

2017 Third-Party Logistics Study

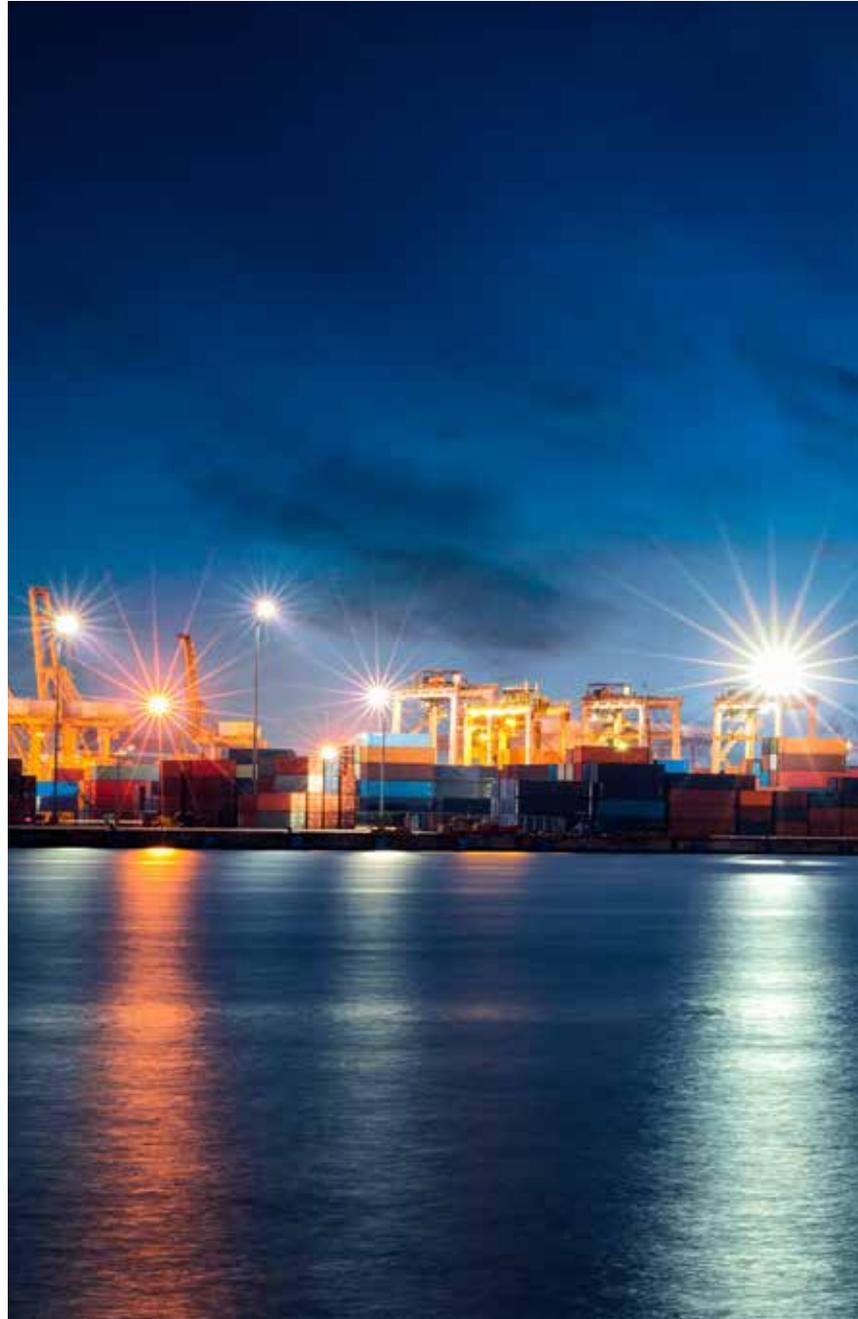
The State of Logistics Outsourcing

Results and Findings of the 21st Annual Study



Table of Contents

| | |
|----|--|
| 4 | Executive Summary |
| 8 | Current State of the 3PL Market |
| 16 | Logistics Service Providers: Decision Time |
| 24 | 3PL Roles in Supply Chain Transformation |
| 32 | Utilizing Big Data and Analytics |
| 40 | End-of-Life Supply Chain |
| 48 | Strategic Assessment |
| 54 | About the Study |
| 60 | About the Sponsors |
| 64 | Contacts |



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Executive Summary

Current State of the 3PL Market

The *2017 21st Annual Third-Party Logistics Study* shows that shippers and their third-party logistics providers continue to move away from primarily transactional relationships and toward meaningful partnerships. Since the study began 21 years ago, researchers have seen the continued improvement in the strategic nature of relationships between shippers and third-party logistics providers.

This year's survey suggests 3PLs and their customers continue to improve the quality of their relationships. Both parties—91% of 3PL users and 97% of 3PL providers—reported that their relationships are successful and that their work is yielding positive results.

The *2017 3PL Study* showed that 75% of those who use logistics services (shippers) and 93% of 3PL providers said the use of 3PL services has contributed to overall logistics cost reductions, and 86% of shippers and 98% of 3PL providers said the use of 3PLs has contributed to improved customer service. Moreover, the majority of both groups—73% of shippers and 90% of 3PL providers—said 3PLs offer new and innovative ways to improve logistics effectiveness.

The topic of alignment remains relevant, and shippers and 3PLs agreed on the importance of openness, transparency and effective communication to overall success. Among respondents, 44% of shippers and 86% of 3PL providers agree that collaborating with other companies, even competitors, to achieve logistics cost and service improvements holds value.

This year's results show that as 3PL offerings mature, shippers are increasingly taking advantage of logistics providers' expertise. Again this year, the most frequently outsourced activities continue to be those that are more transactional, operational and repetitive. Activities that are strategic, IT-intensive and customer-facing tend to be outsourced to a lesser extent. However, even outsourcing in those categories is increasing over historical values.

IT services are becoming a differentiating factor that 3PLs use to their advantage. Shippers continue to rely heavily on the IT services that 3PLs provide, and the ability to manage the provision of IT-based services is a necessary core competency of 3PL providers. While the "IT Gap"—the difference between what shippers feel is important and their ratings of their 3PLs' current IT capabilities—has stabilized, further opportunities for improvement remain.

The 3PL sector continues to increase globally, in terms of both revenue and coverage, and 3PL providers are refining and expanding their core competencies to improve and grow their offerings. New demands from consumers and shippers will drive the industry to continue to evolve.

Logistics Service Providers: Decision Time

Fluctuating capacity, increased shipper demands and disruptions within the industry are creating a volatile decision-making environment for shippers and logistics providers trying to optimize the supply chain. Both parties are increasingly using information and analytics to drive their decisions.

To help optimize the supply chain, shippers are becoming less concerned about the mode of transportation and instead are opting for the most efficient means of moving products.

That has resulted in the growth of mode-neutral logistics providers, and 3PLs are using data aggregation and analysis to determine the best shipment methods. More than half of 3PLs—62%—said that over the past two to three years, their customers showed interest in changing their use of various modes of transportation.

Nearly three-fourths of shippers—71%—said real-time analytics from 3PLs help them better understand shipping alternatives, and 61% valued 3PLs' assessments of trade lanes and origin-destination pairs in terms of cost and service levels.

To provide increased information and data-driven solutions, 3PLs are broadening service offerings, increasing their employee base and their organization's skills, expanding their geographical coverage and investing in new technology.

Logistics providers have turned to mergers and acquisitions to fill gaps in service areas, expand their global network, and leverage best practices and technology across a global scale. The value of M&A deals nearly doubled from 2014 to 2015, growing to \$173 billion from \$87 billion. Also, cross-border deal values have

quadrupled from 2014 to 2015, growing to \$115 billion from \$28 billion.

Shippers have mixed reviews of the M&A activity, with 27% reporting that added options and versatility within a provider are good for shippers and 34% saying that they are concerned about reduced competition based on price.

In spite of the growth, challenges remained. Shippers and their logistics providers faced oil price volatility, a drop in global demand and excess shipping capacity. Carriers and 3PL providers also dealt with increased regulations, including the implementation of the electronic logging device mandate, and remain concerned over the worsening driver shortage. All those factors continued to drive the need for optimization. More than half of logistics providers—59%—listed improving logistics optimization as one of the top three most important goals, and 53% also listed improving process quality and performance.

Shippers show a desire for a more global, unified platform. About half—49%—of shippers named “global expansion” as a supply chain transformation their organization considered in the past two to three years, and 40% of 3PL/4PL providers indicated “global expansion” as something they believed their customers are pursuing.

And as many would expect, data-driven optimization will continue to shape the supply chain industry in the future. Providers that excel in data analytics will develop a competitive advantage.

3PL Roles in Supply Chain Transformation

Shippers looking to gain an overall competitive advantage have shown significant interest in supply chain transformation. Successful transformation efforts rely on a wide range of people and resources, and 3PLs and 4PLs are playing an important role in the transformation process.

Among respondents, 73% of shippers indicated meaningful involvement of 3PLs in processes relating to supply chain transformation, with 9% suggesting very significant involvement, 28% significant involvement and 36% advisory. Responses from 3PLs/4PLs show that they see themselves having a slightly more involved role with 16% reporting very significant involvement, 30% significant and 38% advisory.

As part of this year’s survey, users and 3PL providers assessed the importance of 3PL capabilities relating to people, process, technology and execution/implementation of transformation initiatives. Both groups viewed people as the most important resource with average importance ratings of 26% from users and 30% from providers. Average importance ratings of 25% for users and 27% of providers were reported for execution/implementation capabilities. In addition to the ratings for the process being similar for both types of respondents, users of 3PL services reported an average importance rating of 26% for technology, with 21% of providers responding similarly.

Alignment remains a component of successful 3PL-shopper relationships, but respondents drew a general distinction between 3PL “customer facing” capabilities (e.g., business development; sales and sales support; tender and trade management) and those that are more “service-related” (e.g., operations; fulfillment warehousing).

Slightly more than half of shipper respondents—53%—felt that service-related capabilities were most important to the objective of alignment, while 58% of 3PL respondents felt that both were equally important. Furthermore among shippers, 71% said the availability of real-time analytics is among the most important attributes; 61% said it was trade-lane profitability analysis; and 55% valued collaboration strategies.

While transformation and change are never easy, the experiences of 3PLs and 4PLs may be of great benefit to shippers who engage them

in the supply chain transformation process. Because transformation is a continuous process, logistics providers’ ability to collect and analyze information related to shippers’ operations could continue to shape change, providing value.

Going forward, in addition to the operational expertise and experience that 3PLs contribute to the overall improvement process, there will likely be greater importance on the role meaningful analytics and data play in transformation initiatives. Transformation and continuous improvement will be a priority as shippers look for new and innovative ideas to reduce costs, enhance service and improve the management of complex supply chains.

Utilizing Big Data and Analytics

Data collection and analysis is taking on greater importance for 3PLs and 4PLs as they optimize the supply chain, increase end-to-end visibility and launch new capabilities for their customers. In this year’s survey, nearly all 3PLs—98%—said improved, data-driven decision-making is essential to the future success of supply chain activities and processes, and 93% of shippers agreed. Both groups—86% of 3PLs and 81% of shippers—said the effective use of big data will become a core competency of their supply chain organizations.

Logistics providers are getting more operational and tactical with how they use their insight into the supply chain and are creating value by optimizing networks and processes. Among 3PLs, 71% said the greatest value data provides is in improving process quality and performance, 70% said improving logistics optimization, and 53% said improving integration across the supply chain.

Shippers are increasingly interested in data, which could create a competitive advantage for logistics providers that have invested in technology and expertise to gather and analyze information. Shippers were asked to list the attributes they find the most important regarding big data: 60% ranked improving

integration across the supply chain, 55% said improving data quality, and 52% said improving process quality and performance.

There appears to be a slight disconnect between logistics providers and their understanding of big data's importance to shippers. Among shippers, 79% said their supply chain organization sees significant value in the use of big data compared with 65% of 3PLs who reported that their customers' supply chain organizations see significant value in the use of big data.

This year's survey also showed that shippers have softened on what they think 3PLs can achieve with big data. In the current survey, 35% of shippers said 3PLs can support their big data initiatives, down from 44% who felt the same way in 2014.

Both parties—97% of shippers and 94% of 3PLs—feel alignment is important to drive the effectiveness of big data initiatives. The need to freely share data also contributes to success, but privacy concerns, the necessary infrastructure for obtaining data and usability of data remain roadblocks that need to be addressed. However, shippers appear to be more comfortable with sharing information than they have in the past. In this year's study, 20% of shippers said they would not share proprietary information with 3PLs, down from 26% in 2014.

To draw value out of data, shippers and 3PLs will need to continue focusing on improved data accuracy, which could pose a challenge. An estimated 80% of relevant information is unstructured, and organizing, scrubbing and storing data is time-consuming and costly.

End-of-Life Supply Chain

Supply chain services are valuable throughout a product's lifecycle, especially as products reach their end of life. In today's environment, newer and better versions of products are released much more frequently than they have been in the past, and the end of product's lifecycle is coming sooner rather than later for many items, particularly electronics.

There is a range of environmental, social and economic factors driving the growth of end-of-life supply chain needs. Environmental concerns from consumers, as well as government regulations that mandate proper disposal, are increasing pressure for organizations to focus on environmental impact and sustainability initiatives, creating a key role for reverse logistics providers.

Less than half of shippers—41%—said they do not touch end-of-lifecycle products or processing, indicating that the majority work with end-of-lifecycle handling or processing in some capacity. Among those that are involved in end-of-lifecycle activities, 34% of shippers said it is a result of consumer demand, request or expectations, and 22% said it is because of extended product responsibility.

Logistics providers can take advantage of several opportunities as shippers look for help with their end-of-life supply chain. Among respondents, 41% of shippers said they prefer a third party to handle all aspects of end-of-lifecycle collection and processing; 29% would like to improve the efficiency of their internal capabilities; 20% would like to work

with a third party to support product disposal; and 19% would like to work with a partner to support physical logistics/movement of end-of-lifecycle products.

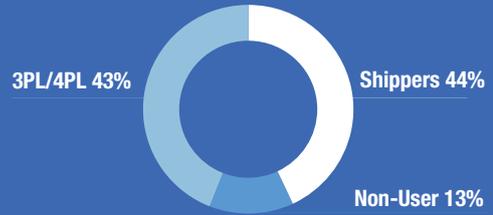
Currently more than half of 3PLs and 4PLs—54%—offer logistics/physical movement support of end-of-lifecycle specific offerings, but 40% do not have any EoL-specific solutions. Among 3PL/4PL respondents, 34% said consumers demand, request or expect end-of-lifecycle support; 17% said extended product responsibility (governmental controls and regulations) were a primary reason they were involved in EoL activities; and 17% said they are involved because of secondary market value capture.

In addition to meeting customer and regulatory demands, recovering products can create opportunities for manufacturers to improve designs, and 15% of shippers said they accept failed products for research and development purposes.

As lifecycles of products continue to shorten, the role of reverse logistics in the supply chain will continue to grow. Ensuring a closed loop for the full product lifecycle allows for greater efficiency, reduced environmental impact and lower total costs at all touch points. Logistics providers that invest in the resources and infrastructure for reverse logistics can leverage their expertise through end-of-life-specific product offerings.

2017 3PL Study Survey Results

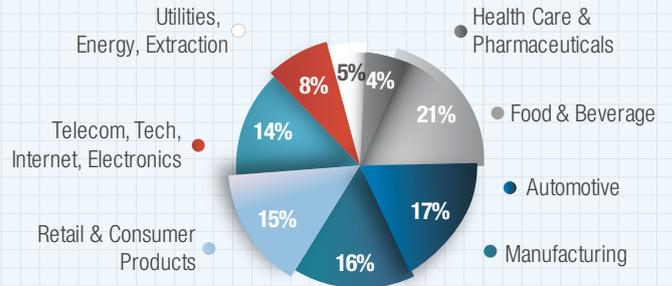
Responses by Category



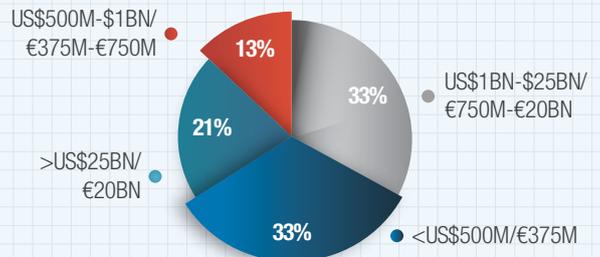
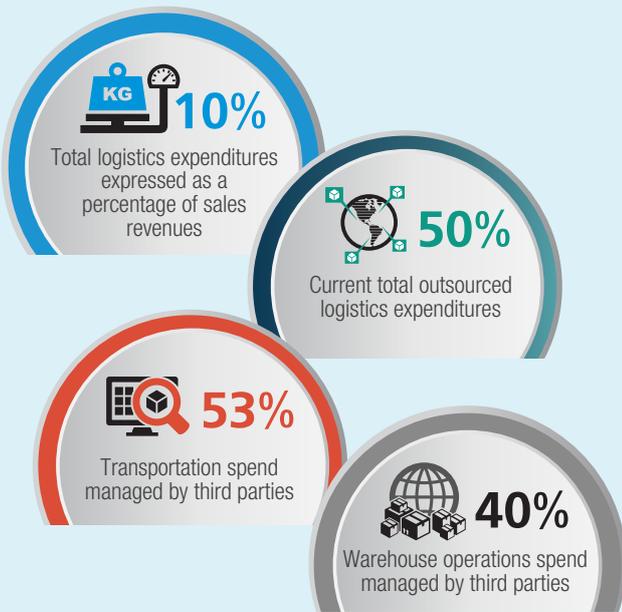
Survey Responses by Region



Response Industries and Company Sizes



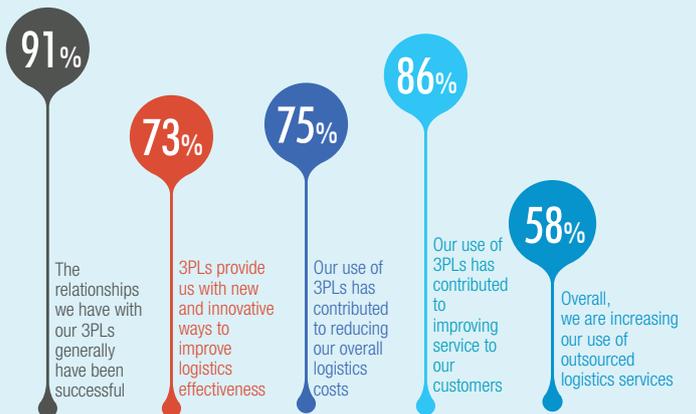
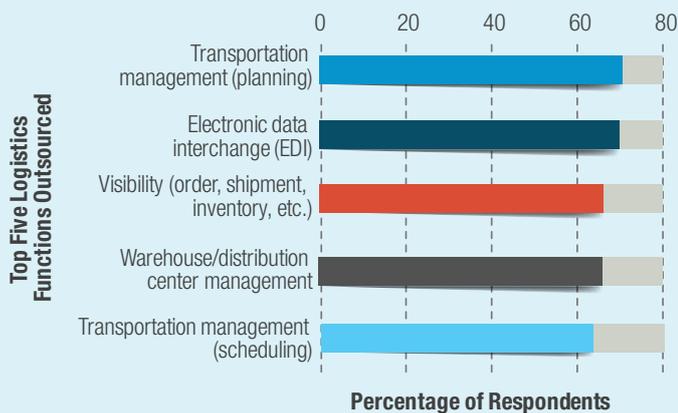
Logistics Expenditures



Outsourced Functions

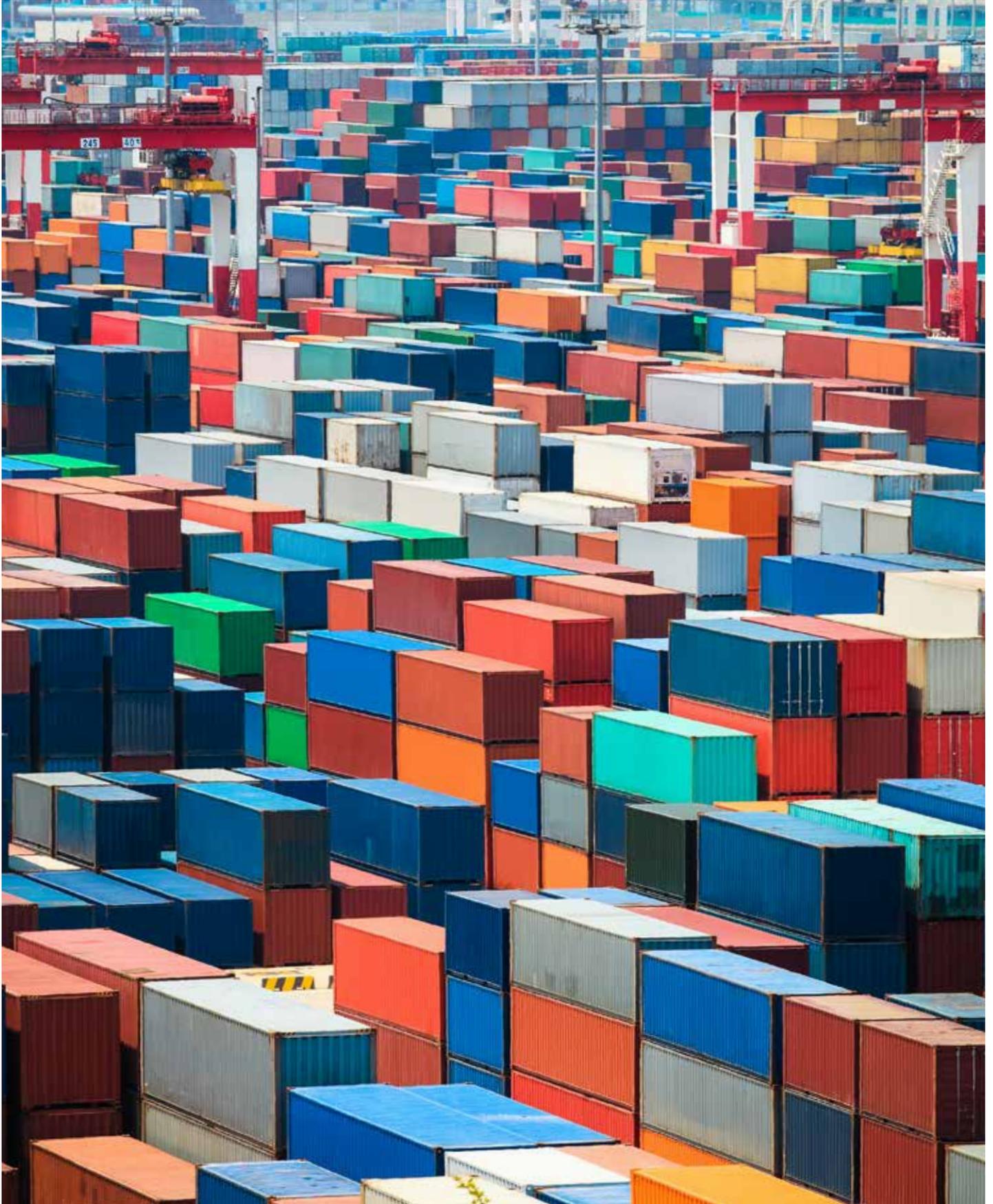


Users of 3PL Services



Current State of the 3PL Market

3PL Service Offerings and Technology Capabilities Create a Competitive Advantage



The results and findings of the 2017 *21st Annual Third-Party Logistics Study* provide current perspectives on the nature of shipper and 3PL relationships, why they are generally successful and some of the ways in which they could be improved.

Shippers and their third-party logistics providers are continuing to work together to strengthen their relationships and optimize the supply chain. Research showed that both parties are moving away from a transactional relationship and more toward meaningful partnerships with shippers relying on 3PLs to provide innovative solutions and a true competitive advantage.

For the past 21 years, we have seen that shippers increasingly leverage what 3PLs offer, creating a true benefit. This year, the number of shippers reporting that 3PLs helped them lower costs has increased, as has the number of shippers reporting that 3PLs have contributed to improving services to the ultimate customer.

The study also has shown that customers generally exhibit a greater understanding of their organizations' core businesses, and how improved supply chain capabilities can help to achieve overall organizational objectives. For several years, researchers have seen shippers refocusing efforts on their core strengths to stay competitive, which then may lead to greater reliance on third-party logistics providers. This demonstrates that shippers are becoming more secure with their partnerships and value the reliability that 3PLs can provide.

In addition, shippers have improved upon their ability to determine when and why investing in outsourced logistics services would be useful, and how best to work with commercial providers to create the best results for their organizations and their supply chains. The 2017 study confirms these observations, given the high percentages of 3PLs and shippers that view their relationships as successful.

Uncertainties within various economies have dampened the interests of many shippers in making capital investments in logistics. In many cases, the economy is sending mixed signals,

which makes it difficult for shippers to know which mode to invest in and when. In addition, the widening of the Panama Canal, the driver shortage and the currently modest, but potentially fluctuating, cost of fuel have added to shippers' desire to remain nimble with their supply chain options. Shippers generally are responding more positively to decisions that rely on 3PL capabilities to provide guidance and operational capabilities regarding the shippers' logistics needs.

Globally, there continues to be concern for the economies of certain countries and regions of the world, as well as interest in comparative wage levels and the continuing evolution of emerging markets. There also is continued interest in global freight balances and directional imbalances because of trading patterns and available capacity, particularly for ocean and international air services, as they may be needed.

Logistics providers have worked hard to balance the risk associated with investing too heavily in any single mode, which has contributed to the number of mergers and acquisitions that have occurred in the past few years. In addition, the 3PL market has grown, and more and more shippers are looking for 3PLs that can serve as a single solution, adding to the merger and acquisition trend.

In an uncertain economy, companies have to be able to react quickly. Time sensitive deliveries, lean supply chains and shorter product lifecycles all necessitate the ability to react quickly when change arises. Logistics providers can work closely with shippers to scale up or down quickly based on demand.

Mode-flexible logistics providers offer options for shippers to utilize the most cost-effective methods. Additionally, lower fuel surcharges and decreased on-highway freight rates can incentivize shippers to move goods via truck instead of rail. An example of this is that there have been recent decreases in intermodal traffic as rates have shifted.

Given the volatility in certain economies, users of 3PL services may experience higher prices for the services they need, which suggests that 3PLs and shippers need to be at the "top of their game."

The global and domestic markets for outsourced logistics services are continuously changing, and users and providers of 3PL services equip themselves with the best people, processes and technology.

In addition to diligence relating to costs, investments and service levels, those involved in both the supply and demand side of the 3PL business are focused on major concerns such as supply chain security and sustainability.

Similar to the past studies, findings from this year's study reinforce the suggestion that both 3PLs and shippers are becoming more proficient at what they do to enhance the quality of 3PL relationships. Not only are 3PLs achieving a better focus on what they do best and the core competencies they can provide to enhance the functioning of customers' supply chains, the IT capabilities 3PLs have invested in are maturing, and shippers are benefiting from the data collection, analysis and visibility that 3PLs can provide.

As an example, in conversations with shippers and logistics providers, it has become clear that retailers are working to reduce the amount of inventory they carry, which frees up capital and increases the pace at which companies can react to changing consumer demands.

A highly functioning supply chain plays a key role in ensuring the functionality of a just-in-time inventory system, which has existed for years within the automotive industry. Lowering inventory carrying costs is becoming the industry norm, which is creating opportunities for 3PLs. Logistics providers can optimize the network and provide increased visibility that can help retailers and shippers strengthen and streamline their supply chains and provide the ability to react quickly to address inventory needs, including spikes in demand.

In today's environment, decisions on modifying the course of a shipment can be made at nearly any point in the supply chain. Because of real-time visibility into the supply chain, a product is no longer on a set course once it leaves the warehouse. Weather disruptions, traffic delays

or even a shift in consumer demand can alter a product's course to ensure it arrives when and where it is needed. Innovative solutions to capture and analyze data, as well as the ability to optimize the supply chain, are providing greater value and flexibility to shippers.

Logistics providers are investing in contemporary IT solutions, replacing legacy systems and processes with a mix of cloud-based solutions, commercial offerings and proprietary innovations to create leading-edge approaches. This is already evident in the adoption of transformative supply chain software, greater use of mobile technologies in key supply chain processes at both shipper and 3PL organizations, and greater movement toward the use of highly capable and flexible systems to facilitate management of supply chain processes and activities.

This year's *Third-Party Logistics Study* provides useful perspectives and insights relating to the 3PL sector and how 3PLs and customers may position themselves to be as successful as possible in the future. For further insight into the details of the study and the key elements of the research process, please see the section titled "About the Study."



3PL Usage Reflects Global Economic Trends

As a result of significant volatility in global markets and global economies, there are direct impacts on demand for logistics and supply chain services. **Figure 1** provides global 3PL revenues by region for 2014 and 2015 from Armstrong & Associates, and also summarizes percentage changes in these revenues for 2014 to 2015 and the two previous years. Also included are compounded annual growth rates (CAGR) by region for 2006 to 2015. A review of the global 3PL revenues from 2014 to 2015 showed increases for North America (+ 1.0%) and Asia-Pacific (+ 2.7%), while decreases were noted for Europe (- 11.4%) and South America (- 15.8%). Coupled with decreases in global 3PL revenues for the remaining countries and regions (- 16.8%), total global 3PL revenues declined from \$751.3B in 2014

to \$721.0 in 2015. This represents an overall net decrease of 4.0%. Additionally, the lackluster global 3PL trends from 2014 to 2015 negatively impacted all of the CAGR figures from those reported in last year's *Annual 3PL study*.

3PL User Spending Patterns on Logistics and 3PL Services

According to this year's study results, 3PL users report an average of 50% of their total logistics expenditures are related to outsourcing, the same amount reported last year. Total logistics expenditures include transportation, distribution, warehousing and value-added services. Of note is that the identical results of 50% for both this year and last year are larger than those indicated for previous years.

Increased Use of Outsourcing Continues to Outpace Moves to Insourcing

Two consistent observations throughout the 21 years of *Annual Third-Party Logistics Studies* are that some customers report having increased their use of outsourced logistics services, while others will indicate a return to insourcing some or all of these same services. Movements to either increased or decreased use of outsourcing may

Figure 1: Global 3PL Revenues Show Modest Decline for 2014-2015

| Region | 2014 Global 3PL Revenues (US\$Billions) | 2015 Global 3PL Revenues (US\$Billions) | Percent Change 2014 to 2015 | Percent Change 2013 to 2014 | Percent Change 2012 to 2013 ^a | CAGR 2006-2015 |
|------------------------------|---|---|-----------------------------|-----------------------------|--|----------------|
| North America | \$ 188.2 | \$ 190.1 | + 1.0% | + 6.1% | + 3.6% | + 4.0% |
| Europe | 174.4 | 154.5 | - 11.4% | + 10.3% | + .01% | - 0.7% |
| Asia-Pacific | 269.6 | 276.9 | + 2.7% | + 5.5% | + 5.3% | + 9.3% |
| South America | 41.9 | 35.3 | - 15.8% | - 6.7% | + 3.0% | + 5.2% |
| Remaining Regions/ Countries | 77.2 | 64.2 | - 16.8% | + 11.9% | - .01% | + 10.2% |
| Total | \$ 751.3 | \$ 721.0 | - 4.0% | + 6.5% | + 2.7% | 4.8% |

^a Source: 2015 19th Annual 3PL Study and © 2014 Armstrong & Associates, Inc.

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be measured in terms of funds expended on outsourced logistics services or the percentage of overall logistics spending represented by outsourcing or the number of activities outsourced.

Outsourcing: 58% of shippers indicate they are increasing their use of outsourced logistics services this year, which compares to a figure of 73% reported last year. In comparison, 88% of 3PL providers agreed their customers showed an increase this year in their use of outsourced logistics services, which compares to 85% last year. These figures are consistent with the modestly positive growth rates for 3PL services, particularly in the North America and Asia-Pacific regions, as discussed above.

Insourcing: Only 26% of shippers indicate that they are returning to insourcing many of their logistics activities, which is lower than the 35% reported last year. Also, 38% of 3PL providers agree that some of their customers are returning to insourcing, a slight increase from the 35% reported last year. While these percentages may seem to conflict, shipper responses pertain only to their organization's directions, while the 3PL responses reflect the providers' thoughts about their overall group of customers.

Reducing or Consolidating 3PLs: This year, fewer 3PL users report reducing or consolidating the number of 3PLs they use—an average of 47%, compared to the previous year's reported 57% as well as the 53% reported in 2015.

One interesting observation that we identified in recent years is that the percentage of 3PL users (shippers) reporting increased use of outsourced logistics services has outstripped the percentage of 3PL users indicating they have returned to insourcing many of their logistics activities by 3:1. Both last year and this year, the ratio is closer to 2:1 (58% versus 26%).

Shipper Experiences With 3PLs: Measures of Success

Among this year's survey findings is that 91% of shippers report their relationships with 3PLs generally have been successful, which represents only a slight measurable decrease from 93% last year. Among logistics providers, 97% reported that their relationships generally have been successful, an increase from 94% last year. Considering the "margin of error" that is present in these percentage figures, the most accurate statement is that both shippers and 3PLs have similar thoughts about the success of their relationships from last year to this year.

Looking deeper into these figures, several survey results are provided below. As we have noted in previous years' studies, the percentage figures from 3PL respondents typically run higher than those from shipper respondents.

- 73% of 3PL users and 90% of 3PL providers agree that 3PLs provide new and innovative ways to improve logistics effectiveness;
- 75% of 3PL users and 93% of 3PL providers agree that the use of 3PLs has contributed to reducing overall logistics costs; and
- 86% of 3PL users and 98% of 3PL providers agree that the use of 3PLs has contributed to improving services to the (ultimate) customers.

Expectations in Shipper-3PL Relationships

As researched in last year's 3PL study, the topic of "alignment" is highly relevant and highly desirable to the success of 3PL-customer relationships. Essentially, this suggests that 3PLs and customers need to be in agreement on the ways they view their goals and objectives, roles and responsibilities, and a wide range of strategic and operational matters. This year's 3PL study reinforced the importance of openness, transparency and effective communication between 3PLs and shippers and the ability of both parties to be sufficiently agile and flexible to accommodate current and future business needs and challenges.

The uses of "gainsharing" and "collaboration" are still thought of highly by 3PLs and shippers as key aspects of many relationships. Survey results this year suggest that 44% of 3PL users and 86% of 3PL providers agree that collaborating with other companies, even competitors, can achieve logistics cost and service improvements. More broadly, success with these types of initiatives may be a key facilitator to achieving the more strategic goals relating to the need for alignment.



What Shippers Outsource and What 3PLs Offer

Figure 2 shows the percentages of shippers outsourcing specific logistics activities. Among the general observations are the following:

- Again this year, the most frequently outsourced activities are domestic transportation (86%), warehousing (66%), international transportation (60%), freight forwarding (44%) and customs brokerage (42%).

- The less frequently outsourced activities continue to be those that are more strategic, customer facing and IT intensive. Examples include: supply chain consultancy services (19%), IT services (17%), fleet management (15%), service parts logistics (12%), lead logistics provider/4PL services (10%) and customer service (9%).

While the more strategic, customer-facing services remain the less frequently outsourced, their rate of adoption is increasing. For example, last year, only 6% indicated were outsourcing lead logistics provider/4PL services, 11% outsourcing IT services and 11% were outsourcing supply chain consultancy services. This demonstrates that as 3PL offerings mature, shippers are increasingly taking advantage of their various areas of expertise.

Figure 2: Shippers Continue to Outsource a Diversity of Logistics Services

| Outsourced Logistics Services | Percentages of 3PL Users | Outsourced Logistics Services | Percentages of 3PL Users |
|--|--------------------------|--|--------------------------|
| Domestic transportation | 86% | Order management and fulfillment | 24% |
| Warehousing | 66% | Reverse logistics (defective, repair, return) | 23% |
| International transportation | 60% | Product labeling, packaging, assembly, kitting | 22% |
| Freight forwarding | 44% | Supply chain consultancy services provided by 3PLs | 19% |
| Customs brokerage | 42% | Information technology (IT) services | 17% |
| Transportation management and planning | 36% | Fleet management | 15% |
| Cross-docking | 34% | Service parts logistics | 12% |
| Freight bill auditing and payment | 32% | Lead logistics provider/4PL services | 10% |
| Inventory management | 24% | Customer service | 9% |

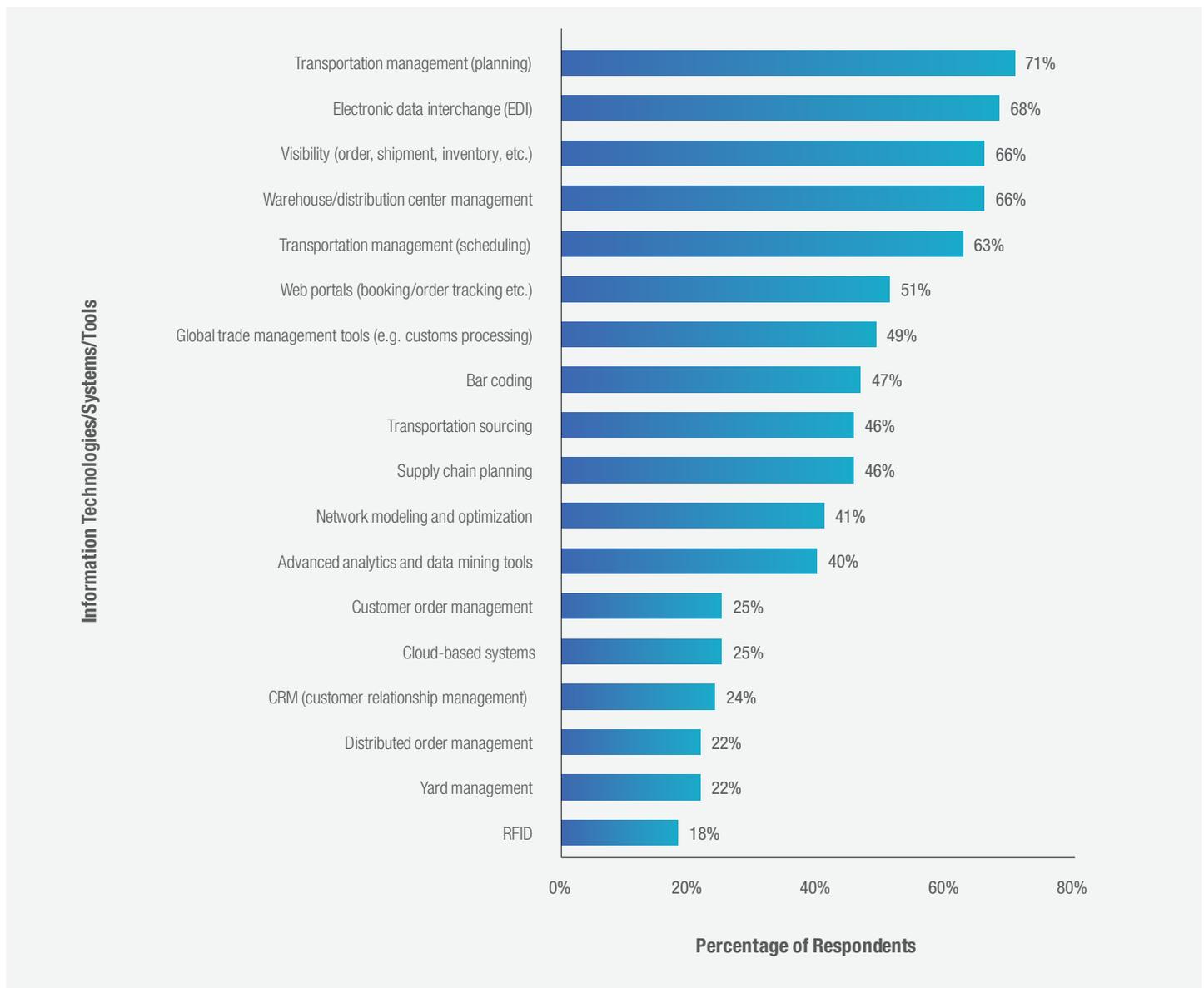


3PL's IT Capabilities: Unquestionably a Key Differentiator Among 3PLs

The *Annual 3PL study* recognized many years ago how important it is for 3PLs to provide a range of IT-based services to help create value for their shipper-customers. Although there have been significant changes over time, **Figure 3** summarizes shipper responses to the question “which information technologies, systems or tools must a 3PL have to serve a customer successfully in your industry classification?” The current results from this

question suggest again this year that the most frequently cited technologies are those that are more execution- and transaction-based capabilities. Examples include transportation management (planning and scheduling), EDI, visibility and warehouse/DC management. Other commonly cited technologies include web portals, global trade management tools, bar coding, transportation sourcing, supply chain planning, network modeling and optimization, and advanced analytics and data mining tools. These more frequently cited technologies tend to parallel the types of logistics services that were profiled in the preceding section.

Figure 3: Shipper Views of Needed IT-Based Capabilities by 3PLs



Beginning 15 years ago, this study has tracked measurable differences between shippers' opinions as to whether they view information technologies as a necessary element of 3PL expertise and whether they are satisfied with their 3PLs' IT capabilities. Referred to as the "IT Gap," **Figure 4** charts this behavior from 2002 to present. Two major trends should be evident from an inspection of this chart. First, the percentage of shippers indicating that IT capabilities are a necessary element of 3PL expertise has remained at a very high level over the 15 years we have been asking this question (91% in 2016); and Second, the percentage of shippers indicating satisfaction with 3PL IT capabilities has increased very significantly from 27% in 2002 to 65% in 2016. One question for readers to consider and debate is whether the IT Gap is exhibiting some degree of stabilization, or whether there will be further narrowing in the future.

In summary, it has become very clear that there is significant demand among shippers,

in general, to look to their 3PLs as a source of capable IT technologies. Although the "tangible" services provided by 3PLs may be viewed in terms of operational and execution-based capabilities, competencies in the IT area are fast becoming differentiating factors when shippers are making selection decisions.

Key Takeaways

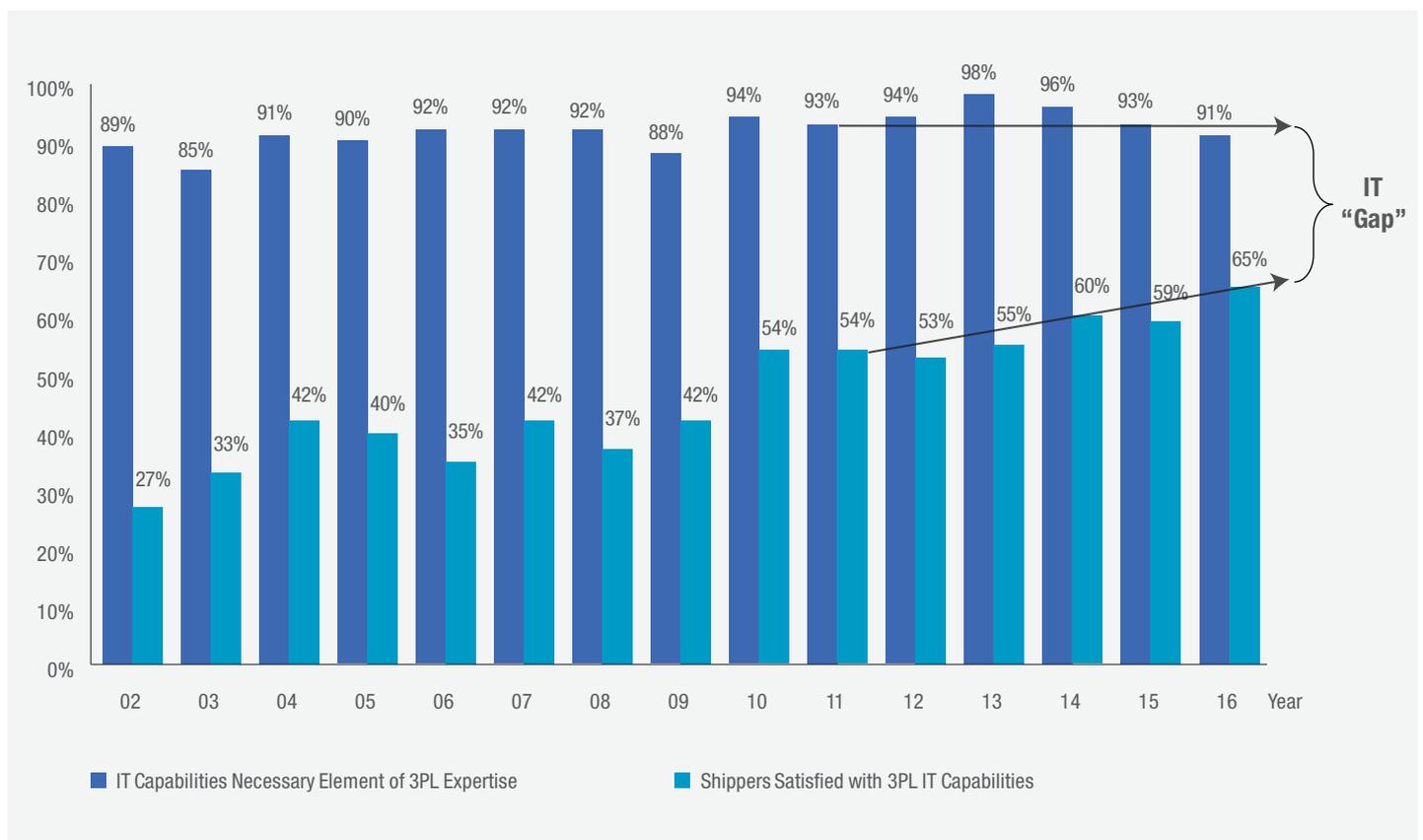
Key findings of the Current State of the Market for the 2017 21st Annual 3PL Study include:

- Although economic conditions vary significantly among countries and regions of the world, modest improvements have been experienced in many key areas. Armstrong & Associates reported aggregate global revenues for the 3PL sector decreased by 4% from 2014 to 2015. This is in contrast to the past several years in which the revenues grew by 9.9% from 2011 to 2012, 2.7% from 2012 to 2013, and by 6.5% from 2013 to 2014. Notably, the

regions of North America and Asia-Pacific recorded modest increases this year, with the remaining regions all posting declines in 3PL revenues from the previous year.

- Users of 3PL services report about 50% of their total logistics expenditures are related to outsourcing, which is the same amount as reported last year. These figures are encouraging as the percentages reported in preceding years were significantly lower. A meaningful interpretation of this trend needs to be viewed with the understanding that 3PL revenues are currently increasing in certain regions of the world and decreasing to some extent in others.
- This year's *Annual 3PL Study* reports that 58% of the shippers surveyed are increasing their use of outsourced logistics services, while 26% report a return to insourcing many of their logistics activities. This ratio of slightly more than 2:1 (58% increased outsourcing

Figure 4: The "IT Gap" – Are We Seeing Some Stabilization?



divided by the 26% that indicated some return to insourcing) is somewhat lower than we have seen in recent years. Also, 47% of shipper respondents indicate they are reducing or consolidating the number of 3PLs they use, a 10% decrease compared to last year.

- Successful relationships between 3PLs and shippers rely on openness, transparency and effective communications between the two parties, as well as agility and flexibility to accommodate current and future business needs and challenges. Obtaining strategic and operational alignment between 3PLs, customers and asset-based service providers remains essential to the success of the overall 3PL supply chain.
- Transactional, operational and repetitive activities tend to be the most frequently outsourced, which is consistent with past studies. Activities that are more strategic, IT-intensive and customer-facing tend to be outsourced to a lesser extent, but their figures are increasing as 3PL providers become better able to provide IT-based services, data collection and data analysis for providers.
- For the past 15 years, this study has been tracking the “IT Gap,” which is defined as the difference between the percentage of 3PL users indicating that IT capabilities are a necessary element of 3PL expertise (91% in the current study) and the percentage of the same users who agree that they are satisfied with 3PL IT capabilities (65%). The IT Gap has been narrowing for most of the 15 years that it has been tracked, but a relevant strategic question is whether it may be showing signs of stabilization.
- Overall, the 3PL sector is increasing globally, and 3PL providers are refining and expanding their core competencies. Customers and potential customers are also heightening their ability to effectively manage relationships with 3PL providers and to help achieve their supply chain objectives while focusing their efforts on their core competencies.



Logistics Service Providers: Decision Time

Data-Driven Decision-Making Drives Optimization, Growth



Shifts in shipping capacity, new demands within the final mile and the worsening driver shortage are just a few of the challenges that create a volatile decision-making environment when it comes to driving logistics efficiency. Layer on top nebulous goals, such as managing changes in consumer behavior, more demanding customer expectations and shippers' desire to respond, and logistics optimization quickly becomes a complex problem to solve.

Time compressions are continuing to take place, with both shippers and consumers expecting products to move even faster. Supply chains are also seeing increased segmentation because of the growing e-commerce market, and shippers are forced to organize multiple unique supply chains within their organizations to cater successfully to the different channels while still leveraging some common infrastructure, assets and relationships.

As a result, third-party logistics providers are increasingly focusing on network optimization and relying more and more on the value of information and analytics, and looking to mergers and acquisitions to fill gaps in capabilities or geographies.

Transportation Mode Decisions Shifting to Logistics Service Providers

Shippers recognize the value of leveraging data to make better decisions. Among survey respondents, 93% agreed that improved, data-driven decision-making is essential to the future success of supply chain activities and processes.

Collecting and analyzing data can help providers work with shippers on demand planning, forecasting, consolidation and distribution points to create a comprehensive transportation strategy that removes inefficiencies and alleviates potential disruptions.

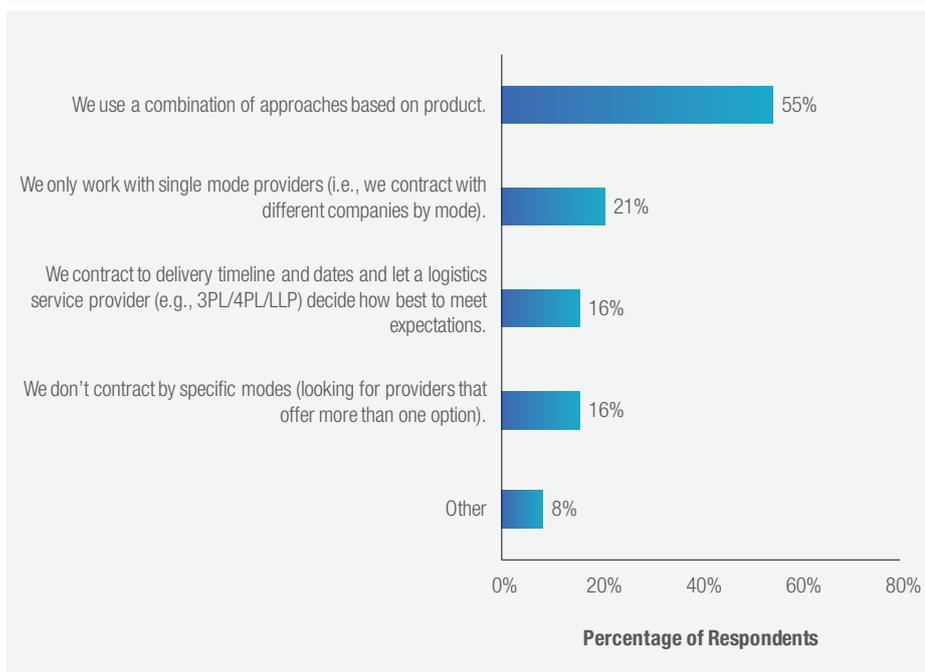
Increasingly, 3PLs are using data aggregation and analysis to determine the best shipment methods. To optimize the supply chain, the industry has seen a growth in mode-neutral logistics providers, and shippers are becoming less prescriptive about how goods flow through their supply chains and instead opt for the most-efficient means. As a result, they are



beginning to favor service-based contracts that allow 3PLs to select the best mode of transportation based on current costs and the shippers' needs.

Sixty-two percent of 3PLs said that over the past two to three years, their customers had shown interest in changing their use of various modes of transportation. When asked how transportation mode decisions are made, more than half of respondents—55%—said they combine the ability of a 3PL to make a mode decision with specific mode requirements and contracts based on product type. Among shippers, 16% said they contract to a delivery timeline and dates and let a logistics service provider decide how to best meet expectations, shown in **Figure 5**. Another 16% said they don't contract by specific modes and instead look for providers that offer more than one option, and 21% of shippers said they only work with single-mode providers.

Figure 5: How Transportation Mode Decisions Are Made



Among 3PLs, only 23% said their shipper customers find a guaranteed mode to be the most important factor and 38% of 3PLs said their customers are most concerned with the shortest shipping time. Instead, 77% said shippers want the lowest cost, and 75% said their shipper customers are the most interested in a guaranteed arrival date, shown in [Figure 6](#).

The Role of Information

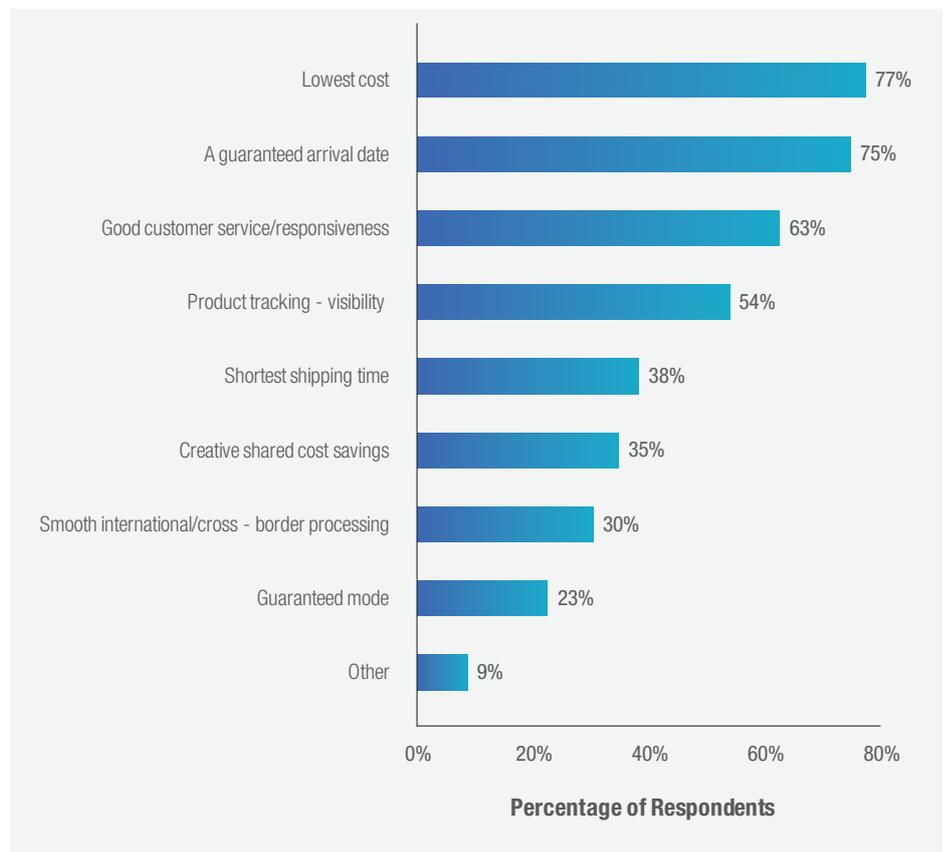
Information has the potential to transform the operating effectiveness of organizations. In successful 3PL-shipper relationships, both parties work together as strategic partners, sharing data and implementing the technology and processes that result in network optimization. By making the most of their data, organizations can transform their operations, make better decisions, bring their products and services to market more quickly and efficiently, and gain the intelligence and insight to compete in a volatile and complex economic environment.

Complexities within the supply chain—particularly surrounding capacity, the cost of assets and changes in global infrastructure (e.g., shipping line mergers, new port services, driver shortages)—increase the importance of route optimization, and they have caused both shippers and providers to look at the entire network rather than focus on moving goods from point A to point B.

From an operational perspective, the majority of shippers—71%—said real-time analytics is a helpful attribute of a 3PL to help them better understand shipping alternatives; 61% valued 3PLs' assessments of trade lanes and origin-destination pairs in terms of cost and service levels.

Shippers have a greater expectation of transparency than they have in the past and want the convenience of accessing information in many different ways. Access to timely information enables 3PLs to leverage data to anticipate exceptions and develop a plan

Figure 6: 3PL/4PL Service Providers: Factors That Are Most Important to Shipper



of action before the exception occurs. In the current environment, 3PLs are continuing to invest in technology that can improve the flow of information between shippers, the warehouse and transportation providers.

Companies are increasing their digitization efforts to capture more information, and analytics are seen as a strategic priority for organizations. Improvements traditionally delivered from operational analytics include reduced downtime, improved productivity, better capacity utilization, accurate forecasting capability and higher flexibility in response to external events.

A Capgemini Consulting survey of more than 600 executives from the U.S., Europe and China found that more than 70% of organizations now put more emphasis on operations than on consumer-focused processes for their analytics initiatives (shown in [Figure 7](#)).

Successful companies enhance the quality of their operations data by using external and unstructured data. Given the growth in data, consumer insights are becoming a core part of the strategic agenda for more than 80% of consumer product companies, according to the Capgemini Consulting study *Consumer Insights: Finding and Protecting the Treasure Trove* (shown in [Figure 8](#)).

Supply chain operations represent a high impact area for consumer insights. For instance, 57% of companies have employed consumer insights in inventory planning, with 90% of them reporting that they have achieved moderate to high levels of success in it. Similarly, 54% of companies have utilized consumer insights to optimize their organizations' supply chain networks, with 87% experiencing moderate to high success.

The role of big data and analytics within supply chain operations is covered in-depth later in the report.

Figure 7: Percentage of Companies That Focus More on Operational Analytics Than on Customer Analytics

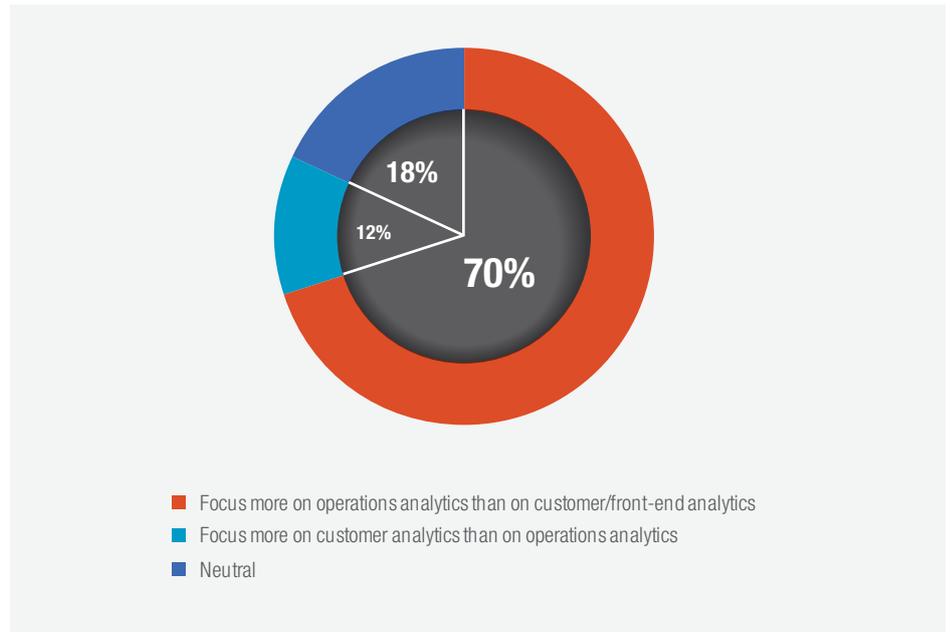
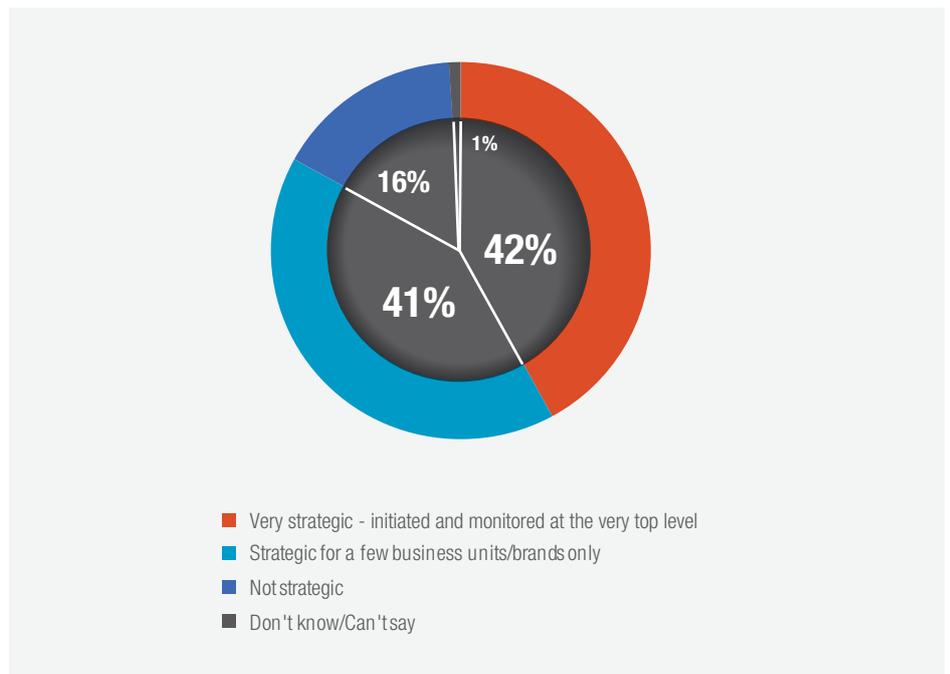


Figure 8: Consumer Insights Has Established Itself as a Strategic Initiative at Consumer Products Organizations



Mergers and Acquisitions

As shippers turn to 3PLs for increased information and data-driven solutions, 3PLs are broadening service offerings, increasing their employee base, expanding their coverage, and in some cases, obtaining new technology and assets to meet shippers' needs.

Mergers and acquisitions are a primary way for logistics providers to grow strategically, expand their global network, support cross-selling opportunities, and leverage best practices and technology across a global scale. In recent years, the logistics industry has been shaped by inorganic growth through a large number of mergers and acquisitions driven by customer demands, new competition and industry changes.

The value of M&A deals has nearly doubled from 2014 to 2015, growing to \$173 billion from \$87 billion. Also, cross-border deal values have more than quadrupled from 2014 to 2015, growing to \$115 billion from \$28 billion. This growth all culminates in greater volatility in rates, swings in capacity and general instability.

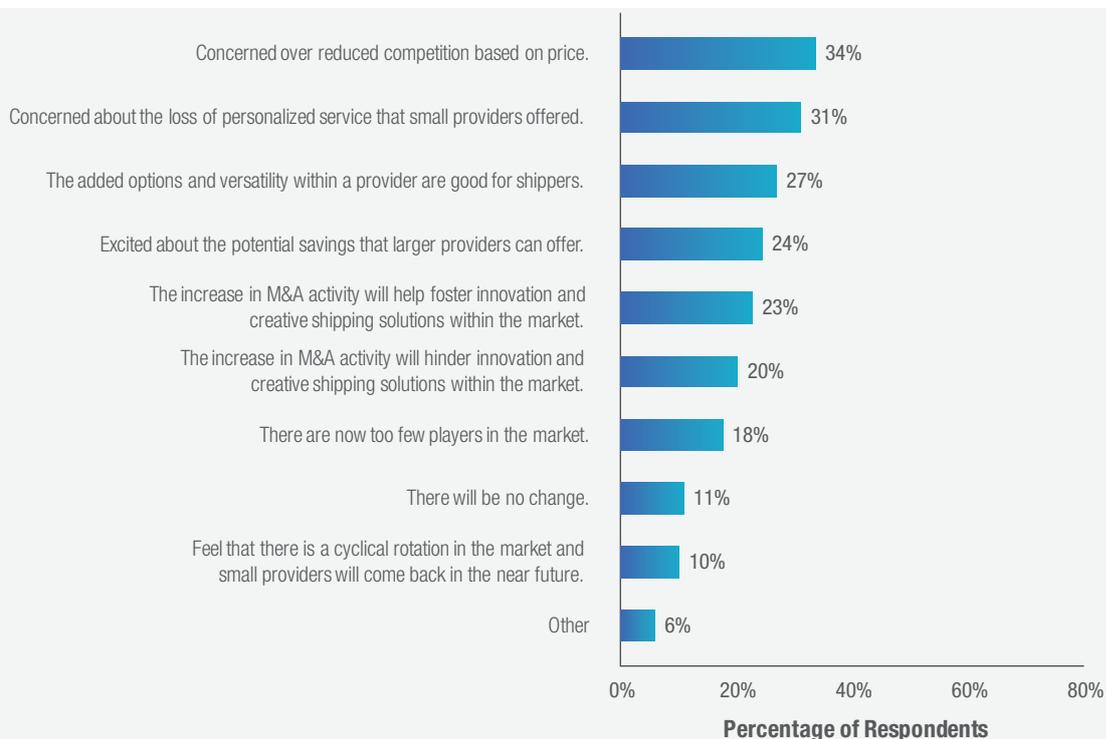
There were several major M&A deals in both 2015 and 2016, including XPO Logistics' acquisition of both Norbert Dentressangle in Europe and Con-Way in the U.S. In addition, UPS acquired Coyote Logistics for roughly \$1.8 billion. UPS was interested, in part, in the company's technology that enabled customers to book and sell existing space on empty trucks. In May 2016, FedEx completed the \$4.8 billion acquisition of Netherlands-based TNT Express-NV, a provider of mail and courier services and the fourth-largest global parcel operator. Frederick Smith, chief executive officer of FedEx, said the timing of the acquisition was important given the current environment where global e-commerce is growing at double-digit rates.

Globalized transportation networks are also experiencing M&A activity. In early 2016, the sale of UTi Worldwide, based in Long Beach, California, to Denmark-based DSV became final as part of a \$1.35 billion deal. DSV offers air and ocean freight forwarding, contract logistics, customs brokerage, distribution, inbound logistics and truckload brokerage.

As shown in **Figure 9**, shippers have mixed reviews of the M&A activity. Among shipper respondents, 27% said added options and versatility within a provider are good for shippers; 24% said they were excited about the potential savings that larger providers can offer; and 23% reported that the increase in M&A activity will help foster innovation and creative shipping solutions within the market.

However, many shippers expressed concern over merger and acquisition activity, with 34% saying they are concerned about reduced competition based on price, 31% expressing concerns about the loss of customer service/personalized service that small providers offered, 20% saying the increase in M&A activity will hinder or slow innovation and creative shipping solutions within the market, and 18% reporting that there are now too few players in the market. Only 10% of respondents feel that there is a cyclical rotation in the market and small providers will come back in the near future.

Figure 9: Shippers' Perspective of the Mergers and Acquisitions Taking Place in the 3PL Market



The Current 3PL Operating Environment

Throughout 2016, shippers and their logistics providers navigated oil price volatility, a drop in global demand and a glut of shipping capacity as fleet expansions and container-ship-size increases outpaced demand. The \$5.4 billion expansion of the Panama Canal opened mid year 2016. The nine-year project more than doubled the canal's cargo capacity, and a third lane was added to accommodate ships large enough to carry up to 14,000 containers. Previously, ships could carry around 5,000 containers. This, in turn, motivated East Coast ports in the U.S., such as Jacksonville, Florida; Savannah, Georgia; and Charleston, South Carolina, to dredge deeper berths to accommodate these vessels, expanding direct trade lanes to Asia.

Operators also dealt with increased regulations, such as the implementation of the electronic logging device mandate, and uncertainty over hours-of-service regulations, which are currently under review. Upcoming regulations—including a proposed rule to mandate speed limiters, a proposed drug and alcohol clearinghouse rule that establishes a database of CDL holders who have failed or refused to take a drug test, and increased tracking of food and beverage products as required by the Food Safety Modernization Act—will affect carriers in the near future.

Carriers, as well as 3PL providers, remain concerned over the worsening driver shortage. The American Trucking Associations reported that the shortage of truck drivers has reached 48,000, and the national trade association expects the number to jump to 240,000 by 2020. Within the U.S., 70% of freight tonnage is moved by a truck, and without drivers, that freight is likely to stand still. The need for drivers and concerns over a shortage is also influencing the need to optimize shipping routes and deliveries.

Several mobile applications have the potential to disrupt the freight industry as they roll out “Uber-for-freight” apps. The app Convoy

provides on-demand service for arranging regional and local shipments. Similarly, the app Roadie connects people looking to move an item with drivers traveling in that direction.

To provide urgent same-day shipping for areas within 300 miles, Onibag partners with bus companies to move goods and relies on ride-sharing drivers for last-mile deliveries. “They are the same drivers that give you a ride every day and are already on the road almost in every city. They work as independent contractors, and they work faster and better,” said Nick Roman, CEO and co-founder of the startup, adding that Onibag's primary customers are biotechnology laboratories and blood banks whose shipments are extremely time sensitive.

In August 2016, Uber acquired Otto, a start-up founded by former Google and Carnegie Mellon engineers, which has focused on developing self-driving truck technology. All major original equipment manufacturers within the trucking industry are testing some form of autonomous vehicle technology. In April 2016, a convoy of more than a dozen self-driving trucks from six major manufacturers completed a cross-border trip in Europe.

In mid-2015, Freightliner began testing its Inspiration Truck, the first licensed autonomous commercial truck to operate on an open public

highway in the United States. The future will evolve rapidly with all of these investments, and many others, serving as potential sources of disruption.

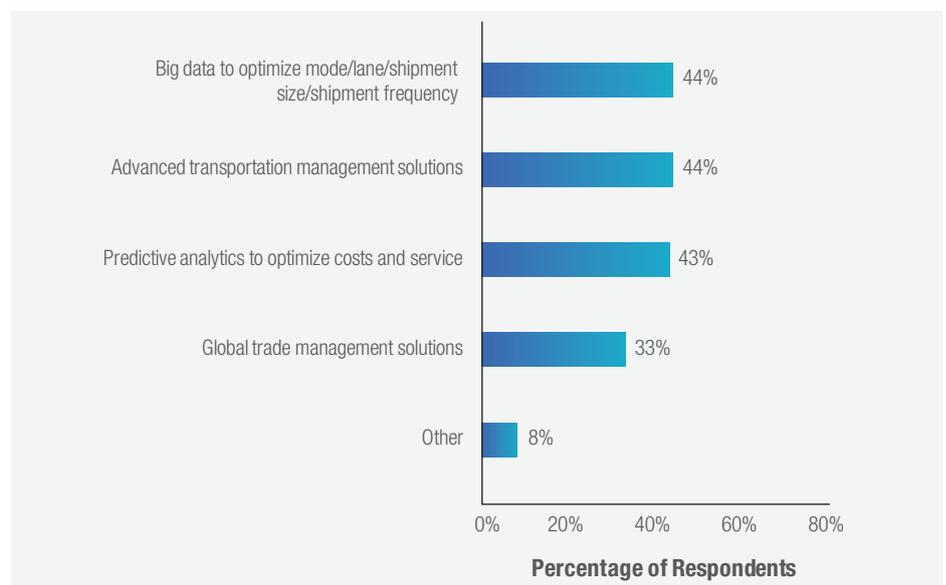
Logistics Optimization

In light of and in response to these sources of volatility and disruption, optimization is a key capability of supply chain operations. This year, 86% of 3PLs said they already sometimes collaborate with other companies, even competitors, to achieve logistics cost and service improvements. This is up from the 81% who reported doing so last year.

More than half of logistics providers—59%—listed improving logistics optimization as one of the top three most-important goals, and 53% also listed improving process quality and performance.

Logistics providers are piloting several innovations and solutions to drive optimization. Among respondents, 44% of 3PLs said they are using big data to optimize mode/lane/shipment size/shipment frequency, shown in **Figure 10**. The same amount—44%—are piloting advanced transportation management solutions; 43% are using predictive analytics to optimize costs and service; and 33% are piloting global trade management solutions.

Figure 10: Innovations or Solutions 3PLs Are Piloting in Transportation



The Need for a Global Transportation Network

Growth in the business-to-consumer market, the expansion of the middle class globally and market forces are driving shippers' desires for a more global, unified platform. Emerging and developing economies saw a 12.5% increase in 2015 deal volume, and expansion into international markets and offerings is driven by the desire to create truly global transportation networks.

About half—49%—of shippers named “global expansion” as a supply chain transformation their organization considered in the past two to three years, and 40% of 3PL/4PL providers indicated “global expansion” as something that they believed their customers are pursuing.

The Internet of Things—a massive network of connected systems, devices and people—drives a large, connected ecosystem. The bigger the ecosystem, the greater the value generated for all stakeholders, which is also fueling the desire for shippers to have a global, connected reach.

In a recent survey of senior business leaders around the globe, 96% said their companies would be using IoT in some way within the next three years, while 68% said their companies are already investing budgets in IoT, according to the Capgemini report “*Monetizing the Internet of Things*.”

Currently, most organizations have not derived significant commercial value from IoT, but the connectivity the IoT provides could hold future value for those within the supply chain. IoT devices generate large volumes of sensor data. For many organizations, the ability to capture, package and sell the vast amounts of sensor data offers a potential monetization

model. Once this data has been aggregated and anonymized, organizations can choose to sell it raw, package insights from it or monetize it using advertising.

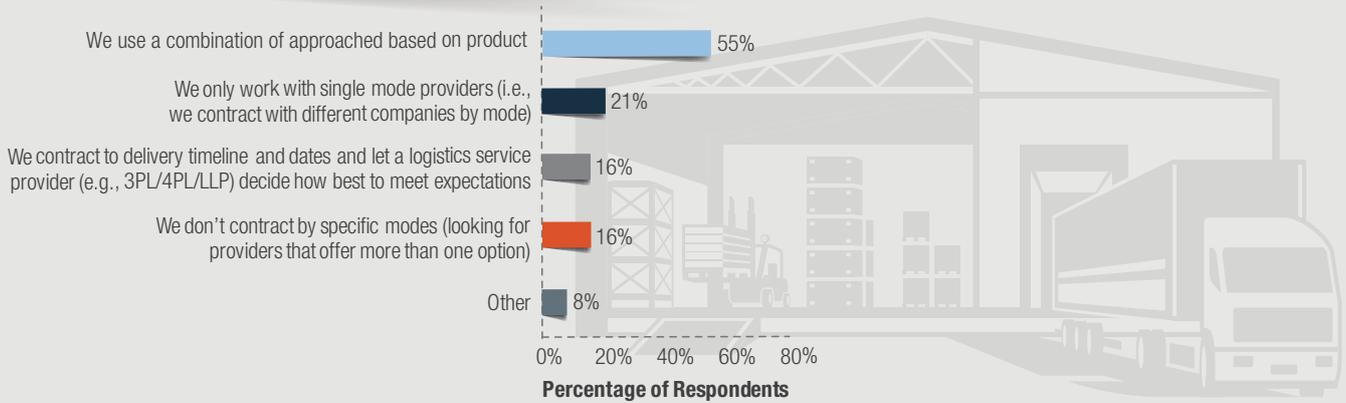
Going forward, logistics will continue to lend itself to data-driven optimization more and more each day. Companies that excel in data analytics with internal departments or external partners will be able to develop a competitive advantage if they combine this capability with the business decision to relax traditional constraints, driving an optimal solution in a volatile environment.

Key Takeaways

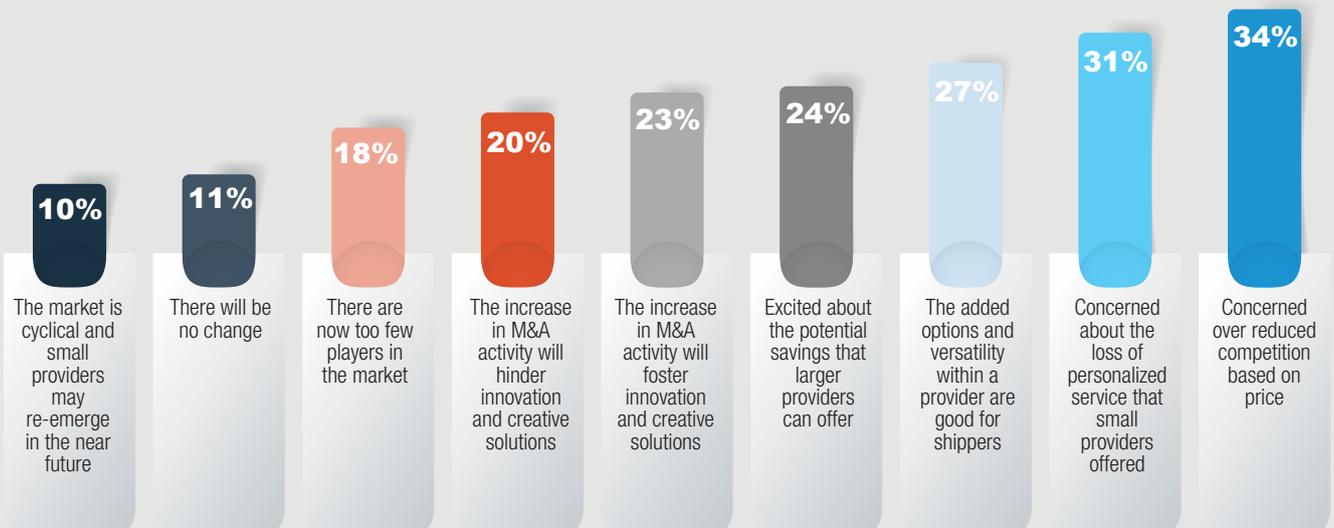
- Shippers are shifting more decision-making power to 3PLs that are leveraging technology innovations to optimize supply chain processes. More than half of respondents—55%—said they combine the ability of a 3PL to make a mode decision with specific mode requirements and contracts based on product type.
- Among shippers, 16% said they contract to a delivery timeline and dates and let a logistics service provider decide how to best meet expectations. Another 16% said they don't contract by specific modes and instead look for providers that offer more than one option; 21% of shippers said they only work with single-mode providers.
- Of 3PLs surveyed, 77% said shippers want the lowest cost, and 75% said their shipper customers are the most interested in a guaranteed arrival date. Only 23% said their shipper customers find a guaranteed mode to be the most-important factor, and 38% of 3PLs said their customers are most concerned with the shortest shipping time.

- There are opportunities for 3PLs to enhance data-driven decision-making capabilities and position themselves as knowledgeable and innovative supply chain partners. The majority of shippers—71%—said real-time analytics to help them better understand shipping alternatives is a helpful attribute of a 3PL; 61% valued 3PLs' assessments of trade lanes and origin-destination pairs in terms of cost and service levels.
- Merger and acquisition activity within the supply chain has continued and has achieved mixed reviews. Among shippers, 27% said added options and versatility within a provider are good for shippers; 24% said they were excited about the potential savings that larger providers can offer; and 23% reported that the increase in M&A activity will help foster innovation and creative shipping solutions within the market.
- However, 34% are concerned over reduced competition based on price, 31% are concerned over the loss of customer service/personalized service that small providers offered, and 20% said the increase in M&A activity will hinder or slow innovation and creative shipping solutions within the market.
- Growth in the business-to-consumer market, the expansion of the middle class globally and changes in market forces are driving shippers' desires to have a more global, unified platform. About half—49%—of shippers named “global expansion” as a supply chain transformation their organization has considered in the past two to three years, and 40% of 3PL/4PL providers indicated “global expansion” as something they believed their customers had shown the most interest in.

Shippers: How are transportation mode decisions made?



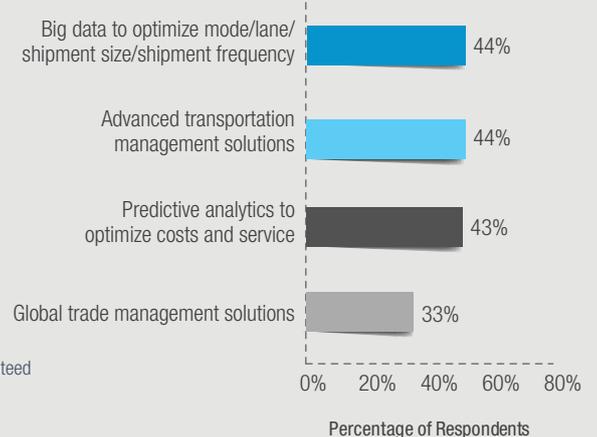
Shippers: What is your perspective of the mergers and acquisitions taking place in the third-party logistics market?



3PL/4PL Service Providers: What factors are most important to your shippers? (Respondents could select three)



What innovations or solutions are you piloting in transportation?



3PL Roles in Supply Chain Transformation

How 3PLs and 4PLs Add Value to Shipper Supply Chain Transformation Processes



Supply chain transformation is of significant interest to shipper organizations seeking to improve their efficiency and effectiveness and gain an overall competitive advantage for the organization. Given the pace at which internal and external environments impacting the functioning of supply chains can change, successful transformation efforts rely on a diversity of people and organizational resources and are guided by a useful roadmap or process.

A logical question is “to what extent should shippers consider their 3PLs and 4PLs as potentially valuable resources to include in these initiatives?” This year’s study gained insightful perspectives on the potential roles of 3PLs/4PLs

when their shippers/clients are contemplating significant transformation of their supply chains, and it showed both groups find value in logistics providers’ expertise.

Supply Chain Transformation

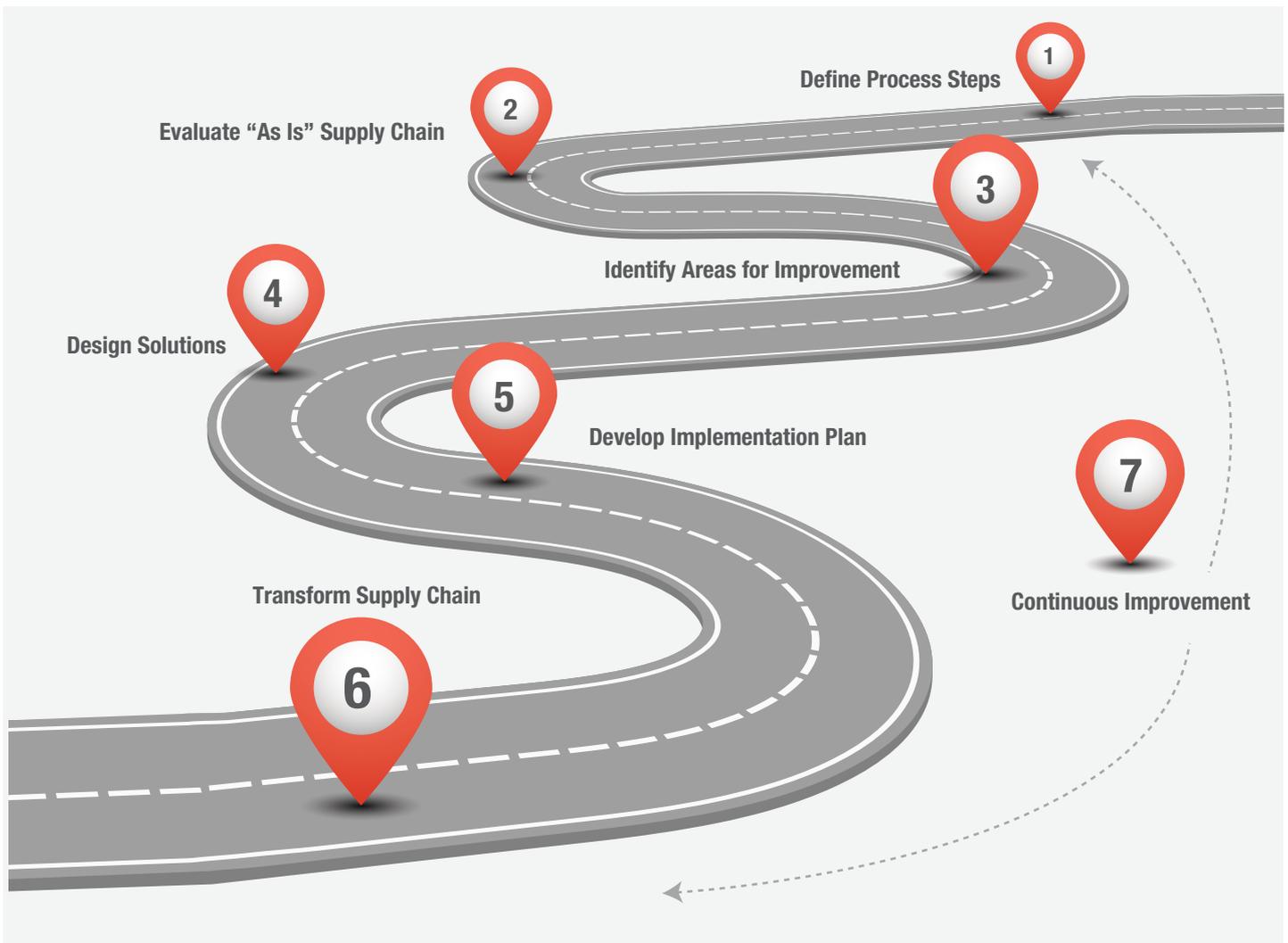
There are many different ways to structure a supply chain transformation process, but there are several steps that should be regarded as relevant to any transformation, shown in **Figure 11**.

1. **Define Process Steps** – The first step in the development of any process is to outline the key activities or deliverables needed to

represent a capable and effective process. Considerations include: identifying the mission or purpose of the process; validating the benefits to the organization or supply chain; structuring the process leadership team and other human resources who will be helpful; anticipating and planning for financial and other types of resources that may be critical to the success of the process; and understanding the key facilitators and potential detriments to overall success of the process.

2. **Evaluate “As Is” Supply Chain** – This provides a useful baseline of information about the current functioning of the supply

Figure 11: Supply Chain Transformation Suggested Process Elements



chain, serving as a launching point for the remainder of the transformation process and a yardstick for measuring improvements. Many shippers rely on a meaningful SWOT analysis (i.e., strengths, weaknesses, opportunities and threats) to help identify areas that may need attention. While examples of supply chain improvements could include overall cost and service levels, inventory turns, cash-to-cash cycles, speed to market, etc., this step also should recognize the contributions to high-level organizational objectives, such as return on invested capital, return on assets, free cash flow, debt-equity measures, etc.

- 3. Identify Areas for Improvement** – Depending on the mission and scope of the transformation, this step focuses on desired improvements in critical areas of the supply chain. Discussions with supply chain executives suggested that a balanced approach to this task would be useful for identifying areas for improvement. Key factors to consider might include: criticality, potential positive impact, cost and duration of the transformation process, and alignment with overall organizational goals and objectives.

- 4. Design Solutions** – Once there is a firm understanding of what the supply chain transformation is designed to accomplish, those involved can identify solutions to help achieve the desired objectives. Each potential solution should be measured in terms of likelihood of success, potential impacts on the functioning of the supply chain and other business processes, and the cost-benefit realities of implementation.

- 5. Develop an Implementation Plan** – When the path forward has been validated and agreed upon, the next step is to develop a time-phased plan for implementing the selected solutions. As with all implementation plans, there should be pre-planned “checkpoints” to evaluate progress and to implement any needed mid-course corrections.

- 6. Transform the Supply Chain** – The success of the transformation is dependent on the cooperation and collaboration of those responsible for key process areas within the shipper organization. This includes those involved in manufacturing, supply management, marketing and sales, and overall business management. Coordination with customers, product suppliers and supply chain service providers may also help facilitate the success of the transformation.

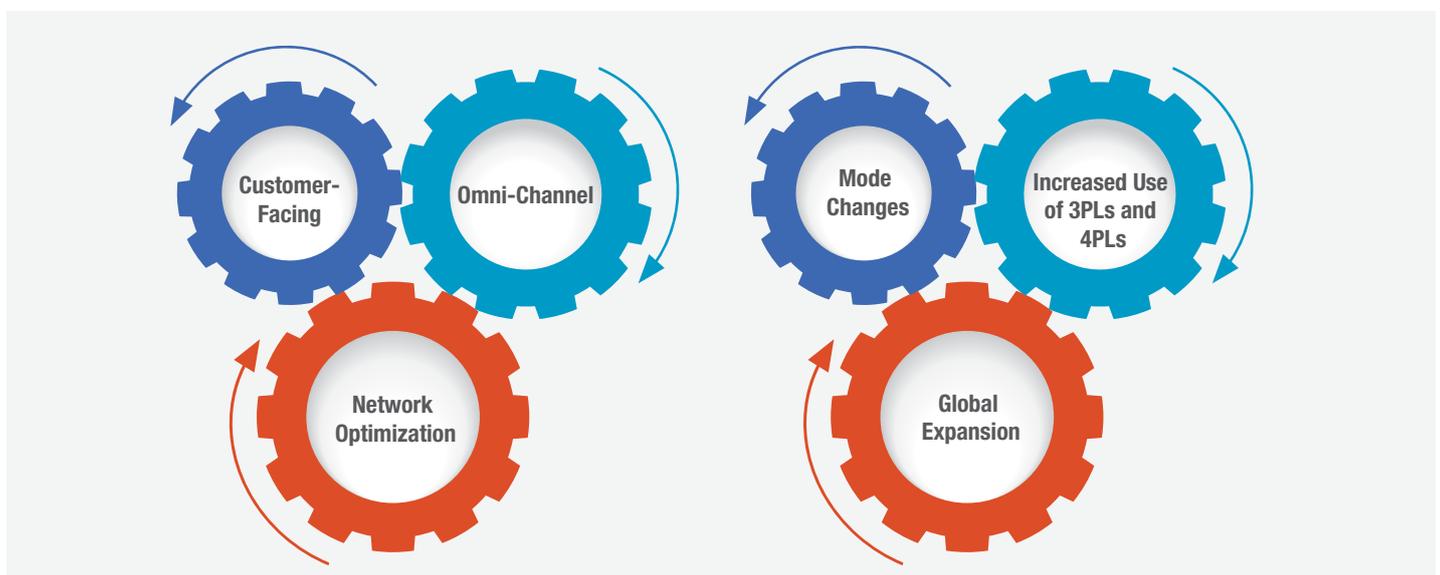
- 7. Seek Continuous Improvement** – As with any sound process, the results of supply chain transformation should serve as a basis for further improvement. Accompanying this task should be the useful application of supply chain metrics, key performance indicators and analytics.

Figure 12 highlights common types of supply chain transformation and some desirable capabilities that may contribute to the overall success of the transformation. Shipper respondents to the global survey were asked which initiatives their organization has considered in the past two to three years. Among those respondents, 66% reported network optimization; 49%, global expansion; 49%, transportation mode changes; 39%, increased use of 3PLs and 4PLs; 33%, changes to “customer-facing” activities; and 26%, responses to “omni-channel” initiatives.

Current State of 3PL/4PL Involvement in Supply Chain Transformation

In its traditional sense, the need for alignment within the supply chain, which we first addressed in the 2016 20th Annual 3PL Study, refers to the desired state of the relationships between organizational and supply chain objectives,

Figure 12: Examples of Shipper Supply Chain Transformation Initiatives



strategies and execution and should extend into customer and supplier networks. In a different, but essentially similar context, it is important to ensure alignment between 3PLs, their customers and any asset-based providers that may be involved.

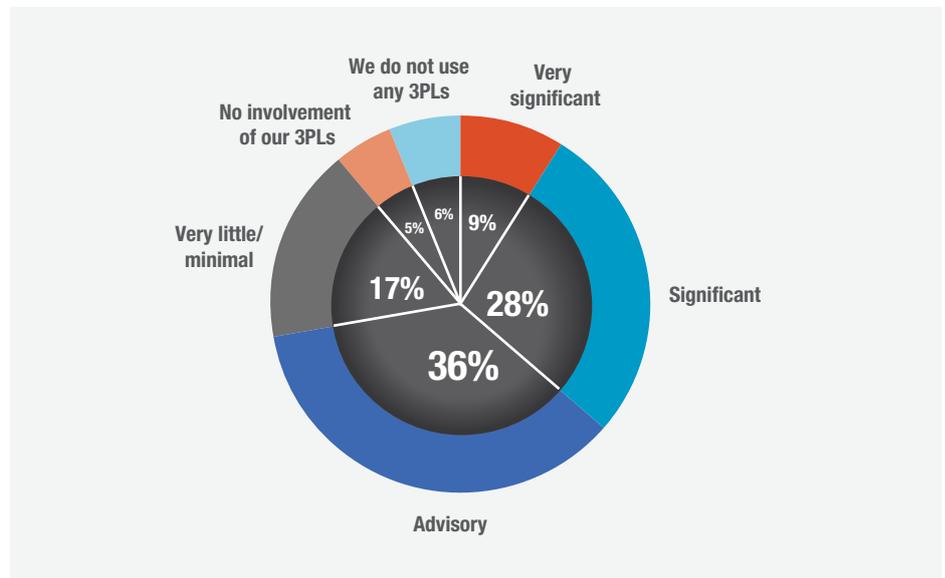
The results shown in **Figure 13** indicate the ways in which shippers report 3PL involvement in assisting with decisions relating to supply chain transformation. Interestingly, 73% of the shipper respondents indicated the meaningful involvement of 3PLs in processes relating to supply chain transformation, with 9% suggesting very significant involvement, 28% significant involvement and 36% advisory. Responses from 3PLs/4PLs show they see themselves having a slightly more involved role with 16% reporting very significant involvement, 30% significant and 38% advisory. This may reflect the fact that 3PLs/4PLs typically serve large numbers of clients/customers. The overall results, however, suggest that shippers place value on input from these providers when considering the transformation of their supply chains.

According to John Metzger, president at Supply Chain Technology Transformation and a visiting professor at Penn State University, "Given the need for velocity of information, money and products, 3PLs play a vital role in helping their customers compete in low inflation environments, where pricing actions to raise revenues and profits may be somewhat limited."

Aligning 3PL/4PL Capabilities With Shippers' Strategic Supply Chain Needs

Users and providers of 3PL services were asked to indicate ways in which 3PLs may add value by assisting with the planning of shipper supply chain transformation efforts, as shown in **Figure 14**. One initial observation is that larger percentages of 3PL respondents indicated value is added by each of the initiatives that were included in the example. While 65% of shipper respondents felt that 3PL industry knowledge helped to add value, a much higher number—82%—of 3PL respondents felt similarly.

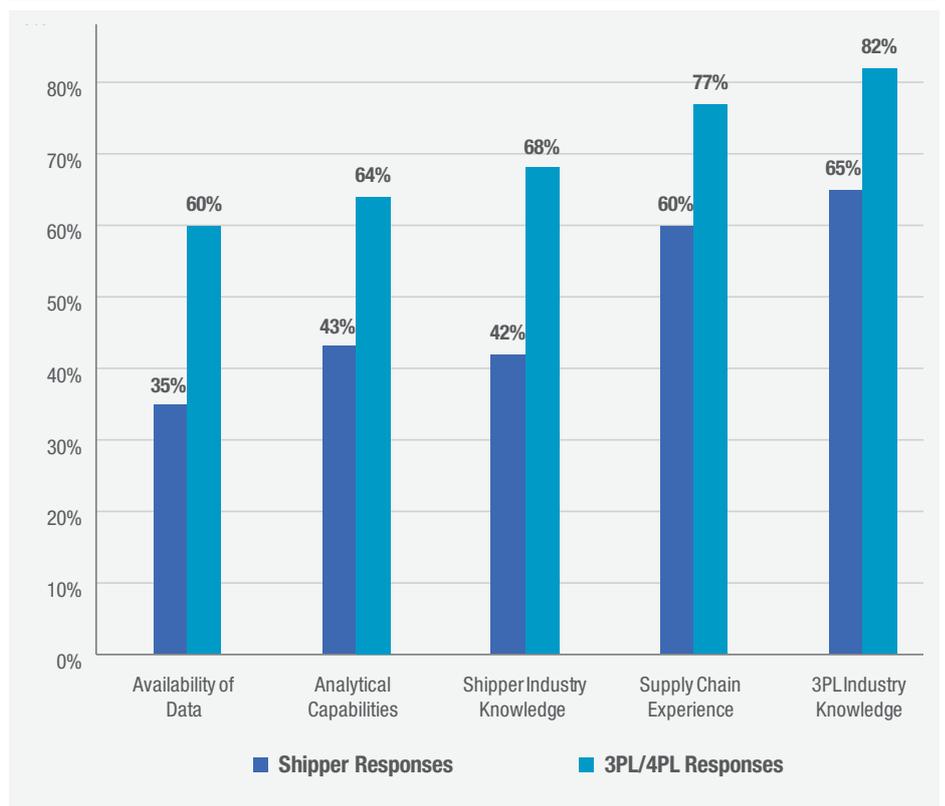
Figure 13: 3PL Involvement in Shipper Supply Chain Transformation



Users and providers agreed that 3PLs could be of assistance with their 3PL industry knowledge, supply chain experience and shipper industry

knowledge. Analytical capabilities and availability of data from 3PLs were also shown as important, but to a somewhat lesser extent.

Figure 14: How 3PLs Can Best Help With Supply Chain Transformation

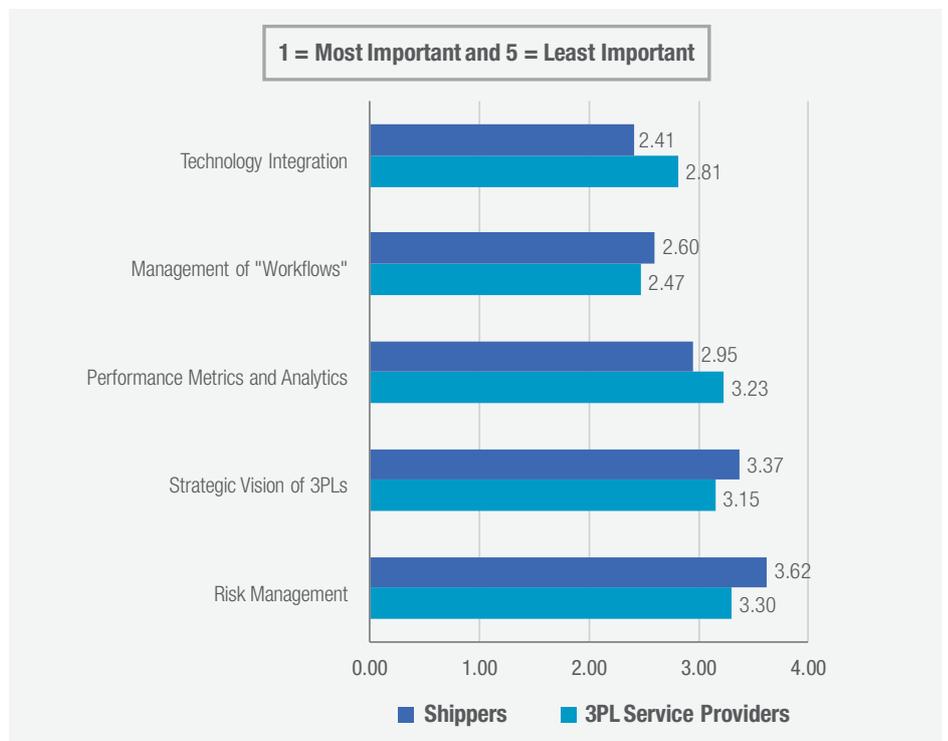


Users and 3PL providers were asked to assess the importance of 3PL capabilities relating to people, process, technology and execution/implementation of transformation initiatives. As may have been expected, both groups viewed people as the most important resource with average importance ratings of 26% from users and 30% from providers. Average importance ratings of 25% for users and 27% of providers were reported for execution/implementation capabilities. In addition to the ratings for the process being similar for both types of respondents, users of 3PL services reported an average importance rating of 26% for technology, with 21% of providers responding similarly.

A similar line of inquiry in the 2017 annual survey questioned shippers and 3PLs about the importance of 3PL capabilities during the implementation phase of the supply chain transformation process. Respondents were asked to rank five capabilities on their importance, using a scale of one for most important to five as least important. Shippers ranked technology integration and effective management of workflows that create value for client organizations as the most important elements, shown in **Figure 15**. Results from the 3PL provider respondents reinforced the importance of these two capabilities. The only exception was that the 3PL version of the survey indicated the management of workflows was rated most important and the technology integration capability ranked second.

Additionally, there is significant evidence to support the role of 3PLs in helping to build support for the transformation initiative. John Burke, chief executive officer of Armada, said: "With a holistic approach to supply chain management, 3PLs can affect change in networks by acting as an advocate on behalf of their clients' networks. This benefits shippers as well as all network providers by creating an environment of shared strategic goals and collaborative thinking. Once this alignment across the supply chain is achieved, end-to-end efficiencies can be gained, providing tremendous value to the client."

Figure 15: Importance of 3PL Capabilities



In the interest of having 3PLs "align" their capabilities with the needs of customers' supply chains, a general distinction was drawn between 3PL "customer facing" capabilities (e.g., business development; sales and sales support; tender and trade management; etc.) and those that are more "service related" (e.g., operations; fulfillment warehousing; etc.). Of

note is that 53% of shipper respondents felt that service-related capabilities were most important to the objective of alignment, while 58% of 3PL respondents felt that both were equally important, as shown in **Figure 16**. One interpretation is that shippers are more interested in the specific supply chain services provided by 3PLs, whereas 3PLs have a more expansive view of the overall relationship.

Figure 16: Customer-Facing vs. Service-Related Capabilities of 3PLs as Related to Alignment Between Shippers and 3PLs

| Capabilities | Percentages in Agreement | |
|----------------------------------|--------------------------|-------------|
| | Shippers | 3PLs/4PLs |
| 3PL Customer-Facing Capabilities | 15% | 8% |
| 3PL Service-Related Capabilities | 53% | 34% |
| Both are Equally Important | 32% | 58% |
| Total Percentages | 100% | 100% |

The importance of 3PL capabilities is expressed very succinctly by David Kaduke, supply chain management executive and a member of the Penn State Center for Supply Chain Research. “The current and future expectation of 3PL value-add services is continuously increasing far beyond a traditional provider of supplemental operational capacity. Seamless integration into the client’s supply chain network, enhanced real-time visibility, industry and regional market knowledge and experience, network and inventory modeling competencies, facility design, engineering and construction, value-added services support for late-stage product differentiation, and customs and compliance expertise are all examples of the increasing expectations and demands of a successful 3PL partner. Today’s 3PL provider must be an expert in supply chain management as well as an effective and efficient operator.”

Focusing on the ongoing relationships that 3PLs/4PLs have with their clients, **Figure 17** shows the percentages of shipper respondents that identified the attributes listed as being important.

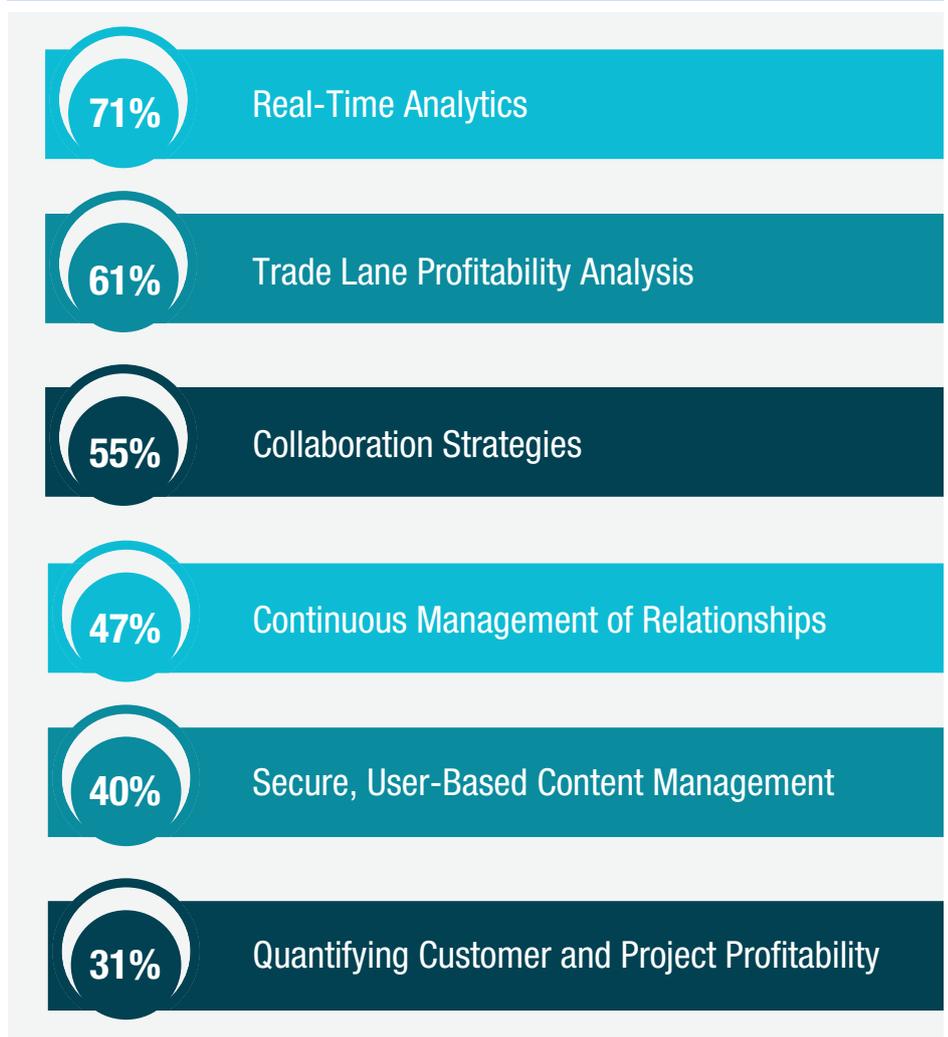
- **Real-Time Analytics (71%)** – Although the results of previous questions suggested that 3PL industry, shipper and supply experience rated higher than analytics and data capabilities, shippers placed significant emphasis on the use of real-time analytics to the success of ongoing client relationships.
- **Trade-Lane Profitability Analysis (61%)** – Related to the meaningful use of analytics, insight into the costs and profitability of specific trade lanes and origin-destination pairs was also viewed as an important capability of 3PLs.

- **Collaboration Strategies (55%)** – While shipper organizations certainly have experience with initiatives relating to alignment and collaboration, more than half of the shipper respondents valued the perspectives and experiences of 3PLs. This is particularly relevant given the increasingly digital workspaces that are essential to shipper-3PL relationships.
- **Continuous Management of Relationships (47%)** – This also suggests that shippers value the ability of many 3PLs to manage aspects of the relationships. Examples include monitoring projects,

assigning tasks, and gaining necessary approvals faster and more intuitively than by email.

- **Secure, User-Based Content Management (40%)** – This is relevant to maintain the confidentiality and security of important documents, such as standard operating procedures, price lists, contracts and exceptions.
- **Quantifying Customer and Project Profitability (31%)** – This attribute, which is of interest to shippers, relates to the trade-lane profitability analysis discussed above.

Figure 17: Attributes of 3PL/4PL Capabilities in Relation to Ongoing Client Relationships



Current Assessment of Strategic 3PL-Shipper Relationships

Bill Eisele, strategic account executive for Penske Logistics, commented that 3PLs and 4PLs are “uniquely positioned to help assess the current state, as well as directing activities in the transformative state.”

“Recognizing that transformation or any other change is never easy, the experiences of 3PLs and 4PLs may be of great benefit to shippers who choose to involve them in the overall process of change,” Eisele said, adding that because supply chain transformation is a continuous process, the support of 3PLs and 4PLs “is particularly valuable because the end state almost always differs from the expected state.”

While there are various ways to address the current state of shipper-3PL relationships and how 3PLs may meaningfully contribute to supply chain transformation efforts at shipper organizations, one unique approach has been used by Lieutenant General William G. Pagonis, logistical chief of the first Gulf War, and more recently a distinguished supply chain executive. To quickly become aware of successes and areas where improvement is needed in both the U.S. Army and the private sector, General Pagonis identified “three ups and three downs” to facilitate improvement and transformation.

Looking at the results of this special topic on 3PL involvement in shippers’ supply chain transformation initiatives, we identified the following “three ups and three downs.”

Three Ups:

- The majority of shippers participating in the survey indicated at least advisory through very significant involvement of 3PLs in decisions relating to supply chain transformation.
- Both shippers and 3PLs agreed that the people involved are the most important resource to facilitate successful transformation initiatives.

- There is an increasing importance of meaningful analytics and data as key contributors to the success of transformation initiatives. These capabilities are becoming more prominent as shipper transformation efforts focus more directly on cost reduction, service enhancement, reductions in variability of all types and improved management of complexity.

Three Downs:

- Although research indicates significant involvement of 3PLs in shippers’ supply chain transformation initiatives, most of this is “advisory” in nature. A next logical question is what will it take to see more significant, meaningful involvement of 3PLs in these efforts?
- Further improvement is needed in the extent to which 3PL involvement in transformation efforts recognizes the strategic, as well as operational, expertise and experience that 3PLs may contribute to the overall improvement process.
- While there are some notable success stories of shipper-3PL collaborations to address key issues relating to supply chain transformation, there are still many customers who seem to prefer a more inwardly focused project scope and plan. Although there are many benefits to the utilization of internal resources, the ultimate success of any supply chain transformation will depend on the ability of the shipper organization to meaningfully involve other participants in the overall process. The earlier that these other participants may become involved, the better.

Key Takeaways

- Shipper organizations seeking to improve their efficiency and effectiveness and gain a competitive advantage for the organization have shown interest in supply chain transformation. Successful transformation

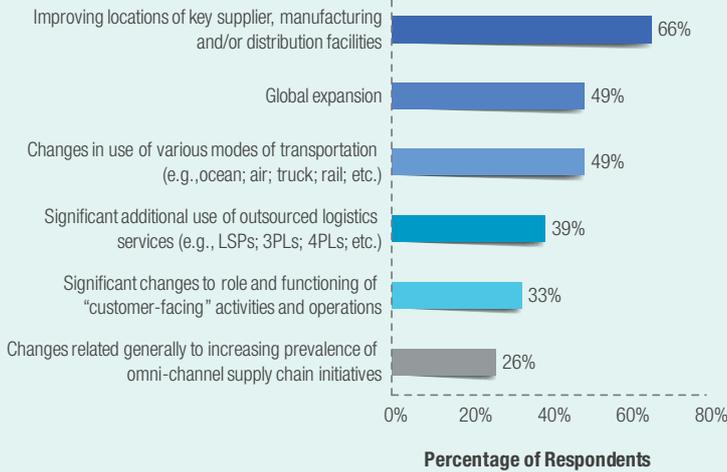
efforts rely on a diversity of people and organizational resources, including 3PLs and 4PLs, and are guided by a useful roadmap or process.

- Shippers report varying levels of 3PL involvement in making decisions related to supply chain transformation. The majority of shippers—73%—indicated meaningful involvement of 3PLs in processes relating to supply chain transformation, with 9% suggesting very significant involvement, 28% significant involvement and 36% advisory. Responses from 3PLs/4PLs show that they see themselves having a slightly more involved role with 16% reporting very significant involvement, 30% significant and 38% advisory.
- Shippers have undertaken varying degrees of transformation in the past two to three years—66% reported focusing on network optimization; 49% on global expansion; 49% on transportation mode changes; 39% on increased use of 3PLs and 4PLs; 33% on changes to “customer facing” activities; and 26% on responses to “omni-channel” initiatives.
- The ability of 3PLs to align their capabilities with the needs of customers’ supply chains remains a priority, but a general distinction was drawn between 3PL “customer facing” and “service related” capabilities. Just over half of shipper respondents—53%—felt that service-related capabilities were most important to the objective of alignment, while 58% of 3PL respondents felt that both were equally important.
- Shippers ranked several attributes they find important in 3PLs/4PLs. Among respondents, 71% listed real-time analytics; 61% named trade-lane profitability analysis; 55% noted collaboration strategies; 47% listed continuous management of relationships; 40% named secure, user-based content management; and 31% listed quantifying customer and project profitability.

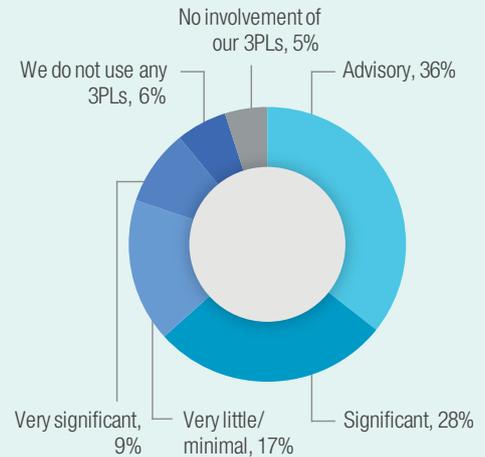
3PL Roles in Supply Chain Transformation

Shippers

Types of transformations shippers have considered in the past 2-3 years



3PL involvement in transformation decisions



Which of the following are ways in which you feel that 3PLs may add value by assisting with the planning of your transformation efforts?

65%

3PL industry knowledge and perspectives

60%

Experience with alternative supply chain strategies

43%

Analytical and modeling capabilities that may be helpful to the transformation process

42%

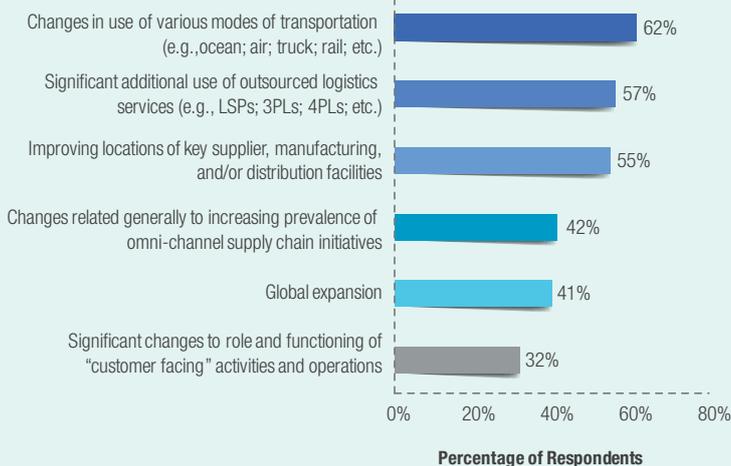
Shipper industry knowledge and perspectives

35%

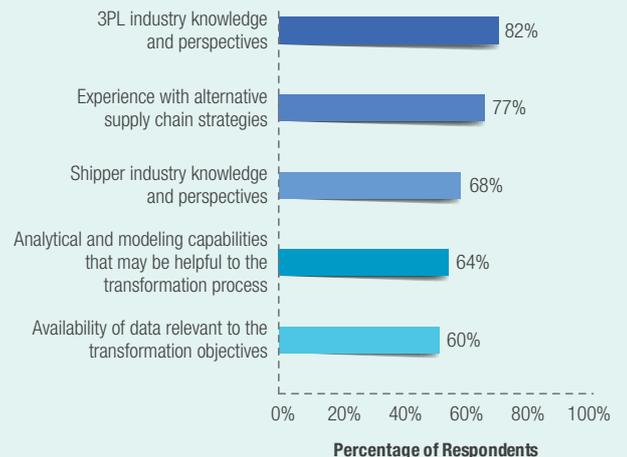
Availability of data relevant to the transformation objectives

3PL/4PL Service Providers

Types of transformation service providers have shown the most interest in over the past 2-3 years



Opportunities service providers see to add value



Utilizing Big Data and Analytics

How Data-Driven Decision-Making is Shaping the Supply Chain



The role of big data—large data sets that are analyzed to reveal patterns, trends and insights—is taking on greater importance for 3PLs and 4PLs as they look to optimize the supply chain, increase end-to-end visibility and drive efficiency for their customers. Big data also allows those within the supply chain to identify and correct inefficiencies, run “what-if” scenarios, and improve the way they respond to disruptions and mitigate risk.

Nearly all 3PLs taking part in the survey—98%—said improved, data-driven decision-making is essential to the future success of supply chain activities and processes. The majority of shippers—93%—agreed. Both groups—86% of 3PLs and 81% of shippers—said the effective use of big data will become a core competency of their supply chain organizations.

The amount of data both 3PLs and shippers collect has grown significantly. Providers are capturing on-board data from trucks (see more in the Strategic Assessment), as well as information through transportation and warehouse management systems. Connectivity gained through the Internet of Things is producing countless data points. However, simply capturing data is not beneficial. It is how that information is analyzed and used that creates value – data generates insights and insights drive action.

“You have to talk to people about what they are going to do with the data and the decisions they would like to make with it,” said Tom McKenna, senior vice president of engineering and technology for Penske Logistics. “In this day and age, you can collect massive quantities of data, but what are you going to do with it?”

To compete in today’s operating environment, 3PLs and 4PLs must be able to provide visibility, which they have been doing for several years. Now providers are getting more operational and tactical with how they use that visibility and are creating value by optimizing networks and processes. “You have to be able to tell me my truck is going to be late, but you should also be able to tell me what I should do with my goods and what adjustments I should make

to minimize disruptions within my supply chain,” McKenna said.

Data can improve process integration. “If I have greater detail on inbound loads, either the arrival times or more specifically the products and the orders that are on that load, I can improve my processes to handle both the warehousing and transportation activities related to that shipment,” McKenna said, adding that integrated processes allow the supply chain to be much more smooth and cost effective.

Some shippers and logistics providers supplement traditional data with external indicators, such as weather, to predict consumer behavior and identify potential supply chain disruptions. Drawing on data can help shippers predict when to ship or stage products ahead of a weather event or when to ship items based on demand.

Logistics providers that have invested in technology and expertise to utilize big data could have a competitive advantage and give shippers a reason to seek out third-party providers. As 3PLs and 4PLs take on greater leadership roles with customers, they will likely take on greater roles aggregating and consolidating data. “You have a greater ability to obtain a more complete and true view of a shipper’s logistics operation and network,” McKenna said.

The Value in the Data

Obtaining data provides opportunities for 3PLs, which can drive direct services or consultancy services. When asked what they find the most important regarding big data, 60% of shippers said improving integration across the supply chain, 55% said improving data quality, and 52% said improving process quality and performance, as shown in **Figure 18**. Third-party logistics providers could provide value to shippers in each of these categories.

Figure 18: What Shippers Find the Most Important

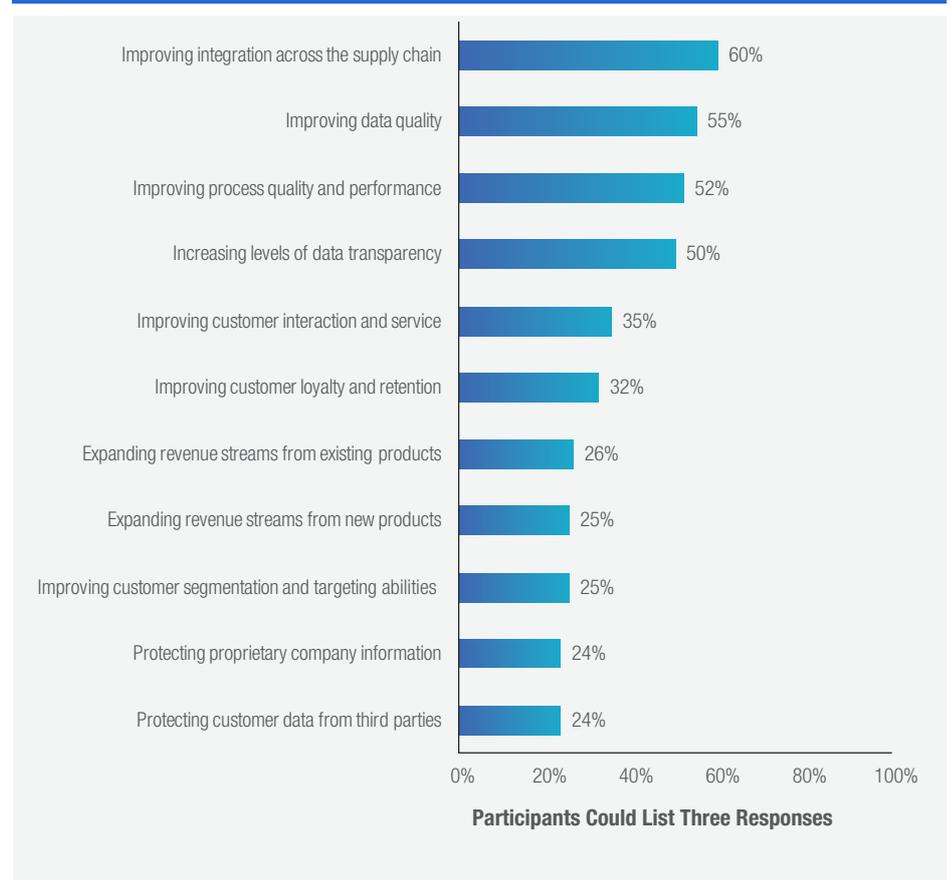


Figure 19: What 3PL/4PL Service Providers Believe Customers Find the Most Important

When asked what they believe their customers find the most important, 71% of 3PLs said improving process quality and performance, 70% said improving logistics optimization, and 53% said improving integration across the supply chain (see [Figure 19](#)).

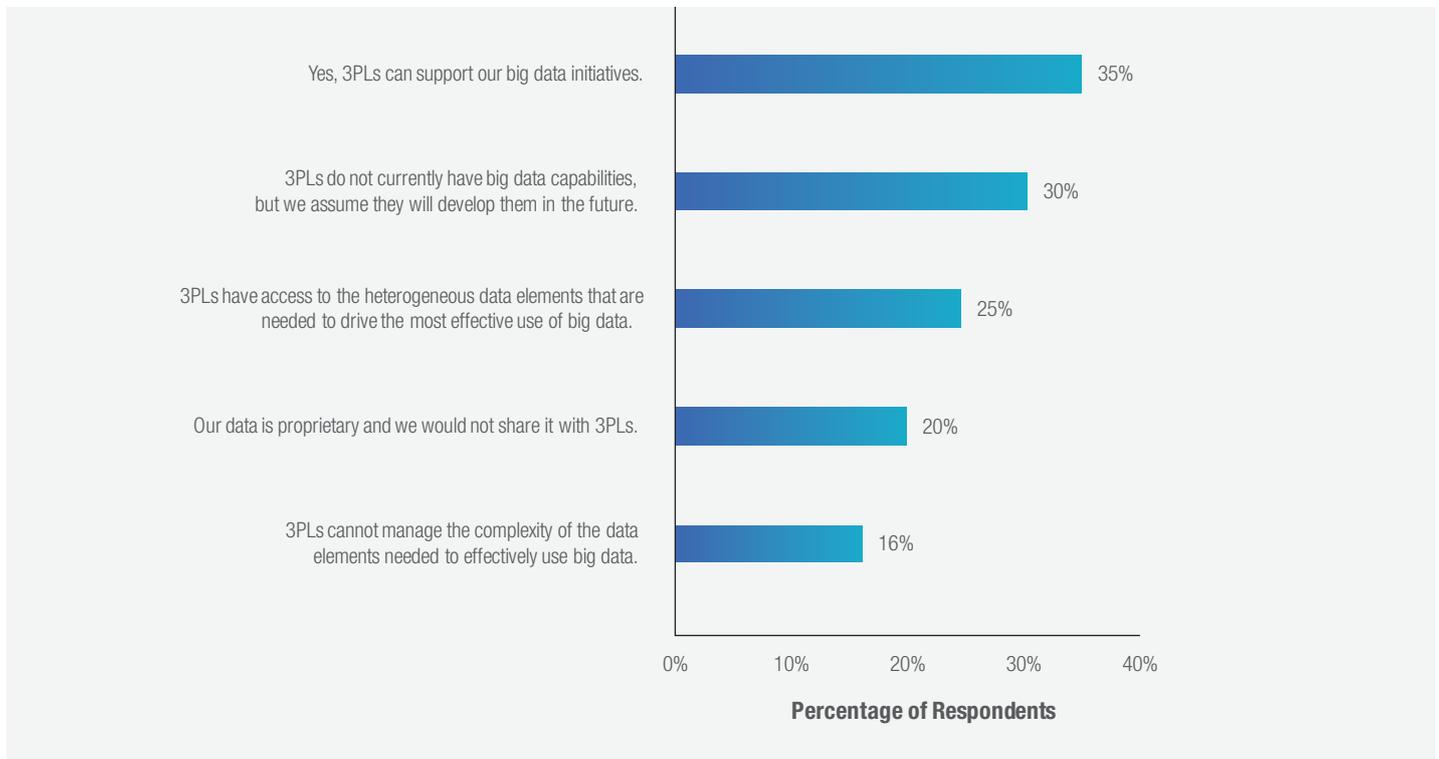
The survey results indicate 3PLs may not realize how important shippers believe big data is—79% of shippers said their supply chain organization sees significant value in the use of big data compared to 65% of 3PLs who reported that their customers' supply chain organizations see significant value in the use of big data.

Even 35% of shippers who do not currently use 3PLs said 3PLs can support their big data initiatives, which indicates 3PLs' expertise in data management and analysis may become an increasingly important reason for shippers to turn to a 3PL.

The desire to capture, analyze and utilize data is creating opportunities for 3PLs and could be a driving factor that causes shippers to seek out 3PLs' expertise. The majority of shippers—88%—said big data initiatives are more about managing the variety of data, rather than the volume. Although shippers see

the value of information, only 66% said their organizations currently have access to timely and comprehensive data relating to supply chain planning and operations.

Organizations have started to use efficiency gains to improve the customer experience. Within the survey, 35% of shippers said the ability of big data to improve customer interaction and service is its most important aspect; 32% said they valued big data's ability to improve customer loyalty and retention.

Figure 20: Shippers' Thoughts on Involving 3PLs With Big Data-Related Projects and 3PLs' Abilities to Address Big Data-Related Problems

Confidence, Expectations Have Shifted

As part of the 2017 survey, researchers revisited questions shippers and logistics providers first answered in 2014. There has been some softening among shippers of what they think 3PLs can do for them in the big data realm.

In the 2017 survey, 35% of shippers said 3PLs can support their big data initiatives, down from 44% who felt the same way in 2014, shown in [Figure 20](#). The latest study also found that 16% of shippers believe 3PLs cannot manage the complexity of the data elements needed to use big data effectively, up from 13% in 2014.

In this year's survey, 61% of shippers said their organizations needed to develop the more traditional requirements of storage, processing and information architecture, which is down from 76% in 2014. "Shippers may no longer feel the need to develop their own systems because they can buy them now in the cloud. That is due to the rapid development of cloud offerings," McKenna said.

Shippers' focus and investments may be shifting to how they better use that data instead of worrying about the technical aspects of storing and processing it. This leads to an increasing recognition of the need for people with expertise, such as data scientists, who have statistical skills and can effectively use advanced tools to do sophisticated analysis.

Going Forward

Shippers remain hopeful for the future. Nearly one-third of shippers—30%— said 3PLs do not currently have big data capabilities, but they assume 3PLs will develop these capabilities in the future. This is up from 22% who reported the same in 2014. One-fourth of shippers said 3PLs have access to the heterogeneous data elements that are needed to drive the most effective use of big data, up from 22% in 2014.

Big data may serve as a catalyst for greater collaboration between shippers and providers as well as within organizations. Among respondents, 97% of shippers and 94% of 3PLs said the effectiveness of big data initiatives are

highly dependent on the alignment and working relationships between supply chain and IT.

To be effective, 3PLs' systems will have to be able to communicate with cloud-based systems that shippers and other logistics providers are deploying. "You're going to have to be able to connect with each other and all of the shippers. Those logistics companies that are able to leverage the data generated off other systems provide more value," said McKenna, adding that progressive 3PLs are increasing their investment in technology to ensure they can work with multiple systems.

Consumer Insights

Consumer insights—the analysis of consumer data to produce data-driven decisions within sales, marketing and supply chain—is a key priority for more than 80% of executives of large consumer products organizations, according to the Capgemini Consulting report "*Consumer Insights: Finding and Guarding the Treasure Trove*" (see [Figure 8](#) earlier in the study).

More than 54% of companies taking part in the *Consumer Insights* study said they leverage consumer insights to support marketing campaign design and execution, and 61% of companies said they leverage consumer insights in new product development.

Among shippers participating in the *2017 Annual 3PL Study*, 26% said expanding revenue streams from existing products is one of the most important features of big data; 25% said they find expanding revenue streams from new products to be the most important.

Supply chain operations represent a high impact area for consumer insights. For instance, 57% of companies have employed consumer insights in inventory planning, with 90% of them reporting that they have achieved moderate to high level of success in it, the *Consumer Insights* report said. Similarly, 54% of companies have utilized consumer insights to optimize their organizations' supply chain networks, with 87% experiencing moderate to high success.

Data Security

Research shows shippers are becoming more comfortable with sharing information. In this year's study, 20% of shippers said they would not share proprietary information with 3PLs, down from 26% in 2014. To build trust with shippers, logistics providers have to demonstrate they can protect data.

Concerns over data privacy are overarching. In addition to societal concerns about data privacy at the consumer level, there are government regulations that require those within the supply chain to protect information. Within the global supply chain, different countries have differing data privacy laws, which could make widespread adoption of big data challenging.

In April 2016, the European Union adopted the General Data Protection Regulation, which is slated to take effect in May 2018. In conjunction with the directive on the Processing of Personal Data for the Purpose of Crime Prevention, the rules establish accountability around data protection in corporations across Europe. The scope of the GDPR is not just limited to European-

based companies. It also includes companies that may be based outside the EU but derive data from consumers inside the EU.

Data Accuracy

Connecting process and products through the Internet of Things is generating more data than ever before and will allow organizations to generate full visibility into the supply chain. Data is projected to grow tenfold from 4.4 trillion gigabytes in 2013 to 44 trillion gigabytes in 2020, and global data production is forecasted to be 44 times greater in 2020 than it was in 2009.

For data to be valuable, users need to be disciplined in how they collect it, which can create a challenge. Often, the users of systems expect that data is being collected in a clean manner, but that is not always true. McKenna said many organizations, including 3PLs, believe their data is better than it truly is. "The whole issue of the cleanliness and completeness of the data always reaches up and bites people," he said.

Among shippers, 61% said their supply chain organizations believe they—the shippers—need to further develop the more traditional requirements of storage, processing and information.

Big data for networks that include multiple transportation modes becomes an even tougher challenge. To avoid black holes in data, orders will need to be tracked across modes as orders/shipments are aggregated and disaggregated to track and trace the handoffs within the supply chain.

Improved data accuracy results in greater clarity and insights, but an estimated 80% of relevant information is unstructured. Organizing, scrubbing and storing data is time-consuming and costly. Improving data quality can be done in a number of ways. Today it is much more people-driven, but systems are evolving and have more automated data clean-up capabilities.

3PLs often find themselves in a position where they need to clean up the data, collect more information or make assumptions to fill in the gaps. There is a cost to collecting, cleaning and

storing data, so it is important for shippers and providers to understand why and how they will use the information.

Big Data in Action

Logistics providers and carriers are using big data technology to increase asset utilization and decrease volatility in supply chains. Information is then being integrated into optimization tools, which helps logistics providers with demand forecasting and overall planning. Some companies utilize off-the-shelf solutions, while others are creating in-house, proprietary systems.

To provide visibility, drive supply chain optimization and minimize disruptions, Penske Logistics has created the ClearChain™ suite of technology, which has added a layer of proprietary technology on top of commercially available systems. ClearChain collects thousands of data points and provides complete, accurate and timely data that connects people in the supply chain with the information needed to improve decision-making. The visibility that the system provides allows users to route around disruptions, alter shipments mid-route, optimize routes and compare the flow of materials to customers' production schedules.

UPS has invested \$1 billion in its On-Road Integrated Optimization and Navigation (ORION) technology. The system uses more than 250 million data points for route optimization and visibility. It draws on fleet telematics, online map data it has customized and advanced algorithms to gather and calculate the data to provide UPS drivers with optimized routes. The system is constantly evaluating the best route based on real-time information. UPS has been working on the technology for years and first deployed it in 2013. The company expects to utilize it on 55,000 routes in the North American market by 2017.

UPS estimates that saving just one mile per driver per day over one year can save UPS up to \$50 million, plus the system provides UPS customers with more personalized services, such as information on upcoming deliveries and the ability to adjust delivery locations and preferences.

Wal-Mart relies heavily on data to optimize its transportation network and inventory management, which minimizes delays. The retailer uses vendor-managed inventory model that allows suppliers to access Wal-Mart's data to see details on current inventory levels and the rate at which products are sold. Suppliers use the data to determine when to ship products. In turn, Wal-Mart monitors and controls the actual transit of goods from warehouses to the stores.

Key Takeaways

- There is enormous potential for big data to drive insights and increase end-to-end visibility in the supply chain, but privacy concerns, the necessary infrastructure for obtaining data and usability of data remain roadblocks that need to be addressed.
- Nearly all 3PLs taking part in the survey—98%—said improved, data-driven decision-making is essential to the future success of supply chain activities and processes. The majority of shippers—93%—agreed. Both groups—86% of 3PLs and 81% of shippers—said the effective use of big data will become a core competency of their supply chain organizations.
- When asked what they find the most important regarding big data, 60% of shippers said improving integration across the supply chain, 55% said improving data quality and 52% said improving process quality and performance. Among 3PLs, 71% said improving process quality and

Operational Analytics at Network Rail

Network Rail in the United Kingdom is using analytics to manage its core rail assets. It uses a solution that brings together data from more than 14 asset information systems into a single digital platform, providing a consolidated and consistent view of the asset data. This data insight is combined with an operational model that embeds data capability in the business. For example, Network Rail provides its engineers with critical data through mobile devices, so that they can access it when and where they need it the most. In turn, this insight is allowing Network Rail to make better operational decisions and allows it to undertake preventive track maintenance, resulting in fewer asset faults and failure. Using data to make better decisions, the company has realized cost savings of £125 million over a five-year period.

Source: Capgemini, "Enabling Track Asset Decision Support at Network Rail," 2014

- performance, 70% said improving logistics optimization, and 53% said improving integration across the supply chain.
- Logistics providers lag slightly in their understanding of big data's importance to shippers—79% of shippers said their supply chain organization sees significant value in the use of big data, compared to 65% of 3PLs who reported that their customers' supply chain organizations see significant value in the use of big data.
- There is softening among shippers of what they think 3PLs can achieve with big data. In the 2017 survey, 35% of shippers said 3PLs can support their big data initiatives, down from 44% who felt the same way in 2014. The latest study also found that 16% of shippers believe 3PLs cannot manage the complexity of the data elements needed to effectively use big data, up from 13% in 2014.
- In this year's survey, 76% of shippers said their organizations needed to develop the more traditional requirements of storage, processing and information architecture, which is down from 79% in 2014.
- Among respondents, 97% of shippers and 94% of 3PLs said the effectiveness of big data initiatives are highly dependent on the alignment and working relationships between supply chain and IT.
- Shippers are becoming more comfortable with sharing information. In this year's study, 20% of shippers said they would not share proprietary information with 3PLs, down from 26% in 2014.
- Improved data accuracy results in greater clarity and insights, but an estimated 80% of relevant information is unstructured. Organizing, scrubbing and storing data is time-consuming and costly.

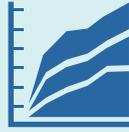


Big Data



Successful big data initiatives are more about managing the variety of data, rather than the volume of data

90% agree



Our supply chain organization sees significant value in the use of big data

79% agree



Improved, data-driven decision-making is essential to the future success of our supply chain activities and processes

93% agree

Shippers: Perspective on Big Data Shifting

2014

69%

Our organization currently has access to timely and comprehensive data relating to supply chain planning and operations.

2017

66%

76%

Our supply chain organization believes we need to further develop the more traditional requirements of storage, processing, and information architecture before we become seriously involved in the use of big data.

61%

81%

The effectiveness of big data initiatives are highly dependent on the alignment and working relationships between supply chain and IT.

81%

81%

The effective use of big data will become a core competency of our supply chain organization.

85%

2014

44%

Yes, 3PLs can support our big data initiatives.

2017

35%

22%

3PLs do not currently have big data capabilities, but we assume they will develop them in the future.

30%

22%

3PLs have access to the heterogeneous data elements that are needed to drive the most effective use of big data.

25%

26%

Our data is proprietary and we would not share it with 3PLs.

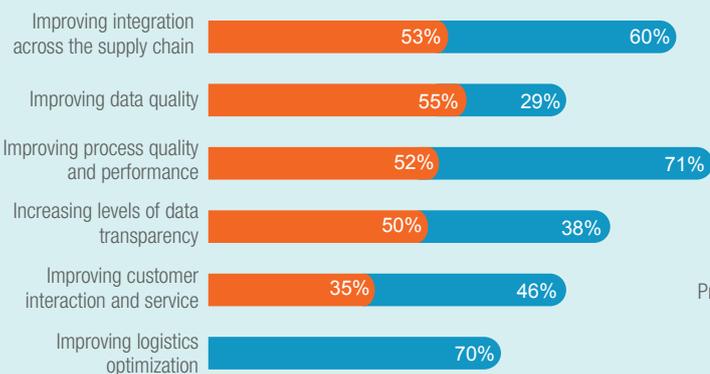
20%

13%

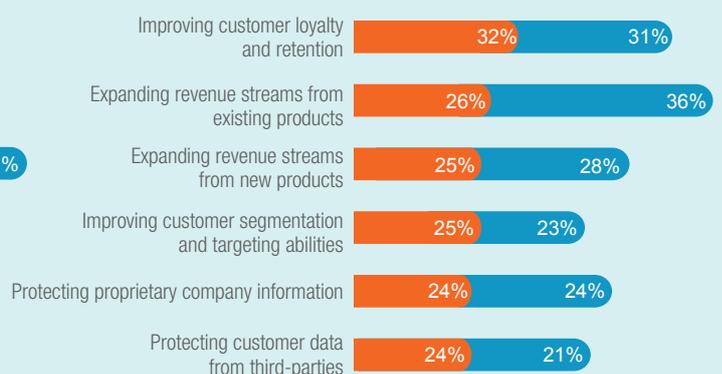
3PLs cannot manage the complexity of the data elements needed to effectively use big data.

16%

What shippers find most important



What 3PL/4PL service providers believe customers want





End-of-Life Supply Chain

Closing the Loop



It is inevitable that at some point, a component or product will reach its end-of-life. Eventually, a manufacturer or vendor will stop marketing, selling or sustaining certain items, or what is more common today, a newer and better version is released. So in today’s market, the end of a product’s lifecycle is coming sooner rather than later for some items, particularly electronics.

The pace of innovation has led to a growing stream of new products, resulting in a decreased product lifespan for a number of products. Consider that in 2012, 18.9 million tons of consumer goods were recycled globally. Five years ago, the 2012 *Third Party Logistics Study* first reported that 44% of 3PLs and 30% of shippers reported that short product lifecycles were a primary concern among electronics shippers.

Within both the U.S. and the European Union, regulations on electronics mandate end-of-life activities.

There is a range of environmental, social and economic factors driving the growth of end-of-life supply chain needs. Not only can improper disposal/dumping result in fines for failing to comply, but it can also create a social backlash and generate bad publicity for those involved. Environmental concerns from consumers are increasing pressure for organizations to focus on environmental impact and sustainability initiatives.

Reverse logistics for end-of-life products has a valuable role within the supply chain. For manufacturers, the magnitude of returns and growing environmental, economic and social pressures to recycle or properly dispose of goods represents an opportunity for significant cost reductions through proper reverse logistics management.

Less than half of shippers—41%—said they do not touch end-of-lifecycle products or processing, and the majority work with end-of-lifecycle handling or processing in some capacity, as shown in **Figure 21**.

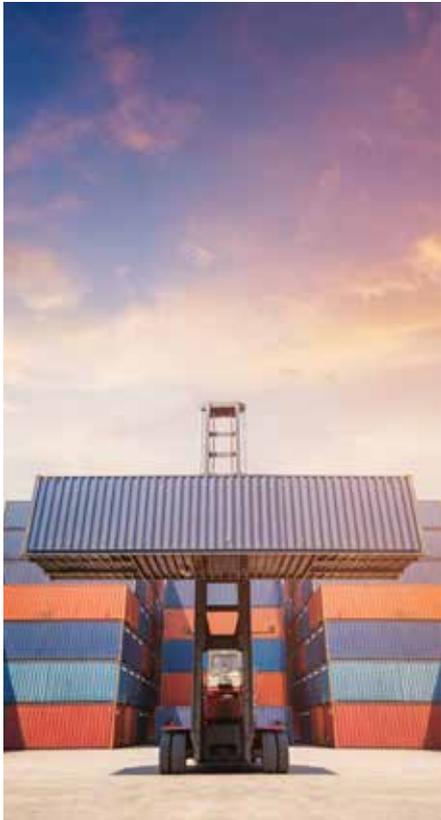
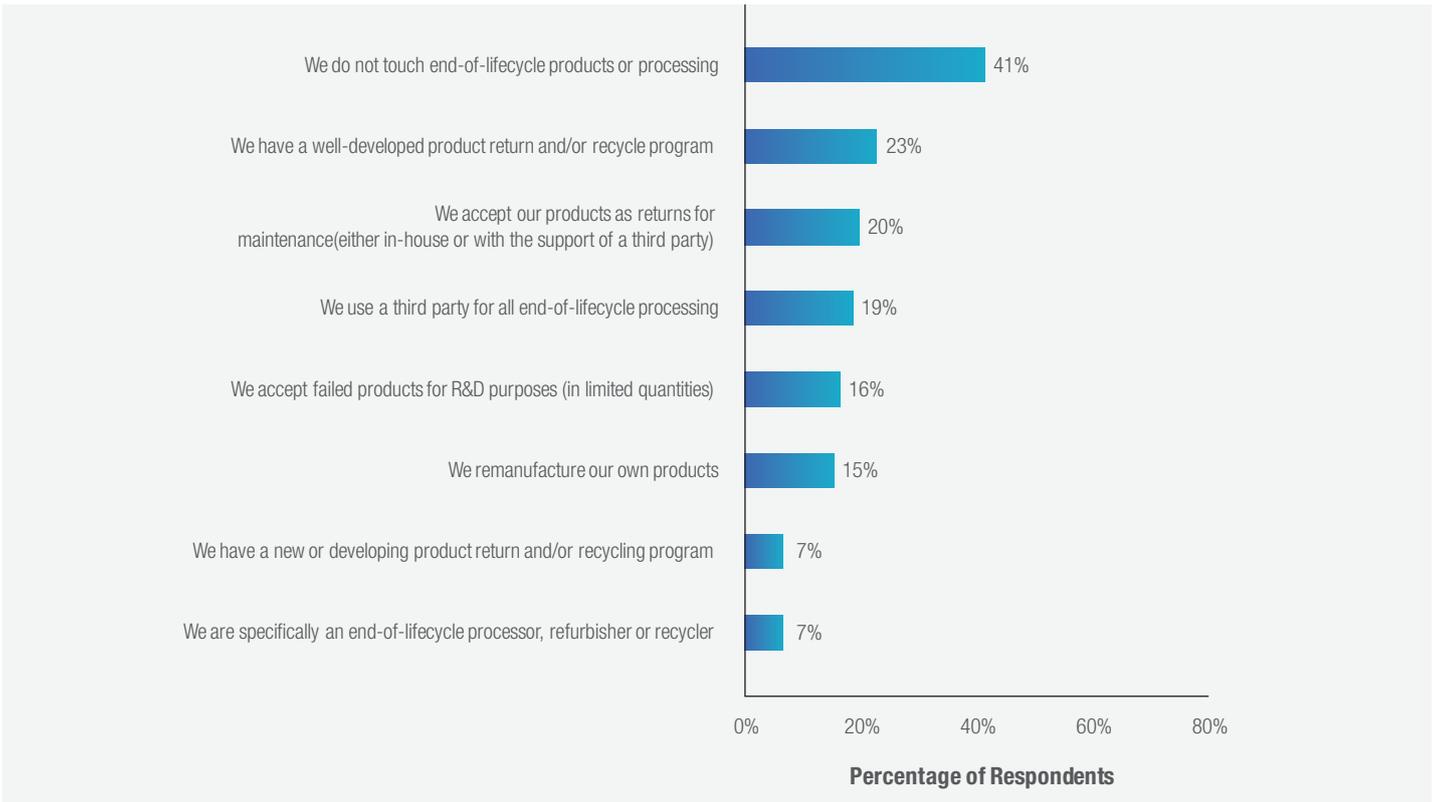


Figure 21: The Degree to Which Shippers’ Companies are Involved in “End-of-Lifecycle” Handling or Processing



Of those that are involved in end-of-lifecycle activities, 34% of shippers said it is a result of consumer demand, request or expectations, and 22% said it is because of extended product responsibility, as shown in **Figure 22**.

There are opportunities for shippers and their logistics providers to obtain value from end-of-life activities. As shown in **Figure 23**, 41% of shippers said they would prefer a third party to handle all aspects of end-of-lifecycle collection and processing. Nearly one-third—29%—would like to improve the efficiency of their internal capabilities; 20% would like to work with a third party to support product disposal; and 19% would like to work with a partner to support physical logistics/movement of end-of-lifecycle products.

Some of the most common approaches to manage products approaching end-of-life include:

- **Maintenance:** Extending the life of the product through repair/service at the manufacturer (20% of shipper respondents)
- **Redesign:** Developing products that use fewer materials, have a smaller environmental footprint and are designed to be more durable, further increasing useable life
- **Remanufacturing:** Replacing broken or outdated parts to make a new product ready for sale (15% of shipper respondents)
- **Recycling:** Recovering materials from end-of-life products for various secondary use

Among logistics providers, more than half—54%—offer logistics/physical movement support of end-of-lifecycle specific offerings, but 40% do not have any EoL-specific solutions (see **Figure 24**).

Figure 22: Why Shippers Have Gotten Involved in End-of-Lifecycle Activities

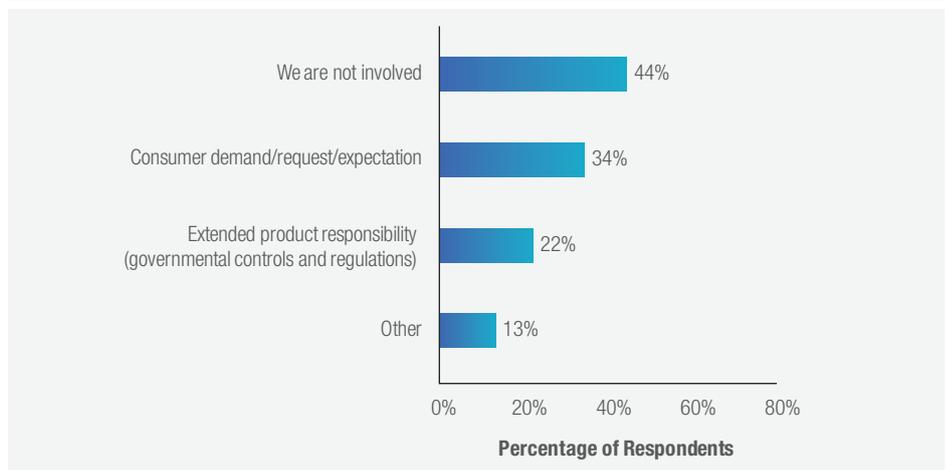


Figure 23: Services Shippers Would be Interested in to Support End-of-Lifecycle Efforts

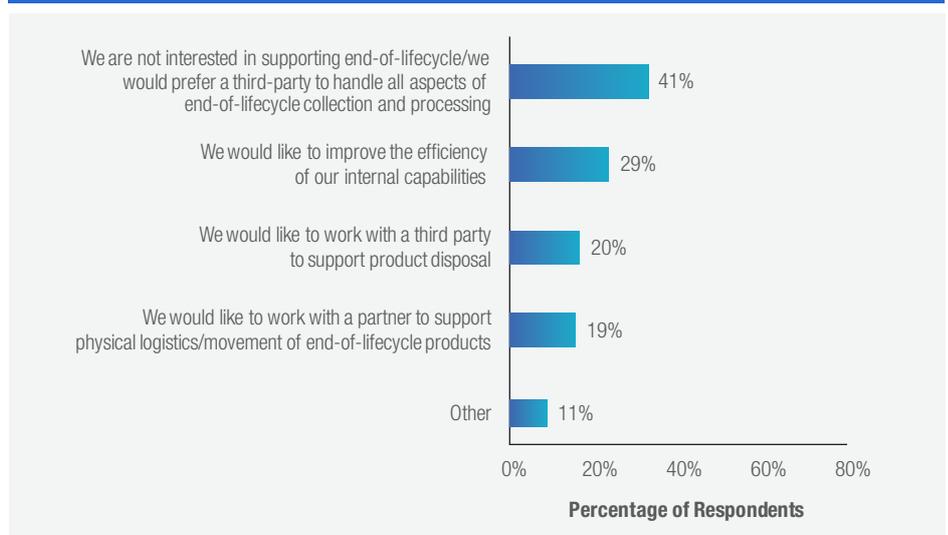
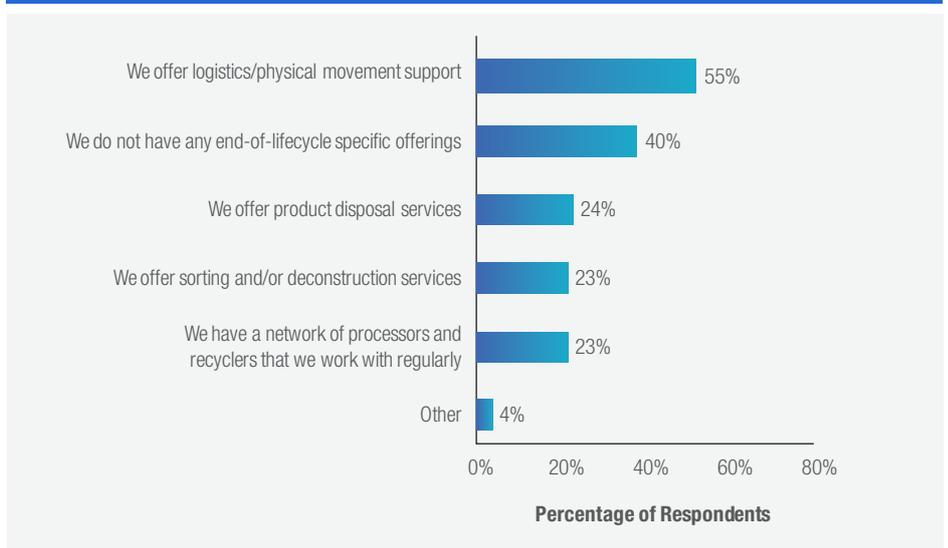


Figure 24: End-of-Lifecycle Specific Offerings 3PL/4PL Service Providers Offer Customers



There could be a slight disconnect between logistics providers' perception of demand for end-of-lifecycle requirements and shippers' needs. Only 44% of shippers said they are not involved in EoL activities, whereas 60% of 3PL/4PL respondents believe that less than 25% of their customers are doing end-of-lifecycle related work (see [Figure 25](#)).

Among 3PL/4PL respondents, 34% said consumers demand, request or expect end-of-lifecycle support; 17% said extended product responsibility (governmental controls and regulations) were a primary reason they were involved in EoL activities; and 17% said they are involved because of secondary market value capture, shown in [Figure 26](#).

Industry-Specific End-of-Life Needs

Rapid growth in the electronics industry has shortened the lifecycle of handheld and home electronics devices. Many of the flat screen televisions, tablets, e-readers and smartphones that are part of consumers' lives today were not even available before 2000. The electronics landscape has evolved rapidly, with consumers replacing some devices every few years.

Electronics containing hazardous or toxic components must be managed properly to ensure safe disposal, and much of the metal and glass used within the products can be reclaimed to minimize the environmental and security impact.

More than half of U.S. states have laws related to electronic waste. In 2015, U.S. implemented a statewide ban that requires residents to dispose of TVs, printers and MP3 players at designated stores and drop-off locations for recycling or face a \$100 fine.

Organizations, including the Environmental Protection Agency, are working jointly with global organizations to address e-waste abroad. EPA collaborates with the United Nations University Solving the E-waste Problem Initiative.

The European Union's European Commission is also working to address waste electrical and electronic equipment. In 2014, the latest

Figure 25: The Degree to Which 3PL/4PL Service Providers' Customers are Involved in End-of-Lifecycle Handling or Processing

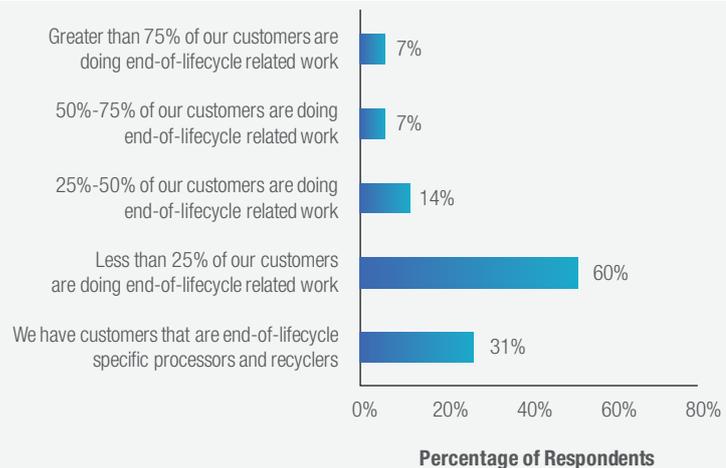
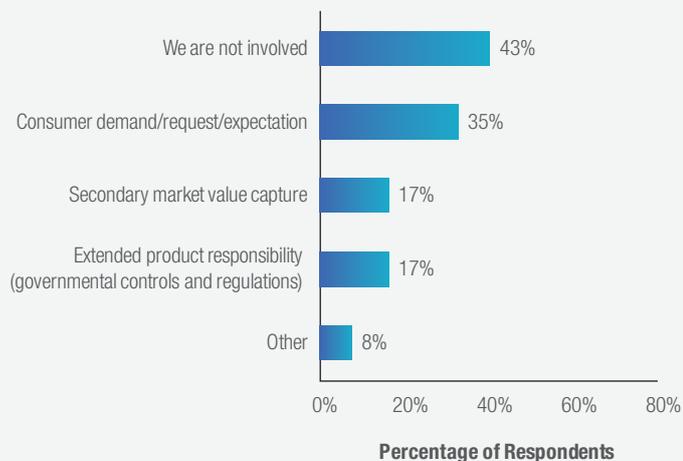


Figure 26: Why 3PLs/4PLs Have Gotten Involved in End-of-Lifecycle Activities



EU Directive outlined where consumers can return their electrical and electronic equipment waste free of charge, and deemed producers or distributors responsible for collection and disposal of such waste.

Within the U.S., the National Strategy for Electronics Stewardship (NSES) is encouraging certification of electronics recycling and refurbishment facilities. In 2011, approximately 100 facilities were certified under the newly established voluntary electronics recycling certification programs. As of mid June 2014, more than 565 facilities obtained voluntary certification.

The NSES also took steps to develop environmentally friendly product standards for electronics that contain fewer toxic materials, use less energy, last longer, use more recycled materials, and are more easily recycled or upgraded. Federal agencies have worked together to develop environmentally preferable electronics standards, called the Electronic Product Environmental Assessment Tool (EPEAT).

Federal purchasers are currently required to buy EPEAT-registered products, and purchasers of EPEAT products are located in 43 countries and include the governments of eight countries. Also, state and local governments, large corporations and businesses are purchasing electronics that meet green design and recycling standards.

Factors Driving End-of-Life Supply Chain

Not only are there regulations related to end-of-life supply chain, but consumers also appear to have greater expectations for maintenance and repair services as well as warranty expectations for their electronics devices. Manufacturers have the potential to differentiate themselves through their support offerings, which would likely produce an economic boost.

There is also an economic benefit to recycling and reusing materials within electronics devices. Not only can improved recycling practices reduce costs of waste management, but they can also lead to reusable materials. For example, the EPA estimates that for every one million cell phones recycled, 35,274 pounds of copper, 772 pounds of silver, 75 pounds of gold and 33 pounds of palladium can be recovered.

There are several ways manufacturers can manage the end of lifecycle for products, including reuse, repair, recovery, recycling and disposal, as shown in [Figure 27](#). Recovering products creates opportunities for manufacturers to improve designs, and 15% of shippers said

they accept failed products for research and development purposes.

Ensuring a closed loop along the product lifecycle allows for greater efficiency, reduced environmental impact and lower total costs at all touch points, and there are significant savings opportunities through well-managed and optimized reverse logistics for manufacturers.

Logistics providers that understand the growth in reverse logistics and the necessary infrastructure for success can leverage their expertise through end-of-life-specific product offerings.

Key Takeaways

- Less than half of shippers—41%—said they do not touch end-of-lifecycle products or processing, but the majority of shippers work with end-of-lifecycle handling or processing in some capacity.
- Of those that are involved in end-of-lifecycle activities, 34% of shippers said it is because of consumer demand, request or expectations, and 22% said it is because of extended product responsibility.

- Among shippers, 41% would prefer a third party to handle all aspects of end-of-lifecycle collection and processing; 29% would like to improve the efficiency of their internal capabilities; 20% would like to work with a third party to support product disposal; and 19% would like to work with a partner to support physical logistics/movement of end-of-lifecycle products.
- More than half of logistics providers—54%—offer logistics/physical movement support of end-of-lifecycle specific offerings, but 40% do not have any EoL-specific solutions.
- Among shippers, 34% said consumers demand, request or expect end-of-lifecycle support; 17% said extended product responsibility (governmental controls and regulations) were a primary reason they were involved in EoL activities; and 17% said they are involved because of secondary market value capture.

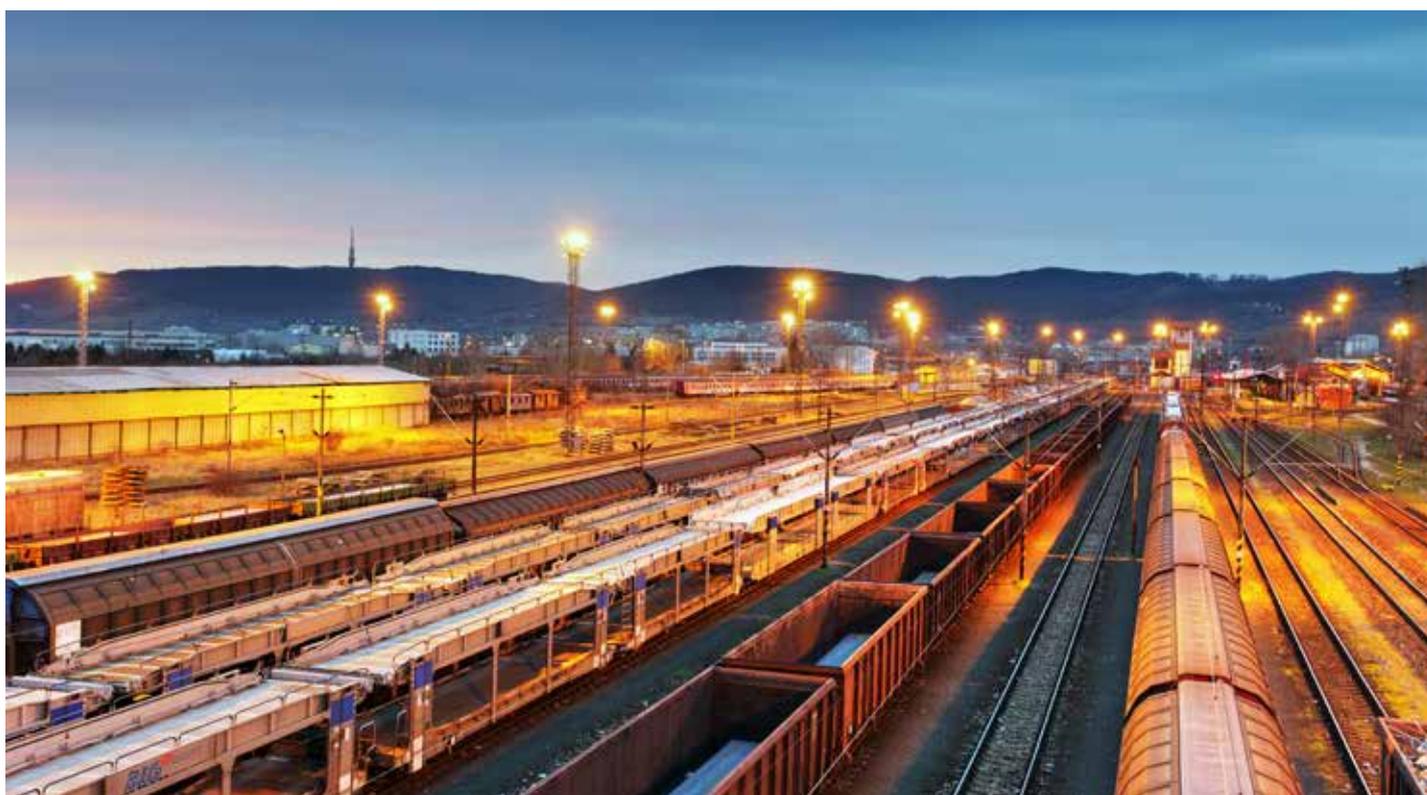
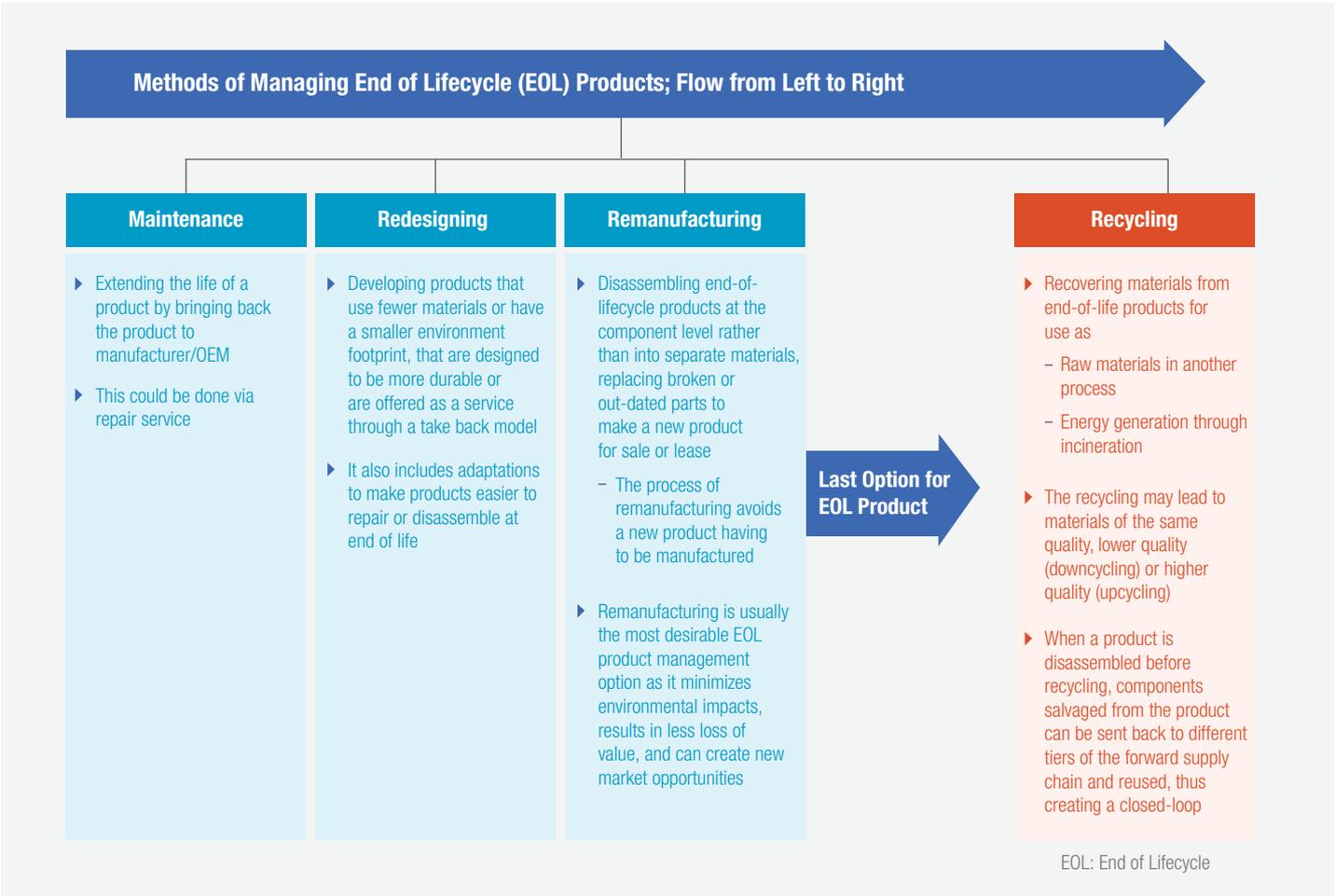


Figure 27: End-of-Lifecycle Management of Products Techniques



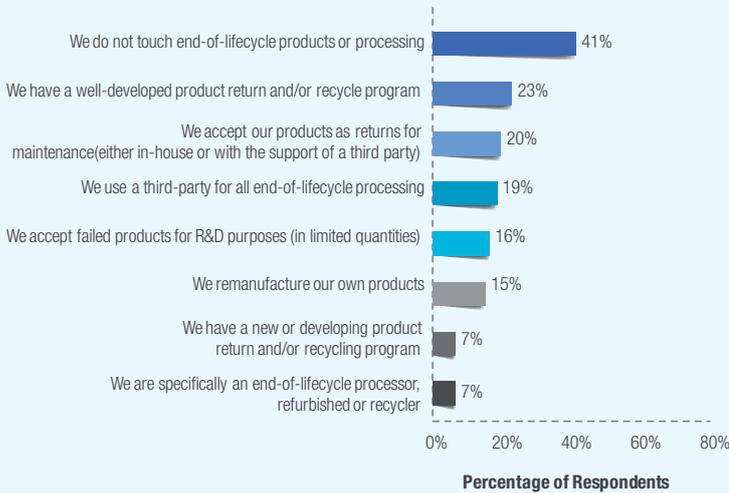
Source: CC India Analysis



The End-of-Life Supply Chain

The Degree to Which Shippers and Service Providers are Involved in the End-of-Life Supply Chain

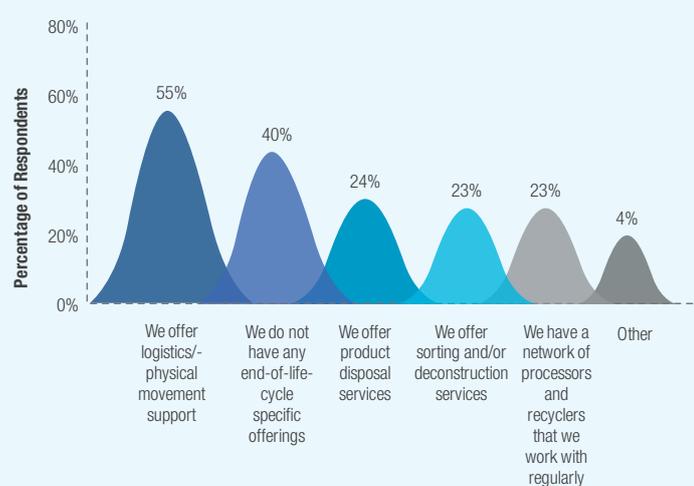
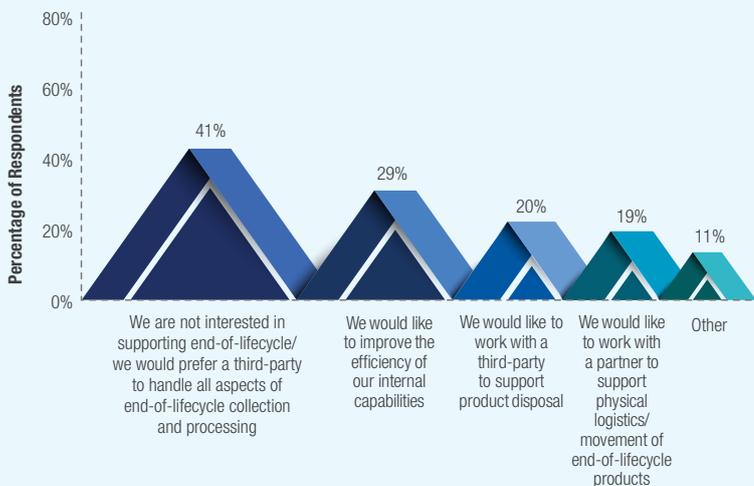
Shippers



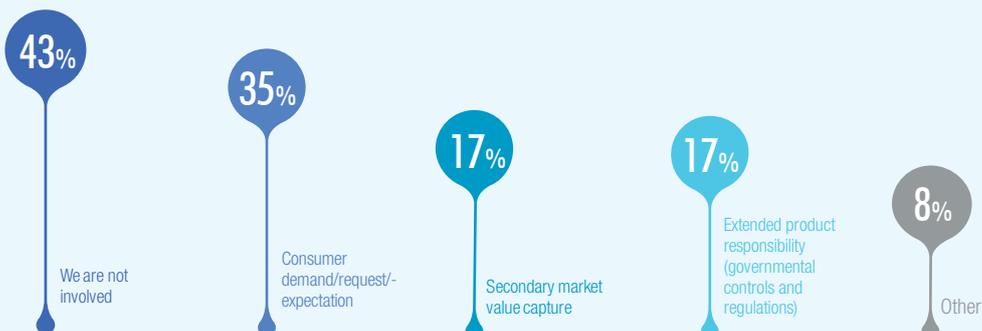
3PL/4PL Service Providers



Why Shippers and Service Providers have Gotten Involved in End-of-Life Activities



End-of-Life Related Services Shippers and Service Providers Would be Interested in Supporting



Strategic Assessment

Closing the Loop



Change Management

Change is always inevitable, but the pace of change in today's supply chain continues to accelerate. Shippers, as well as their logistics providers, see the needs for change arise from both internal and external forces, and they must be both reactive and proactive to remain successful. Given the role of 3PLs in shippers' supply chain transformation initiatives, the need for effective change management has increased significantly. Although numerous process models relating to change management have been developed, the seminal research conducted by Professor John Kotter of Harvard Business School has resulted in the most widely used and highly regarded of the available templates.¹

Kotter created a list, "Eight Steps of Change," which includes:

1. Establish a sense of urgency
2. Form a powerful guiding coalition
3. Create a vision
4. Communicate the vision
5. Empower others to act on the vision
6. Plan for and create short-term wins
7. Consolidate improvements and produce more change
8. Institutionalize new approaches

There is a logical progression throughout each of the steps. The first few steps (1 - 3) essentially serve to validate the need for change and also create a climate for change. Obviously, the idea of change, whether positive or negative, is not welcomed equally by all organizations and their people, so these steps create the foundation upon which further progress needs to be made. The next steps (4 - 6) are focused on engaging and enabling the entire organization(s). These steps are critical to creating "buy in" among those who will participate in the change process. Creating short-term successes may help to build credibility of the overall change management

process. The last two steps (7 - 8) are designed to implement and sustain change. Collectively, these eight steps represent a useful roadmap for dealing with organizational change.

In the context of supply chain transformation, and because supply chains by definition are multi-organizational, change management must be diffused throughout the supply chain. Logically, there should be a roadmap for creating buy-in and participation of organizations throughout the supply chain. This includes customers, suppliers, providers of supply chain services, financial institutions, etc.

There is validity in the well-worn phrase "the supply chain is as strong as its weakest link," and change is necessary to maintain the overall integrity of the supply chain, particularly given the rate of change in today's operating environments. This underscores the need for change management processes to be inclusive of an organization's supply chain partners to enhance the likelihood of success. In many cases, supply chain partners may be able to help shippers react to change faster than shippers could have on their own.

To what extent do organization-specific change management initiatives reflect the importance of change in a broader, supply chain perspective? Do organizations consider the impacts on and participation of supply chain partners in the change management process? How are organizations involving supply chain partners in the change management process?

The Food and Beverage Sector

A growing number of locations offering fresh foods coupled with a proliferation of fresh products, shifts in consumer behavior and an increase in government regulations are intensifying the transportation demands on the food and beverage industry. At the same time, the rising cost of transportation, the focus on freshness and the desire to gain efficiencies within the supply chain has become a greater

priority for food distributors, which is creating opportunities for 3PLs and 4PLs.

Increasingly, grocery stores are segmenting out their fresh channel and are offering more grab-and-go items, such as fresh sandwiches, salad bars and prepackaged product. Stores are also trying to cater to a greater number of consumer preferences, which is leading to some smaller, niche offerings at locations, and stores with a fresh format are expected to grow, which will create additional opportunities for logistics providers.

The consistency with which a product is delivered is incredibly important to food distribution companies. "Consumers won't stand for brown lettuce. It comes back to providing more frequent replenishment and smaller deliveries," said Andy Moses, senior vice president of global products at Penske Logistics, adding that the customer demand for freshness is shifting traditional transportation patterns. "It is no longer good enough to have a tractor trailer run every three days or so. They want daily or more frequent replenishment of those items."

E-commerce, growth in the omni-channel and a proliferation of products mean that today's consumers have greater expectations. Not only are they looking for a wider variety of product choices, consumers expect quality products that are in stock, whether they're shopping online or at their local grocery store. Within a dynamic consumer environment, the customer has so many options that retailers cannot afford to have empty shelves or products that aren't fresh.

To accelerate freshness, some companies are creating separate supply chains for the different segments and profit centers within a store. As a result, they are pulling highly perishable items out of traditional distribution channels and putting them in more rapid-replenishment distribution channels. Some food retailers, such as coffee shops, also offer their products for sale in grocery stores, which is creating further segmentation within the supply chain.

1. For example, see Kotter, J. P. *Leading Change*. Boston: Harvard Business School Press, 1996.

These changes shift both warehouse and transportation practices, placing new demands on network and warehouse design, equipment and the labor force. Within the transportation segment, changing demand is leading to the use of different types of equipment and drivers with different skill levels, as some drivers are now entering the store through the front door and possibly even restocking displays themselves.

Within the warehouse, employees are picking smaller quantities rather than pallets, which requires different levels of technology. Grocers and logistics providers may create more geographically accessible warehouses to respond to this accelerated perishables track.

Stores rely more heavily on having the right inventory to build brand affinity. Today's consumers have many more options to do their grocery shopping than they ever had before, making it easy for shoppers to change stores if they have a bad experience. This requires shippers to develop a more flexible, reliable, but efficient supply chain for these product segments.

Within the grocery segment, volumes often spike during certain times of the year, such as the holidays, seasonal promotions or ahead of severe weather. The ability to scale up quickly enables grocers to keep their shelves stocked, generating consumer loyalty.

And grocers want to take advantage of these surges in volume, which means the ability to flex rapidly is valuable.

While contingency planning is a key element within the supply chain, it takes on even greater importance within the food and beverage industry. The combination of real-time supply of products, just-in-time deliveries, and an industry that is vulnerable to weather and agricultural conditions means shippers sometimes have to shift their sourcing and routing of products with very little notice. As a result, their transportation needs can shift quickly as can available capacity.

In addition to traditional spikes, the food and beverage industry saw shifts in produce shipments in 2015 because of the drought in California and floods in Texas, and the Avian flu cut poultry and egg production in the Midwest, forcing suppliers to find products elsewhere. These types of disruptions could drive the use of 3PLs because having access to a large pool of carriers, which 3PLs can provide, ensures shippers have the capacity and coverage they need.

Increased transportation demands, customer expectations and shippers' need to respond can add complexities to the distribution network. This also creates opportunities for 3PLs that are continuing to invest in technology to increase collaboration and speed the flow of information among shippers, the warehouse and transportation providers.

Upstream collaboration can aid in working through those complexities. Working with shippers on their demand planning, forecasting and distribution points can help create a predictable transportation strategy that could alleviate potential disruptions when the unknown or unexpected occurs. Access to timely information also enables 3PLs to leverage data to anticipate exceptions and have a plan of action in place before the exception occurs.

The role of information and its ability to let those within the supply chain track and trace items is critical in the food and beverage industry. Technology, including transportation and warehouse management systems as well as scanning technology, allows carriers to track products at multiple touch points throughout the supply chain, such as upon pickup at the suppliers' dock, delivery into the warehouse, loading at the warehouse and the final delivery from the truck.

Food recalls are inevitable, and to prevent consumers from getting sick and to protect their brands, food suppliers need to be able to pull products off the shelf quickly when necessary.

The ability to track products throughout the supply chain—from farm to fork—enables food distribution companies to intercept recalled items before they are delivered or quickly thereafter.

In 2015, the Food and Drug Administration reported hundreds of recalls. In March 2015, Kraft recalled 6.5 million boxes of macaroni and cheese after consumers found metal in the boxes. In April, Blue Bell Ice Cream voluntarily removed all of its products from shelves because of safety concerns. In July Aspen Foods recalled about two million pounds of frozen chicken products, and Oscar Mayer recalled more than two million pounds of turkey bacon due to mislabeling in August. Chipotle Mexican Grill also faced a number of food safety challenges throughout the year.

In 2016, the Food and Drug Administration released the final regulations surrounding the Food Safety Modernization Act, which applies to shippers, receivers, loaders and carriers that transport food in the United States. The rule addresses time/temperature controls for perishable food and mandates that food and beverage providers, as well as their supply chain partners, must be able to track and trace products quickly in the event of a recall.

Carriers will need to track temperatures while transporting perishable products and will need to verify that, based on the shipper's specifications, mechanically refrigerated cold storage compartments or containers, as well as thermally insulated tanks, have been properly pre-cooled before loading products, if necessary.

Monitoring temperatures not only ensures products don't spoil, but it can also prolong the shelf life, appealing to the desire for freshness. Even slight variations in temperature matter. For example, raising the temperature of bagged salad from 34 to 42 degrees Fahrenheit during a shipment makes bagged salad go bad five days faster, even though the product will be delivered perfectly intact.



These mandates are designed to improve safety and prevent spoilage, but they create greater complexity surrounding food delivery and place greater demands on those within the supply chain. A continued focus on freshness, food safety and customer service will continue to be the driving force behind shippers' efforts in the food and beverage industry supply chain, which has evolved to encompass transportation, storage and distribution from the field to the table. The amount of information required to track and trace products throughout the food and beverage supply chain has increased tremendously and will continue to grow. Shippers likely will increasingly rely on 3PL partners with the expertise to collect, analyze and share information in near real time.

Will grocery customers turn to the added expertise 3PLs provide as they either pilot or execute e-commerce or omni-channel fulfillment strategies within the food and beverage industry? How can 3PLs collaborate with food and beverage shippers to improve tracking and tracing capabilities, speed deliveries, manage inventories and control costs? Will food and beverage shippers utilize 3PLs to provide a mix of technology,

equipment and expertise to leverage the supply chain?

Digitizing the Truck

In the current operating environment, carriers, shippers and logistics providers need an increasing amount of information related to shipments. Companies are demanding transparency from their business partners, and automating the flow of information can save time for all parties in the supply chain.

Telematics—the branch of technology that deals with long-distance transmission of computerized information—speeds the exchange of data and provides accurate information on a load's location as well as the tractor and trailer carrying the load, giving carriers and logistics providers deeper insight and visibility into fleet operations.

Tracking technology allows those within the supply chain to monitor the movement of goods from the time they leave the manufacturer to the final unloading. Load and trailer tracking technology can save fleets time, increasing productivity and efficiency, and automatic updates give providers more timely insight, enhance customer service and streamline

operations. The data can help providers predict potential service issues and detect load tampering.

There are a number of telematics options with varying capabilities on the market. Systems can provide GPS tracking and diagnostic data, as well as information on unsafe driving events and regulatory compliance. That information allows providers to improve customer service, minimize delays, better utilize assets and enhance security. Digitizing trucks enables route optimization based on real-time data, which can allow carriers to adjust routes based on traffic or supply chain disruptions. The information also allows carriers or logistics providers to send real-time alerts regarding the status of a delivery.

Technology providers have seen greater demand from logistics companies looking to increase productivity through the use of collaborative, cloud technology. This growth is driving increased investments among providers as well as mergers and acquisitions within the telematics industry.

In June 2016, Verizon Communications signed an agreement to purchase Telogis, a provider of cloud-based logistics software and services for

truck fleets. The announcement came following years of significant capital fundraising by Telogis. Telogis raised \$93 million through the venture capital firm Kleiner Perkins Caufield & Byers in 2013 and another \$25 million from other venture capital firms in 2015.

Two large providers in the GPS fleet and tracking space, Navman Wireless and Teletrac, merged in 2015, making it one of the largest global telematics providers. The company said it tracks more than 500,000 vehicles owned by over 40,000 organizations on five continents.

In addition to relying on traditional telematics offerings, providers can also leverage technology that tracks loads via the GPS receivers on drivers' smartphones, which provides an alternative to pulling information from a specific tractor or trailer. Using the technology, logistics providers and brokers can obtain GPS status updates via the driver's cellular phone once the driver has given permission for the system to run on his or her phone.

One challenge surrounding the adoption of telematics technology has been the cost, but smaller fleets may have more opportunities to use the technology as the number of tracking technologies increases and options become more cost effective.

There are several government regulations that are also driving the adoption of telematics technology. In December 2015, the Federal Motor Carrier Safety Administration enacted a mandate requiring electronic logging devices. Carriers must comply by December 2017. They can utilize devices that only track location and hours-of-service information, but many may opt for a more-comprehensive telematics device.

Load-tracking technology may see increased growth as carriers and shippers work to comply with the final requirements of the Food and Drug Administration's Food Safety Modernization Act. They take effect in 2017 and require shippers to demonstrate compliance across the entire supply chain. Under FSMA, shippers and carriers need to be able to demonstrate a chain of custody as well as temperature compliance.

Carriers also face restrictions on the order in which products can be loaded in a trailer.

However, collecting data is only one part of the equation. For the information to be useful, supply chain partners have to integrate data into the appropriate systems so it can be analyzed and provide value. The increase in the amount of data that fleets and providers collect, as well as the growing need to use the information strategically, could result in increased opportunities for 3PLs and 4PLs to manage and analyze the data the systems generate. Logistics providers could also guide carriers and brokers on the benefit of implementing the systems within the supply chain and on the ways in which they collect data.

Given the amount of information exchanged through telematics systems, data privacy remains a big concern for multinational logistics organizations. Those collecting, receiving and analyzing the data will need to have security systems in place to protect the information they receive.

To improve performance, equipment manufacturers are equipping vehicles with remote diagnostic reporting systems that can transmit fault codes to alert carriers to required maintenance and avoid the risk of a breakdown or violation during a roadside inspection.

Remote diagnostic reporting systems have a number of benefits for carriers, including minimizing delays associated with downtime and reducing the risk of violations under the Department of Transportation's Compliance, Safety, Accountability program. The systems are standard on some tractors and can be ordered on others.

In addition to bringing significant changes to the amount of data that is transmitted from Class 8 trucks, technology is changing the tractors as well. Adaptive cruise control, which is already available in some vehicles, can be enhanced when vehicle-to-vehicle communication is added. Trucks could adjust their speeds in

sync with the truck ahead of them, resulting in the ability for trucks to convoy, controlled by a lead truck. In April 2016, a convoy of self-driving trucks completed a cross-border trip in Europe. More than a dozen trucks from six major manufacturers—DAF, Daimler, Iveco, MAN, Scania and Volvo—took part in the journey.

In mid 2015, Freightliner began testing its Inspiration Truck, the first licensed autonomous commercial truck to operate on an open public highway in the United States. The Inspiration Truck can activate the Highway Pilot option that links together camera and radar technology with systems providing lane stability, collision avoidance, speed control, braking, steering and an advanced dash display. The move toward driverless vehicles could increase as the driver shortage worsens and capacity tightens.

The ability for trucks to communicate information is becoming a necessary tool for logistics organizations because of the need for real-time information related to loads and the desire to optimize routes and decrease transportation costs. Because supply chain partners have to integrate data into the appropriate systems to derive its value, it could bode well for 3PLs and 4PLs that have the expertise to analyze and manage the information.

What types of opportunities will the vast amounts of data coming off of vehicles create for 3PLs and 4PLs? How will the truck of the future incorporate autonomous technologies? Will the technology result in driverless vehicles, which could mitigate the challenges associated with the driver shortage as well as tight capacity?

The Effect of Brexit on the Supply Chain

Brexit, the United Kingdom's vote to leave the European Union, could bring uncertainty as well as opportunity to supply chain operations both regionally within the U.K. and globally as Britain establishes its trading relationships and

rules. It will take up to two years for the U.K. to fully exit and renegotiate trade relationships with Europe, but the vote could lead to increased demand for third-party logistics providers to provide guidance as shippers, retailers and manufacturers adapt to changing trade rules and regulations. Both 3PLs and 4PLs could help mitigate supply chain disruptions until updated trade agreements and regulations are established.

Uncertainty lingers over economic stability, the currency value, trade deals and potential migrant worker reductions, and there are both short- and long-term implications of the vote.

In the short term, shipping demand could increase if retailers see a spike in sales. Since Brexit was announced, the British pound has become weaker, which could drive up demand of exports and boost sales for U.K. retailers as foreigners take advantage of the exchange rate.

In addition, Brexit is expected to increase caution and slow down merger and acquisition activity initially as companies wait to see the implications of the vote. However the value of the British pound may make U.K. companies

attractive targets in some industries with aggressive buyers.

Going forward, trade may become more complicated as it will likely include more duties and taxes. Under the current system, when those within the U.K. purchase goods for other EU countries, it is as though they're purchasing from the U.K.

As part of their long-term strategy retailers and manufacturers within the U.K. may alter their existing distribution channels, moving distribution centers and adjusting transportation routes. This is likely to be even more probable for companies with a customer base focused in the continent, but it may take years to occur.

Because the U.K. will most likely no longer be subject to EU law and instead will create its own national legislation, U.S. firms operating in the U.K. may see changes in the way they operate.

A primary reason U.S. companies have established operations in the U.K. is the country's access to other markets through

the EU's Customs Union and Free Trade Agreements. Once the U.K. leaves the EU, it may lose preferential access, which would mean exports of U.S. businesses from the U.K. could be subject to duties and additional taxes.

The U.K. will have to negotiate its own FTA with both the EU and other countries the EU has trade agreements with, but it is unlikely those agreements will contain the level of preferential access that the U.K. had under the current EU Treaties and FTAs.

That could drive U.S. manufacturers currently operating in the U.K. to relocate in other EU Member States.

In addition, Brexit could affect the labor pool within the U.K. Under current legislation, EU citizens are primarily free to take advantage of employment opportunities in any EU country. This may change once the U.K. leaves the EU.

While there are still many unknowns, there is already a precedent for countries, including Norway and Switzerland, that are outside of the EU but still have full access to EU markets.

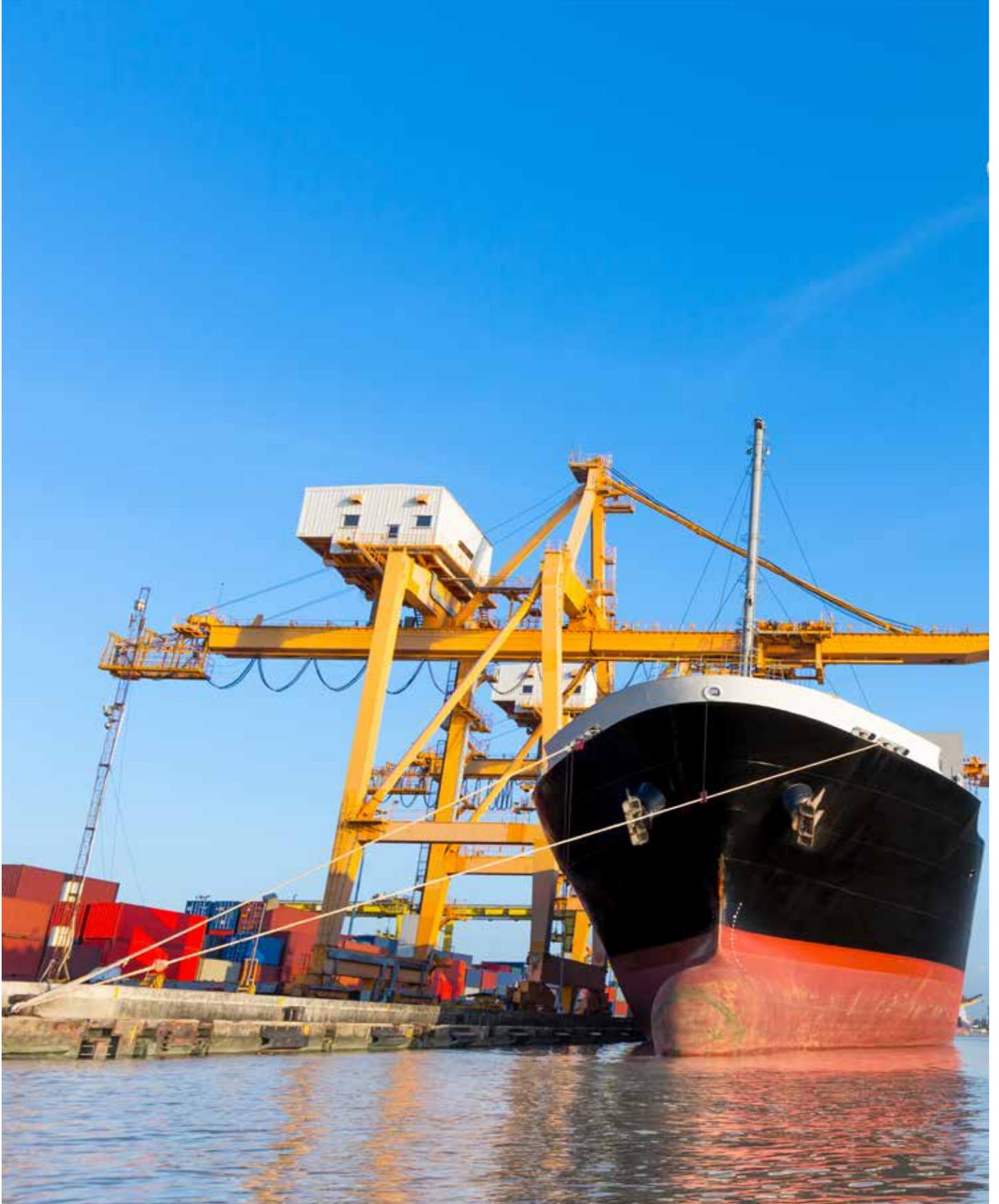
Norway operates under a trade model that requires a full contribution to the EU budget, and the country abides by most EU regulations and standards. Switzerland also makes a contribution to the EU budget, and it has a free trade agreement with the EU as well as other agreements that give it access for a number of industries and requires the free movement of people.

Although the long-term effects are difficult to predict, those within the supply chain have said it is unlikely trade will stop. Logistics providers could play a key role in helping retailers, manufacturers and distributors develop their short- and long-term distribution and supply chain strategies as they respond to the changing environment.

How will Brexit affect the movement of goods between the UK and EU? Will transportation and distribution patterns change? How can logistics providers help minimize supply chain disruptions as the transition occurs?



About the Study



For the past 21 years, the *Annual 3PL Study* has documented the significant transformation of the global 3PL industry. Since the study was first published in 1996, the overall business environment and the logistics sector has experienced considerable change, and its evolution continues.

Twenty-one years ago, neither Google nor Amazon existed, and business-to-consumer shipping made up a much smaller percentage of transportation than it does today. Sharing information in real time was more difficult and, in some cases, impossible. Now storage of data is virtually free and information can be collected, stored and analyzed to drive any number of improvements. What's more, global markets and global trade needs continue to evolve, which translates directly into demand for logistics and supply chain services.

Today we are seeing a rapid pace of change, which is making things more complex for shippers and their logistics providers. Companies have to go to greater lengths to figure out what their supply chain strategies need to become and how they can gain a competitive advantage.

As a result, researchers have seen many 3PLs evolve from tactical service providers to collaborative partners that take on greater accountability and control. Providers have also increased their technology expectations, and 3PLs are responding with increased capabilities. Gain-sharing and collaboration remain important to many relationships, and a growing number of 3PL users and providers agree that collaborating with other companies to achieve logistics cost and service improvements holds value.

Increasingly, 3PLs offer a comprehensive suite of integrated logistics services and can take on the role of a lead logistics partner, working to create a lean, cost-effective supply chain. The study's authors have also observed an evolution in which providers have become more proficient at the provision of 3PL services, and customers have become more strategic buyers and users of 3PL services.

As the industry has evolved, supply chain executives have faced new challenges as they work to manage and adapt their operations to market conditions. Throughout the life of the study, researchers have seen ample evidence that solid relationships between 3PLs and customers have made both better equipped to address emerging issues, which change with time. In the last 21 years, issues have ranged from volatility in fuel costs to supply chain security demands to near-shoring.

As the economy has shifted, the 3PL sector, as well as overall business operations, has become far more global than when the study launched. The logistics provider sector has responded by expanding its services for customers having global logistics needs. Similar to last year, the study reported continued collaborative and positive relationships between shippers and 3PLs. The factors that contribute to that success shift as the economy, technology and the operating environment change.

Maintaining the steady cadence needed to sustain the report throughout the past 21 years has taken commitment and dedication from the numerous industry representatives, supporting organizations and sponsor firms who have generously participated in the surveys and interviews needed to produce the *Annual 3PL Study*. The *21st Annual Third-Party Logistics Study* is dedicated to those who have made all of this possible. We are immensely appreciative of their great contribution to the overall effort.

Dr. C. John Langley, Clinical Professor, Supply Chain and Information Systems, and Director of Development, Center for Supply Chain Research at the Smeal College of Business, Pennsylvania State University, initiated this study to capture and measure this rapidly evolving industry.

The *Annual Third-Party Logistics Study* now serves as a vital tool for use by shippers and 3PLs, and as a widely anticipated, heavily referenced index on the state of the 3PL industry. In a year-round process, the study team establishes topics of interest, develops the survey tool, conducts the research, analyzes the results, writes this report,

and presents and shares the findings. The study has evolved in both reach and scope. Just as this study has evolved and changed, so has the participation rate among members and affiliates of the *Annual Third-Party Logistics Study's* partner organizations.

As part of this year's survey process, the study attracted 342 respondents, an increase over the number of participants taking part last year.

Results included in the "Current State of the 3PL Market" chapter from current users of 3PL and 4PL services rely primarily on data gathered from respondents in North America (65%), Asia (11%) and Europe (16%). Readers are asked to be cautious about comparing the data in this report to data from *Annual Third-Party Logistics Study* reports produced before 2014 because this year's base of respondents is more geographically focused.

2017 Third-Party Logistics Study Goals

Research and analysis for the **Current State of the 3PL Market** chapter sets out to:

- Understand what shippers outsource and what 3PLs offer.
- Identify trends in shipper expenditures for 3PL services and to recognize key shipper and 3PL perspectives on the use and provision of logistics services.
- Determine how 3PLs add value to their customers' supply chains.
- Update researchers' knowledge of 3PL-shipper relationships, and to learn how both types of organizations are using these relationships to improve and enhance their businesses and supply chains.
- Understand the benefits reported by shippers that are attributed to the use of 3PLs.

- Assess the importance of 3PL capabilities relating to people, process, technology, and execution/implementation.
- Document what types of information technologies and systems are needed for 3PLs to successfully serve customers, and to assess the extent to which this success is being achieved.
- Examine why customers outsource or elect not to outsource to 3PLs.

Goals for the **Special Topic** sections include:

- **Logistics Service Providers: Decision Time:** Given the complex operating environment shippers are navigating today, the study team sought to understand the role that logistics service providers are playing in network optimization. The study also looked at how shippers and 3PLs are using data to drive decisions, as well as the growth in mergers and acquisitions as 3PLs look to expand coverage and increase their use of technology.
- **3PL Roles in Supply Chain Transformation:** Successful transformation efforts rely on a wide range of people and resources, including 3PLs and 4PLs. The study team examined the current and potential future role that logistics providers play within the transportation process, as well as the importance of their operational expertise and the ability to collect and analyze information.
- **Utilizing Big Data and Analytics:** In today's operating environment, 3PLs, 4PLs and shippers have access to vast amounts of information. The research team examined the ways in which all parties in the supply chain are using this data to drive decisions and optimize the network. Researchers examined how expectations as well as shippers' comfort level with sharing information related to the use of data have changed over time.

- **End-of-Life Supply Chain:** As the lifecycles of products, especially electronics, are compressed, shippers and manufacturers are requiring greater assistance with their end-of-lifecycle supply chain. Researchers sought to understand shippers' current end-of-life supply chain needs as well as 3PLs' offerings. The team also examined how 3PLs could aid in this arena going forward.
- Based on what was learned from the study process, the team includes the section titled Strategic Assessment to take an introspective view of the future of the 3PL industry and shipper-3PL relationships.

The Annual 3PL Study Process

Steps and elements of the development of the *Annual 3PL Study* include:

Accessibility: Links to the Web-based survey tool are circulated through *Annual 3PL Study* supporting organizations for distribution to their members and affiliates. This year's survey circulated in mid-2016, yielding 342 usable responses, from both users and non-users of 3PL services. The study report and additional materials are also presented on its own Website, www.3PLstudy.com.

Topics: In addition to measuring core trends in the 3PL industry, the *Annual 3PL Study* conducts in-depth examinations of contemporary supply chain topics that affected both users and providers of 3PL services. This year's topics include: how logistics providers are using data-driven decision-making to drive growth, supply chain transformation and big data within the supply chain.

Contributing Sponsors: The *Annual 3PL Study* is jointly owned by Capgemini and Dr. Langley. The sponsor of the *21st Annual 3PL Study* is Penske Logistics.

Multiple Research Streams: A distinguishing feature of the *Annual 3PL Study* is the incorporation of multiple streams of research that the study team undertakes to validate and illuminate the findings in this report. The

team solicits survey topic ideas throughout the year from key industry participants and through desk research conducted by the team and Capgemini's Strategic Research Group, which also helps to vet potential topics of interest. Survey topics and questions attempt to reflect key issues and trends facing both users and providers of logistics services. This year the team opted to forgo in-person workshops because of health and safety concerns in our current climate. However, researchers relied on technology to connect them with shippers for intensive exploratory interviews following the survey to discover deeper implications.

Wide Coverage: The *Annual Third-Party Logistics Study* is presented and discussed in prominent supply chain industry venues, including the following:

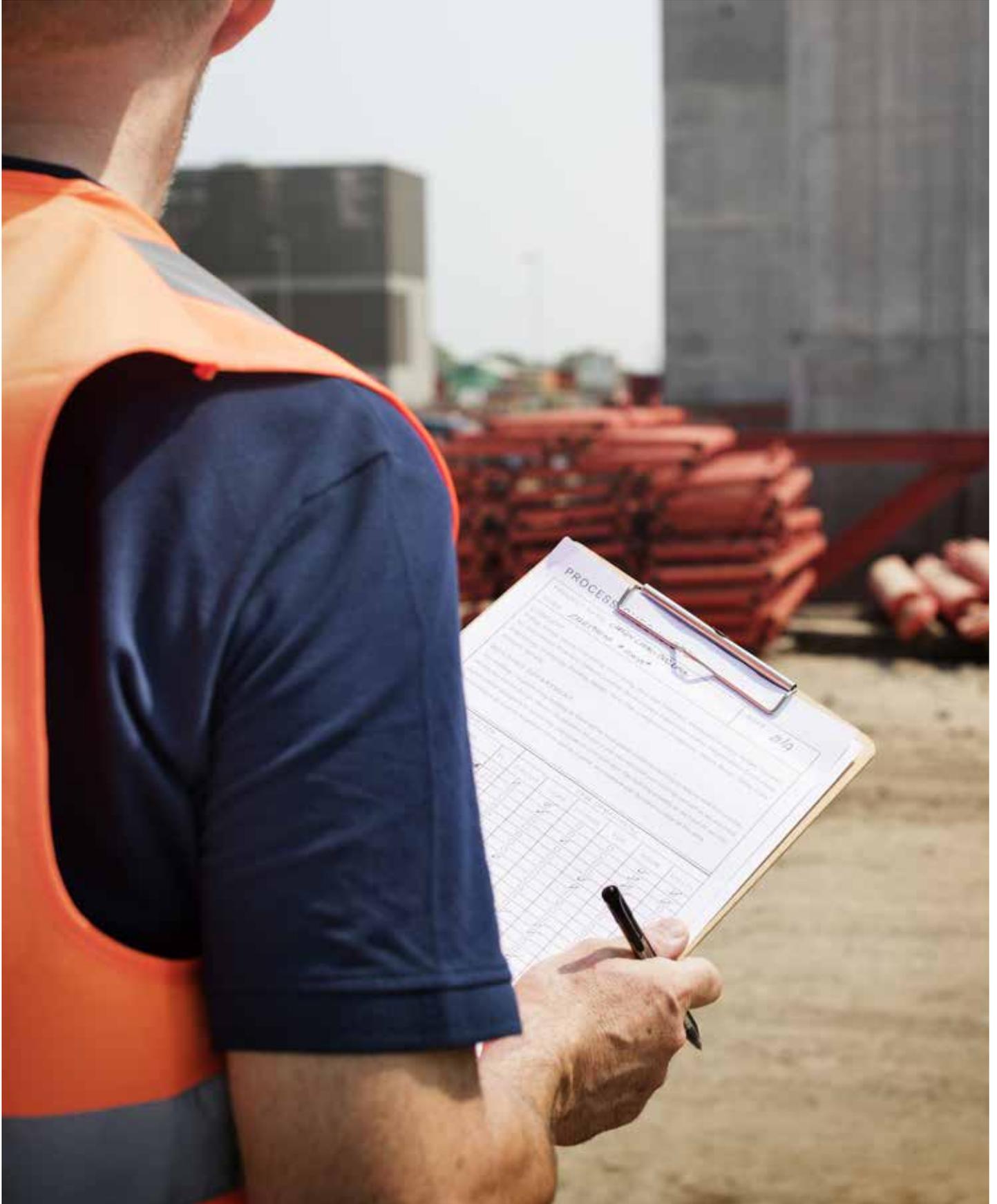
- Presentations at influential industry conferences, such as the Council of Supply Chain Management Professionals (CSCMP), and annual THINK! events conducted by The Logistics Institute – Asia Pacific at the National University of Singapore, the Gordon Institute of Business Science (GIBS), the business school of the University of Pretoria in Johannesburg, South Africa, executive education programs available through the Center for Supply Chain Research at the Pennsylvania State University and Penn State Executive Programs, and NASSTRAC (National Shippers Strategic Transportation Council).
- Analyst briefings, typically conducted annually in the weeks following the release of the annual study results in the fall.
- Magazine and journal articles in publications, such as Supply Chain Management Review, Logistics Management, Inbound Logistics, Logistics Quarterly, Supply Chain Quarterly and *Supply Chain Digest*.
- Webcasts conducted with media and publications, including *Supply Chain Management Review*, *Logistics Management*, *SupplyChainBrain*, Stifel Nicolaus and others.



Supporting Organizations: Each year a number of supply chain organizations facilitate the research process by asking members and other contacts to respond to the survey. In addition to completing the survey, individual companies help out by enabling executives to participate in interviews and by lending subject matter expertise.

Definitions: Survey recipients were asked to think of a “third-party logistics (3PL) provider” as a company that provides one or more logistics services for its clients and customers. A “fourth-party logistics (4PL) provider” is one that may manage multiple logistics providers or orchestrate broader aspects of a customer’s supply chain. To ensure confidentiality and objectivity, 3PL users were not asked to name the specific 3PLs they use.

About the Respondents



Shippers: Figure 28 reveals the percentage of shipper respondents to the survey, including both users and non-users of 3PL services and the percentage of 3PLs. The non-user responses are useful because they provide valuable perspectives on why they do not currently use 3PLs at this time, as well as on a number of other relevant topics. Shipper respondents are typically managers, directors, vice presidents and C-suite executives.

Figure 29 reflects the seven most prominent industries reported by users of 3PL services, accounting for almost 86% of the overall respondents.

Figure 30 includes all shipper respondents' anticipated total sales for 2015.

3PLs: 3PL executives and managers responded to a similar, but separate version of the survey. 3PL respondents represent: 1) several operating geographies; 2) an extensive list of industries served (actually quite similar to the shipper-respondent industries); and 3) a range of titles, from managers to presidents/chief executive officers. Approximately 6% of the 3PL firms expected 2016 company revenues in excess of U.S. \$25 billion (about €20 billion), while about 51% reported revenues of less than U.S. \$500 million (about €375 million).

Figure 28: Three Categories of Respondents

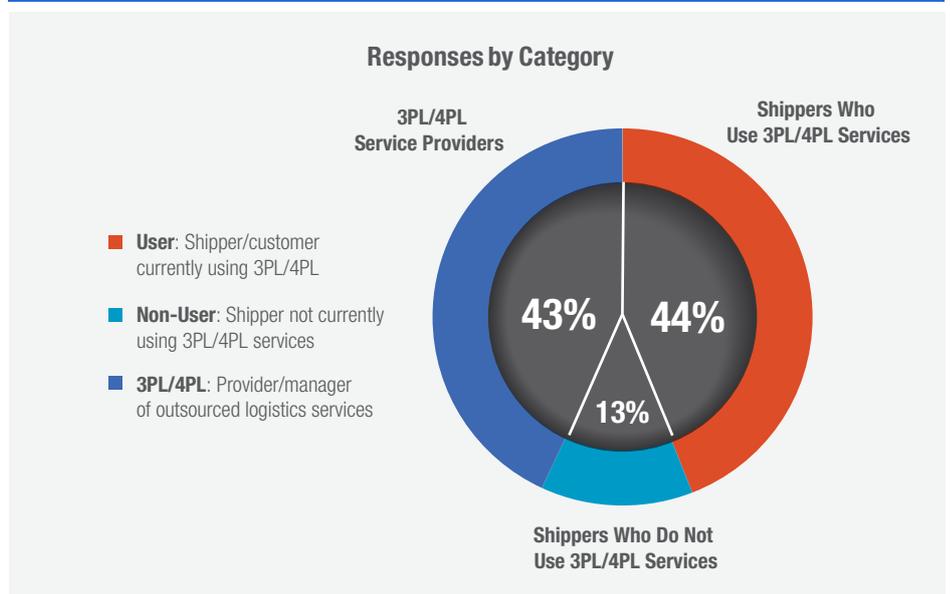


Figure 29: Most Prominent Industries Reported by Users of 3PL Services

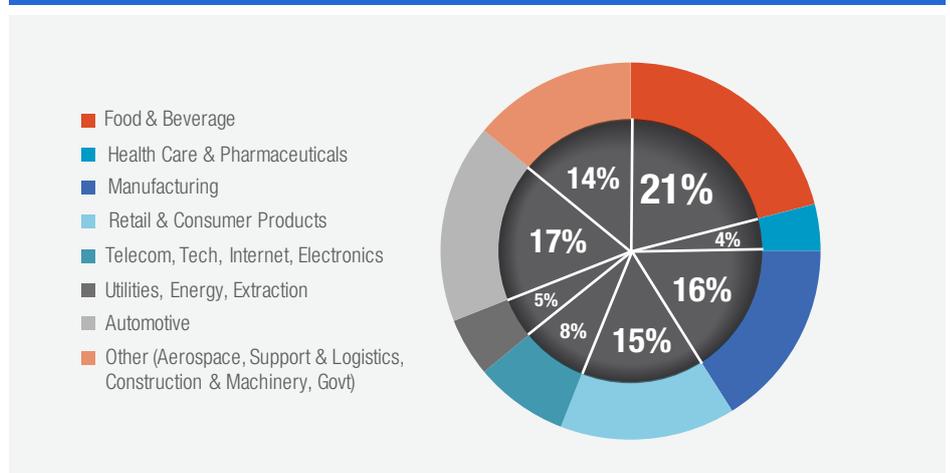
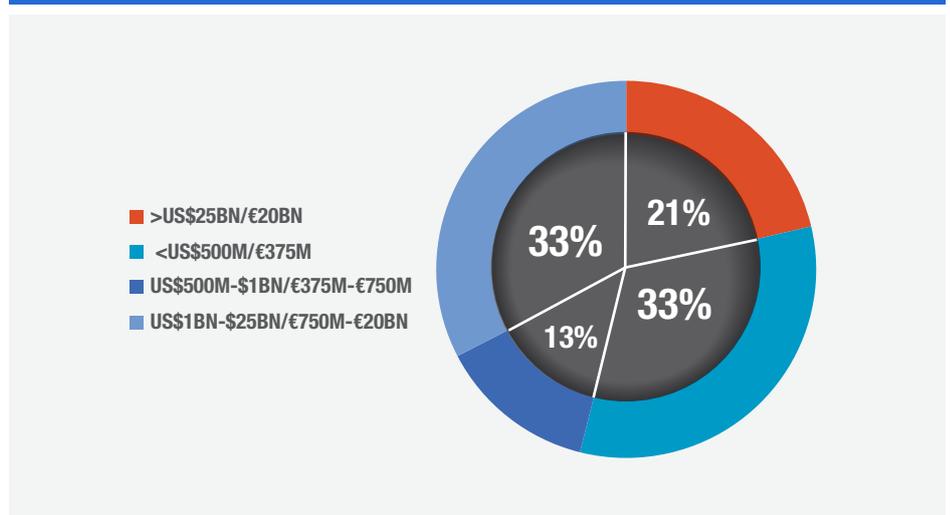


Figure 30: Shippers Anticipated Total Sales for 2015



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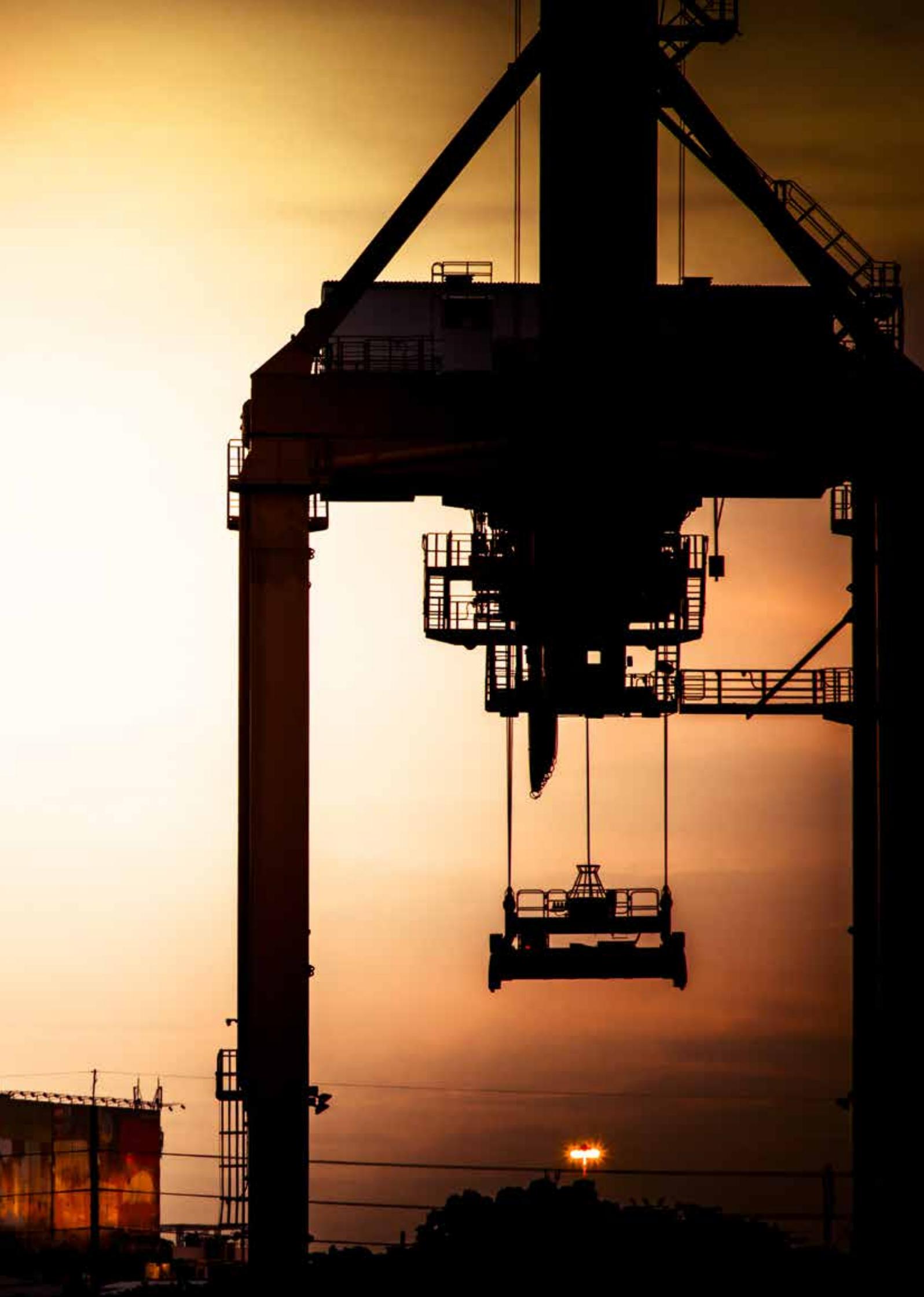
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