

# Fueling your Logistics Business through Digital Transformation

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Fraunhofer IML | Executive Summary



# LSPs are Missing Out on Digital Transformation Opportunities

Logistics Service Providers (LSPs) work in a tough, competitive market characterized by low margins, short customer contracts, highly variable customer demand and a limited labor pool. Opportunities exist for LSPs to break out of this constrained market, significantly improve margins and create competitive advantage through digital transformation, but few are taking advantage of these opportunities so far. That is the key finding of recent research on the LSP industry conducted by Fraunhofer Institute for Material Flow and Logistics.

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## A Market in Turmoil

The rapid ascension of the consumer as the driver of all market decisions through the digitization of commerce has thrown most industries into turmoil. Industries based on the Plan—Source—Make—Deliver model, where long production runs and operational efficiencies spelled success, are suddenly faced with consumer demands for personalized products ordered from anywhere on any channel and shipped to anywhere the same day or the next day for free. LSPs, as often the ones responsible for the Deliver portion of this model, and the ones providing the final “touch” with the consumer, are very much caught up in this turmoil.

LSP executives are well aware of the impact digitization is having on the marketplace. In the survey, 80% of LSP executives said they expect digital transformation to have a major impact on their customers. (fig.1) But surprisingly, even with two-thirds of respondents think their competitors will respond to this transformation, only slightly more than half (57%) expect changing their own business models to adapt to the new market realities.

**Fig. 1** How much will the following areas change over the next five years as a result of digital transformation



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## The Opportunity

The only way companies can survive and thrive amidst the turmoil brought on by the digitization of commerce is through a digital transformation of their businesses that drives greater value from advanced technologies. As an important cog in the supply chain, this is a huge opportunity for LSPs. Why? Because the elevation of

satisfying consumer demand and improving the customer experience as the key driver of corporate success has lifted fulfillment from merely a backend cost center to a strategic weapon. LSPs can seize this opportunity and be drivers of this digital transformation for their customers.

### For Example:



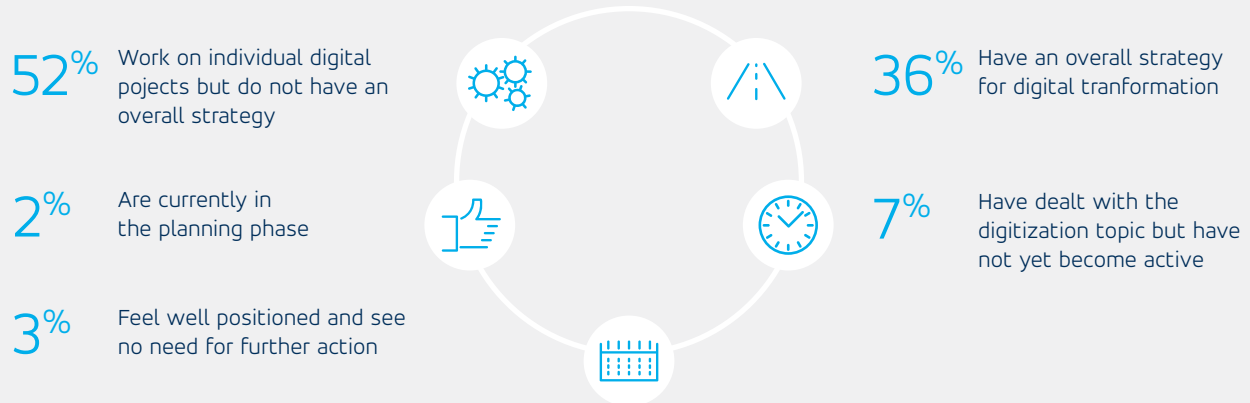
We see that some of the businesses which sell through department stores, for example health and beauty supplies, now want to go directly to their consumers. But they typically don't have a lot of experience at selling directly to their end consumers. So, what we can do is bring some of the expertise we have from direct consumer operations and help them to understand how to engage with their end consumer. How to arise the services both in terms of delivery and return. I think we are able to do that with the information we have.

Emma Dempsey, Deputy CEO, Clipper Logistics



But most LSPs aren't. Only 36% of respondents have a digital strategy in place to take advantage of this opportunity and elevate themselves above their competitors. (fig. 2) As a result, the majority are missing the opportunity to not only transform their own businesses, but to also become strategic partners in their customers' digital transformation journey.

**Fig. 2** Current approaches to digital transformation



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## Thinking Inside the Box

With such tremendous opportunity to transform their business and become strategic partners with their customers, why aren't most LSPs jumping in with both feet instead of just sticking their toes in the water with small digital projects with no overall strategy, or ignoring the opportunities all together?

The research suggests that the main reason is that most LSP executives are still thinking within the box of their traditional business. A full 75% see digitization as a way to either replace existing analog processes with digital ones or support new processes for customers within

the context of current operations. (fig. 3) Only 25% are thinking outside the box—understanding that digital transformation is their means to create new business models that will enable them to leapfrog their competition and establish themselves as strategic, long-term partners with their customers.

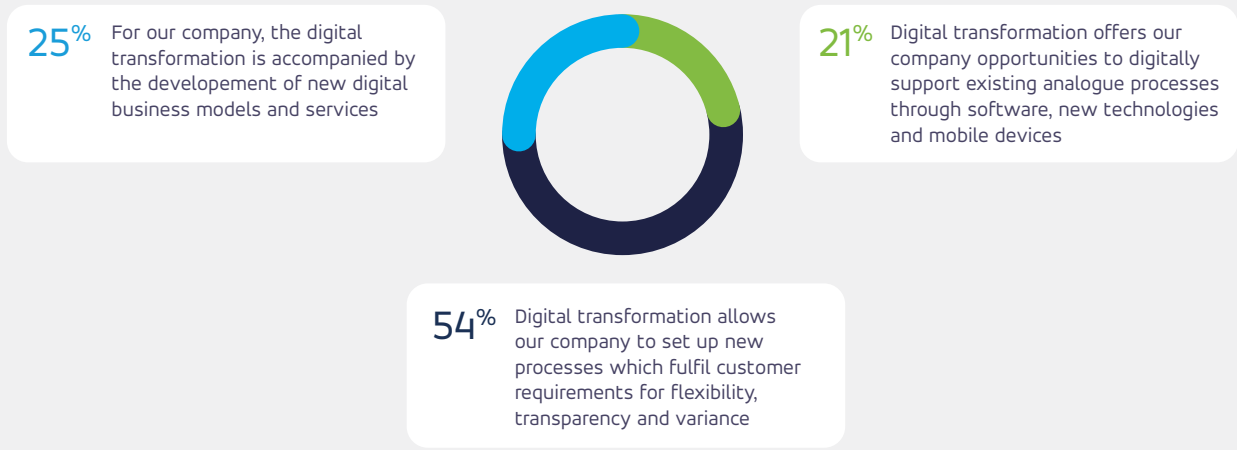
### For Example:

“ There are two main aspects related to the digital transformation. The first concerns mainly the digitization of the current business model. The LSP industry is still a fairly manual industry, both in operations and data management. The second aspect is what I call digitalization and means what we can create as an additional service, as an additional product with the huge amount of information and data we manage.

Gianfranco Sgro, EVP Contract Logistics, Kühne & Nagel



**Fig. 3** Digital Transformation seen by Logistics Service Providers

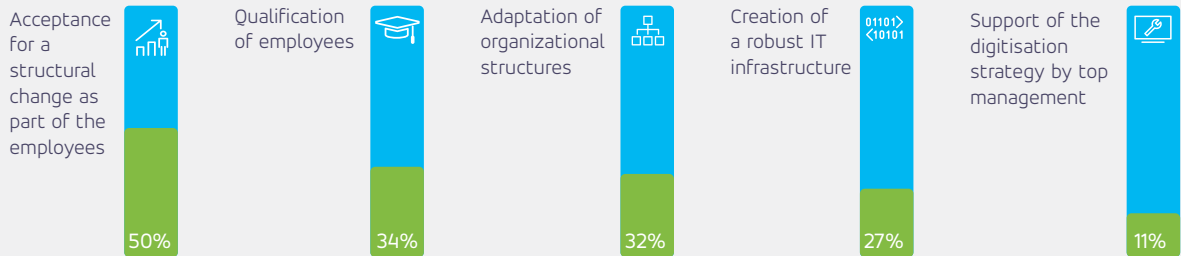


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## Hurdles to Overcome

Why aren't more LSPs developing digital transportation strategies to take advantage of the tremendous opportunities? The answers are predictable: unwillingness to change (50%) and investment cost (43%), but also understandable: difficulties in developing a digital transformation strategy (25%) and in rolling one out (45%). (Fig. 4)

**Fig. 4**



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It should be pointed out that while the unwillingness to change is part of the normal human condition impacting all industries, LSP executives know that not moving forward in their industry means they will fall behind competitors.

Investment costs are a bigger issue. The LSP industry is a low-margin business primarily because it is perceived as a low-value cost center which companies would rather outsource than do in-house. Despite LSPs' continuous attempts to add value through additional services, in the customers' minds, LSPs primarily receive, store and ship inventory—something any competitor can do,

which leads to competitive pricing and low margins. Low margins often don't leave much room for strategic investments such as digital transformation. It's a catch-22, to quote the famous Joseph Heller novel.

But as the data shows, the ability to help customers to develop and rollout their digital transformation strategies, and become an integral part of those strategies as the centerpiece of their digital supply chains, is a huge opportunity for LSPs that will repay the investment many times over.

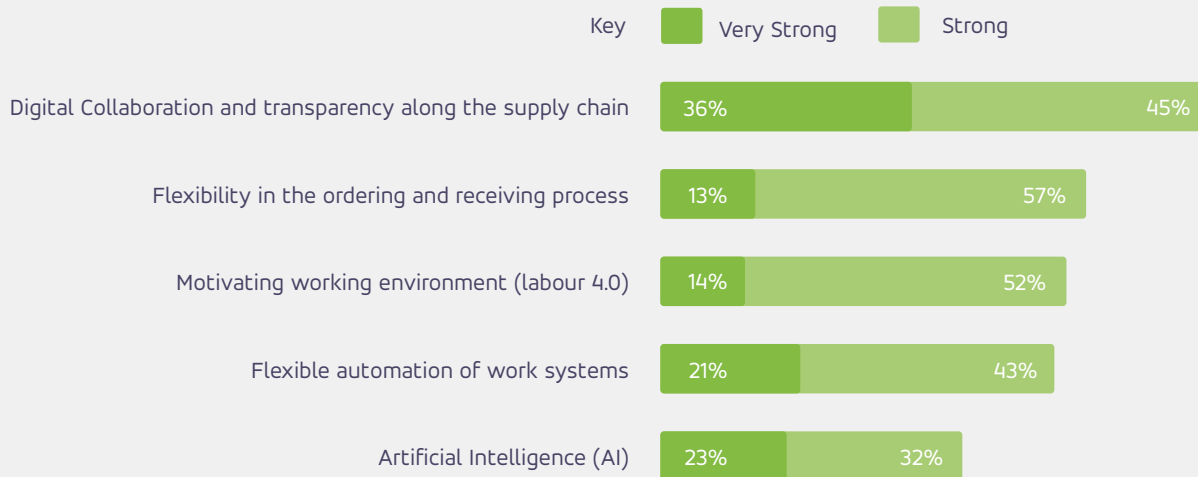
## Be the Solution!

Digitization of commerce has enabled the supply chain and logistics function to rise from a backend cost center to a focus of corporate strategy as companies compete to provide the best possible customer experiences. LSPs can play an important role in this transformation due to their unique position between manufacturers and retailers, and between manufacturers or retailers and their end consumers. Right now, LSPs are mainly the physical connection between these groups by virtue of the inventory they store and ship. But in a digitized world, LSPs can also be the data visibility and analysis connection between these groups to facilitate the end-to-end

digitization, collaboration and transparency the market is asking for.

In fact, 81% of the study respondents say that market demand for digital collaboration and transparency is a strong influence on their business. (fig. 5) And the second strongest influence on their business is the need for flexibility in the ordering and receiving process—something a digitized LSP can handily provide for customers.

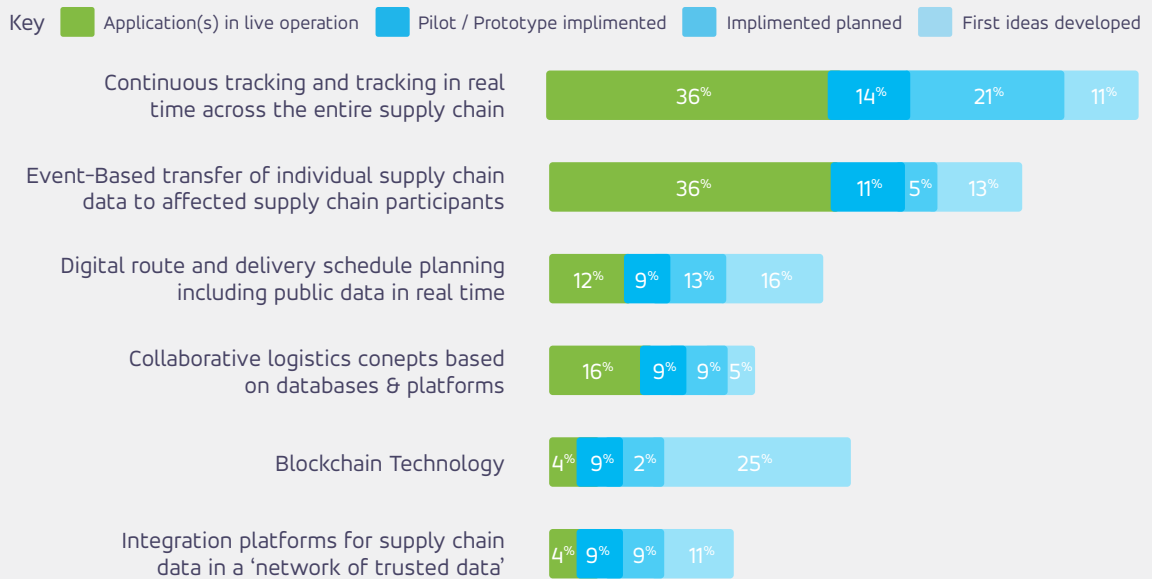
**Fig. 5** How do you consider the influence of the following market demands to be on your company?



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However, most LSPs are not currently delivering on these potential game changers. In the study, only 36% of the LSPs have implemented real-time track and trace capabilities across the extended supply chain. (fig. 6) Similarly, only 36% have implemented event-based sharing of relevant data to affected supply chain partners. And only 16% have implemented collaborative logistics technologies.

**Fig. 6** Emerging technologies to support your supply chain transparency



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There are two main take-aways from the gaps the survey found between market demands and what LSPs are providing. First, there are tremendous opportunities for LSPs to provide greater value to their customers (at higher margins) and create competitive advantage in these areas through digital transformation, and second, companies should not wait to begin this journey because others are already taking the lead. Those who fail to act now will fall behind and will be locked into the low-margin services of the past.

For Example:



The 3PL Industry has to add value to the customer. Conventional warehousing will not be enough. Generating services and differentiation in terms of how to service your customers is essential to generate revenue.”

Gianfranco Sgro, EVP Contract Logistics, Kühne & Nagel



## Digital Transformation Technologies

The key to digital transformation is the data. Participants up and down the supply chain want access to data, they want to understand it and be able to use it to improve efficiency and service, as well as to predict future demand, and they want to use it to sense disruptions and more rapidly and effectively respond. Digital transformation technologies, therefore, are capabilities that enable companies to harness data to sense, analyze, predict and respond to daily supply chain activities and disruptions. As the heart of supply chains, LSPs can deploy digital technologies to leverage this data for their own benefit and for the benefit of their customers.

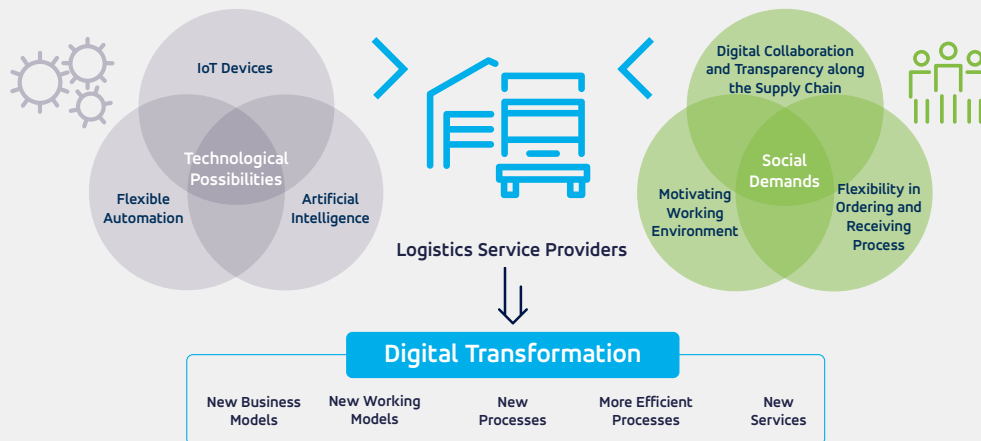
The Fraunhofer IML study categorized digital transformation technologies into three general areas of benefit for LSPs and their customers:

Development of new business models and digital services for business expansion

Creation of new processes to support customer expectations for flexibility and transparency

Improvements in the efficiency, productivity and accuracy of existing processes

**Fig. 7** Big picture of digital transformation for LSPs



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## New Business Models

The potential for new business models based on the access, use and analysis of data is enormous. The largest taxi service company in the world (Uber) doesn't own any taxis. The largest provider of overnight accommodations (AirBnB) doesn't own any real estate. The largest media company (Facebook) doesn't produce any content. One of the largest retailers in the world (Alibaba) doesn't own any merchandise. And the largest search engine provider (Google) doesn't own the data its customers search.

Put in the context of LSP services, companies are creating new business models based on using digital data platforms to create new value, such as:

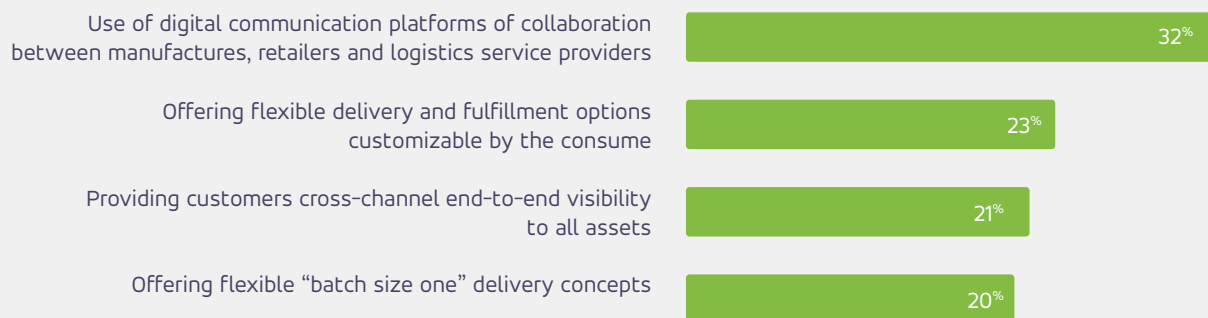
Facilitating collaboration between manufacturers and retailers (32%)

Offering flexible delivery and fulfillment options customizable by the consumer (23%)

Providing customers cross-channel end-to-end visibility to all assets (21%)

Offering flexible "batch size one" delivery concepts (20%)

**Fig. 8** New Business Models



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Consider the value an LSP could provide to customers by aggregating upstream inventory and shipment data from supply chain partners to provide end-to-end visibility, and then using artificial intelligence (AI), predictive analytics and machine learning (ML) technologies to predict disruptions and delayed arrivals so customers can proactively respond. Or use those same technologies to analyze shipments and returns from consumers to help customers better understand demand variances and adjust inventory quantities and placement. The opportunities are endless for new business models like these that can change the nature of how customers perceive the LSP—as a strategic business partner rather than simply being the ones who store and ship their inven-

tory. That is how LSPs can drive higher margins and longer-term contracts.

An important caveat to the use of these new digital technologies is that they must be built on a solid foundation of supply chain management (SCM) software, either on-premise or, increasingly, in the Cloud. With a sophisticated base of data management and execution capabilities, augmented with digital transformation technologies, companies can progress from predictive to prescriptive to autonomous supply chains that will fundamentally change the LPS business.

## New Processes

Consumers want fresh, local, personalized products delivered to their door almost immediately. Retailers want small batch sizes, frequent and rapid replenishment, and visibility to their inventory across all nodes of the supply chain, as well as flexibility in the ordering and receiving processes. Satisfying these types of demand will require LSPs to deploy new processes supported by higher levels of automation technology.

For example, leading LSPs in the survey are:

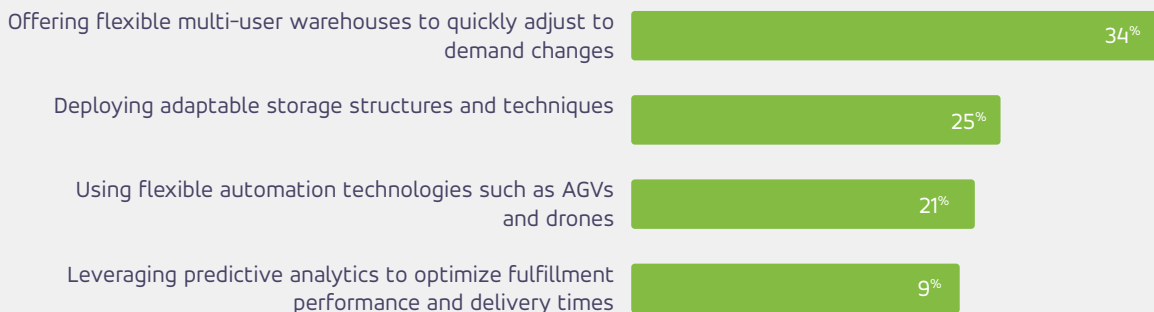
Offering flexible multi-user warehouses to quickly adjust to demand changes (34%)

Deploying adaptable storage structures and techniques (25%)

Using flexible automation technologies such as AGVs and drones (21%)

Leveraging predictive analytics to optimize fulfillment performance and delivery times (9%)

**Fig. 9** New Processes



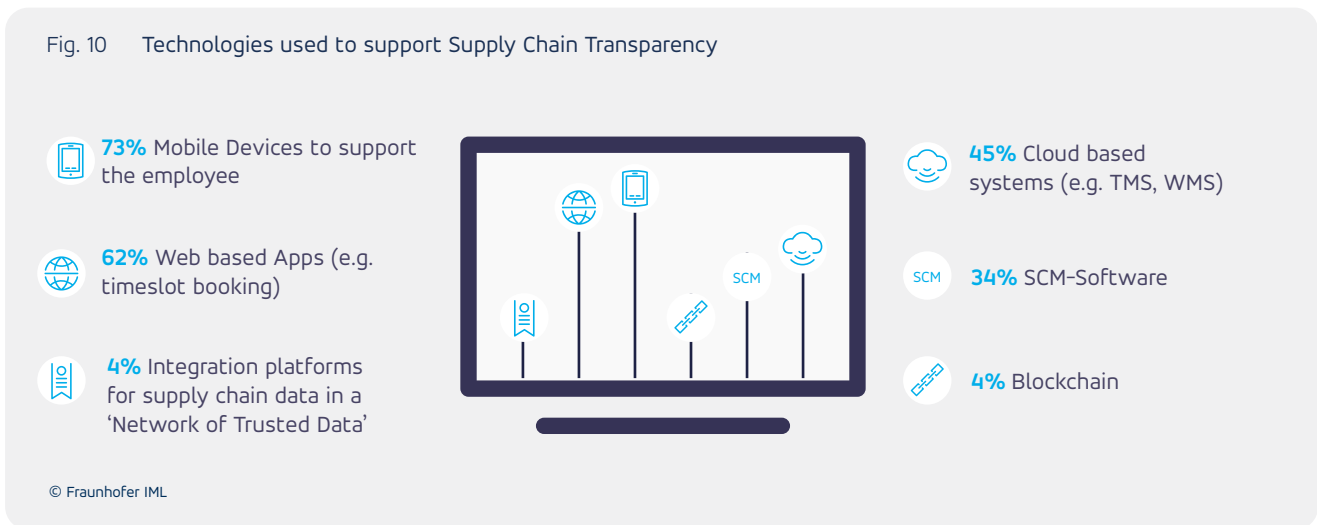
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For Example:

“Customers expect from us as logistics specialist more agility and flexibility. Products should be brought closer to the end customer. Decentralised structures, postponement of decisions, a more agile contract structure and increased flexibility in payment models, e.g. in the form of transactional pricing, are just some of the trends that can be observed.”

Emma Dempsey, Deputy CEO, Clipper Logistics

LSPs are also using digital technologies to support the strong market demand for supply chain transparency. While some of these technologies are already widely used, such as mobile devices (73%), other such as Blockchain and integration technologies (4%) are just beginning to gain traction. (fig. 10)



There are many more new processes and technologies LSPs can use to meet customers' evolving needs. Which ones to deploy will depend on customer business objectives. By using new processes and technologies to help customers meet their objectives, LSPs will cement their value to those customers, at higher margins, and position themselves to serve the needs of a broader marketplace.

## Improving Existing Processes

For Example:

“Supply chains are becoming more small-scale, which means more labor-intensive processes for warehouses and in the transport chain. However, this increase in complexity and labour intensity is currently being offset by fewer and fewer skilled workers on the labour market. Digitisation - and above all automation - offers a great opportunity for these developments.”

Markus Voss, Global CIO, DHL Supply Chain

LSPs cannot remain profitable or meet evolving customer demands for transparency and flexibility if they continue to deploy primarily manual processes or only rudimentary automation such as sortation and conveyer systems. A key restraining factor is the limited availability of skilled labor.

LSPs face two issues regarding the limited availability of labor. First, existing employees must be made more efficient and productive through a combination of more accurate resource planning, improved work methods, and more advanced automation such as collaborative robots

(cobots), goods-to-person technologies and the use of IoT devices, augmented with AI and ML. (Fig. 11) Resource planning ensures the right number of people with the right skills are available and assigned to the right tasks to complete all work on time. Designed work methods teach workers the most efficient way to complete each task, and advanced automation multiplies the output of work each person can produce. AI and ML technology can then be employed to continuously improve these processes.

**Fig. 11** Labor 4.0 - Motivating and automating the workforce



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The second issue is that LSPs must attract, train, motivate and retain a more educated workforce. Today's younger workforce is not motivated merely by compensation. They want an interesting and motivating work environment where they can use and enhance their skills, learn new skills and collaborate with coworkers. Besides training them to use the advanced digital transformation and automation technologies mentioned previously in this report, this should include using capabilities such as social media for internal communication and collaboration, as well as workforce monitoring and incentive programs to provide recognition and let work-

ers know how they are doing. They also want helpful coaching from their supervisors.

The survey found that many LSPs (39%) are currently focusing on employee involvement through use of social media or collaborative resource planning tools. (fig. 12) These assistance systems are becoming increasingly important to guide employees through new processes and to support their decision-making.

**Fig. 12** Use of social media for internal communication



**Fig. 13** Use of sensory-cognitive assistance systems



**Fig. 14** Use of physical assurance systems



Sensory cognitive-assistance systems such as virtual reality and augmented reality are also being deployed by LSPs (13%) to improve productivity while supporting the human-machine interfaces. (fig. 13)

The combination of social media, sensory-cognitive assistance systems and use of physical assurance systems makes the workforce much more efficient and productive. But it also creates the kind of work environment that is much more interesting to today's workers, leading them to be more engaged. This will attract new talent and help retain them.

Lastly, ergonomics and physical assistance systems such as exoskeletons are being deployed or planned to reduce the physical strain of the work so employees can do more for longer periods of time.



Next year we will procure around 10,000 new devices for our employees. Instead of a conventional barcode scanner, we will equip the employees with a ring scanner that is worn on the finger so that both hands are free. These scanners are complemented by Smartwatches, which show the employees all necessary information directly on a display on their arm. Clipboards, pick lists and note management, which are still common in astonishingly many warehouses today, will then be a thing of the past. And here, too, the feedback from employees is extremely good. The devices are almost intuitive and very user-friendly. This makes these wearables our best-selling digital enablers.

Markus Voss, Global CIO, DHL Supply Chain



## New Processes

We cannot leave the topic of digital transformation technologies without discussing artificial intelligences, machine-learning and the internet of things. These technologies are by their nature transformative. LSPs recognize this potential and are beginning to deploy these capabilities. In the survey, 55% of respondents say AI will strongly influence their services going forward.

“ We are working on predictive analytics and Artificial Intelligence. We have today algorithms for our predictive analytics for every single shipment. This will transform our way of managing supply chain. First level of transformation will be from reactive to predictive, where big data and predictive analytics will allow us to reduce the number of incidents by managing in anticipation all potential disruptive events. Artificial intelligence will further improve supply chain management by re-routing and choosing the best solution based on all customer parameters. This will tremendously increase the level of automation in the end-to-end supply chain.

Gianfranco Sgro, EVP Contract Logistics, Kühne & Nagel ”

LSP executives also recognize the potential of IoT on a wide range of logistics activities inside and outside of the warehouse. (fig. 15)

Fig. 15 Opportunities for integrating IoT devices into logistic processes



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## The Road Forward

The turmoil in the marketplace caused by the digitization of commerce offers tremendous opportunities for LSPs to win more business at higher margins while becoming strategic partners with their customers. At the same time, LSPs can also make their own operations more efficient and productive while attracting and retaining a more talented and engaged workforce. This is all possible through embracing digital transformation technologies and processes. The Fraunhofer IML research shows that many LSP executives understand the possibilities

and are beginning to roll out these technologies, but so far, many others are not yet on board.

The question then becomes, how to get started, what is the road forward? Due to the enormous amount of potential change, effort and reward, the best advice is to crawl, walk, run. Since digital transformation technologies offer benefits for both internal operations and for customers, and since most companies likely have not yet implemented some or all of these technolo-

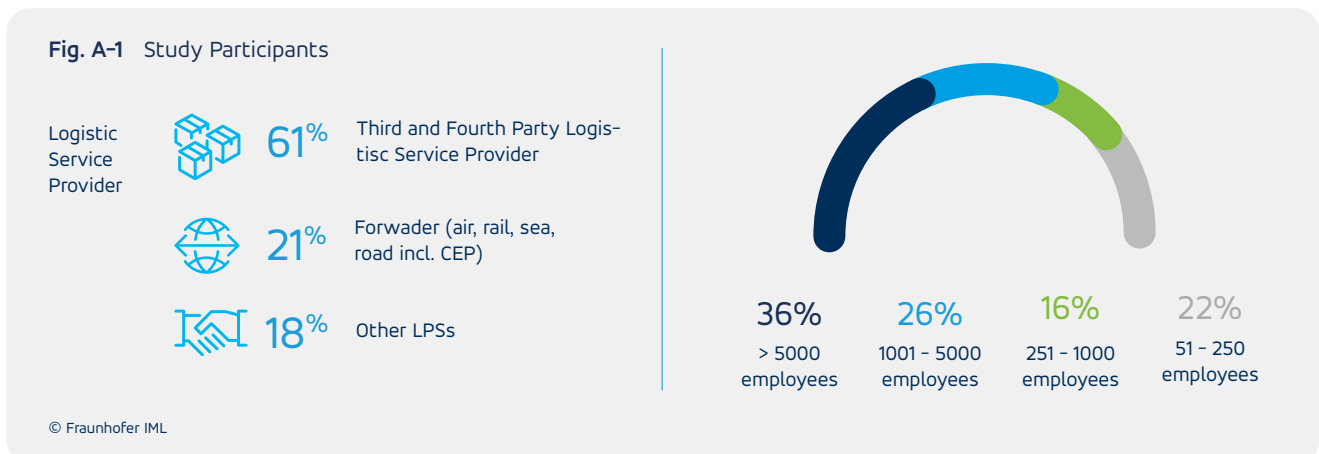
gies, the recommendation is to roll them out in reverse order to their potential impact as discussed in this report. In other words:

1. Interview internal customers to determine what challenges most need to be addressed
2. Research digital technologies to decide which ones will best meet customer needs
3. Pilot new technologies in a phased approach to determine which ones provide the best value for stated needs
4. Roll out the highest value technologies across the enterprise
5. Repeat the steps above with external customers to define new value-add processes the digital technologies can support
6. Define new business models based on input from customers on what their greatest business challenges are and based on lessons learned from the previous steps.
7. Roll out the new business models and associated digital transformation technologies to customers in a phased approach, always verifying benefits are achieved at each step

By following this roadmap, LSPs can become strategic partners with their customers, increasing margins by delivering greater value, while also improving internal efficiency and attracting and retaining a quality workforce.

## Appendix: The Study

In order to reveal the state of Digital Transformation in the LSP industry, Fraunhofer Institute for Material Flow and Logistics executed a market study consisting of a market survey and a series of interviews conducted with industry leaders in logistics, digitization and innovation. The study covered a wide spectrum of activities such as affordable and scalable infrastructures, the use of machine learning and artificial intelligence, optimizing existing processes and developing new market solutions. The use of sensors and data opportunities was also explored. Fig. A-1 shows the breakdown of study participants.



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## About Fraunhofer IML

The Fraunhofer Institute for Material Flow and Logistics IML is the partner of choice for integrated logistics research. It works in all fields of internal and external logistics. In keeping with the Fraunhofer concept, solutions to problems for immediate use in business are developed on the one hand, but initial research is also conducted on the other hand for periods of two to five years, in some cases even longer. Currently 315 scientists as well as 250 doctoral candidates and students work at the institute founded in 1981, supported by colleagues in workshops, laboratories and service departments.

Teams assembled according to project and customer requirements create cross-industry and customer-specific solutions, among other things in the field of materials handling, business process modelling, transportation systems and resource logistics. Artificial intelligence, smart finance and the Internet of Things are also among the current research focal points. For interdisciplinary projects, the institute has access to a total of 26,600 employees in 72 facilities of the entire Fraunhofer-Gesellschaft. Fraunhofer IML coordinates the Internet of Things throughout Fraunhofer. The general management of the Fraunhofer Traffic and Transportation Alliance, bundling the traffic and transportation expertise of 15 Fraunhofer institutes, is also located in Dortmund.

Questions in regard to the study can be directed to [info@warehouse-logistics.com](mailto:info@warehouse-logistics.com).

[blueyonder.com](http://blueyonder.com)

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