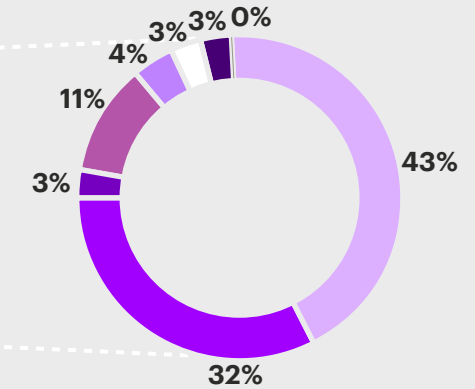
The algorithm results led to the identification of four distinct clusters, representing different digital maturity levels, which were named: Leaders, Efficient Followers, Strivers and Laggards. We adopted this classification to detail out and analyze our survey responses and compare behavior across different clusters.

Executive level split (N=605)



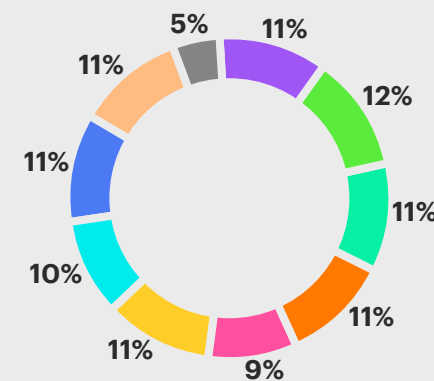
- C-suite
- Vice President
- Director

C-suite split (N=605)



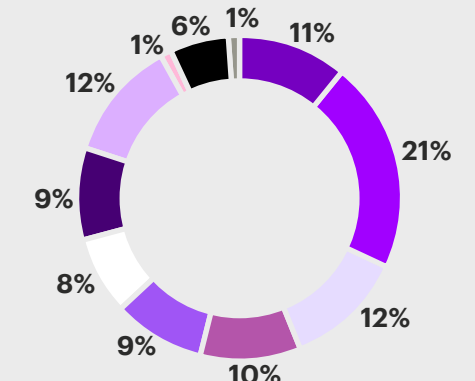
- Chief Executive Officer (CEO)
- Chief Information Officer (CIO)
- Chief Operating Officer (COO)
- Chief Marketing Officer (CMO)
- Chief Technology Officer (CTO)
- Chief Innovation Officer
- Chief Digital Officer (CDO)
- Chief Strategy Officer (CSO)

F&L segment split (N=605)



- Air cargo
- Ocean carriers
- Railroads
- Trucking
- Port operators
- Freight forwarders
- Courier, express & parcel
- Contract logistics
- Truck brokerage
- Other

Geographic split (N=605)



- Canada
- United States
- France
- Germany
- Italy
- United Kingdom
- Australia
- China
- Singapore
- Japan
- Other

## About Accenture

Accenture is a leading global professional services company that helps the world's leading businesses, governments and other organizations build their digital core, optimize their operations, accelerate revenue growth and enhance citizen services—creating tangible value at speed and scale. We are a talent and innovation led company with 738,000 people serving clients in more than 120 countries. Technology is at the core of change today, and we are one of the world's leaders in helping drive that change, with strong ecosystem relationships. We combine our strength in technology with unmatched industry experience, functional expertise and global delivery capability. We are uniquely able to deliver tangible outcomes because of our broad range of services, solutions and assets across Strategy & Consulting, Technology, Operations, Industry X and Accenture Song. These capabilities, together with our culture of shared success and commitment to creating 360° value, enable us to help our clients succeed and build trusted, lasting relationships. We measure our success by the 360° value we create for our clients, each other, our shareholders, partners and communities.

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