



DHL RESEARCH BRIEF

# **DIGITALIZATION AND THE SUPPLY CHAIN: WHERE ARE WE AND WHAT'S NEXT?**

DHL Supply Chain

# SURVEY RESULTS AT A GLANCE

**82**



percent of companies surveyed said that supply chain digitalization is having a moderate to high impact on their business today

**73**



percent consider big data analytics the most significant information technology for their supply chains

**60**



percent of companies prefer to leverage their third-party logistics service provider's (3PL) investment in physical technologies versus investing in-house

**78**



percent of companies see organizational/data siloes as the biggest roadblock to change when implementing analytics technologies

**63**



percent believe robotics is the most important physical technology for supply chain applications



Most companies are only in the "development" stage of implementing supply chain digitalization technologies – i.e., they've launched one or more initiatives

For information/  
analytics technologies,

**56**

percent of companies choose an in-house solution first



Reduced costs and improved profitability are the benefits most companies expect to reap from supply chain digitalization efforts

# DIGITALIZATION AND THE SUPPLY CHAIN: **WHERE ARE WE AND WHAT'S NEXT?**

By Lisa Harrington, president, lharrington group LLC and senior research fellow, Robert H. Smith School of Business, University of Maryland.

Digitalization in the supply chain is happening so fast and on so many fronts, it's difficult to keep pace. Disruptive technologies in the physical world – e.g., next-generation robotics and autonomous vehicles – now integrate with big data analytics, sensors, blockchain and other virtual applications.

This integration is disrupting the traditional, linear supply chain model, “transforming [supply chains] into connected, intelligent, scalable, customizable, and nimble digital supply networks,” says consulting firm Deloitte.<sup>1</sup> “Digital supply chain management now includes gathering insights from distributed data, sensors, and connected assets to drive actionable improvements via advanced analytical and digital solutions.”

Companies that successfully deploy supply chain digitalization stand to reap tremendous benefits. For example, Accenture estimates for a pharmaceutical manufacturer with \$10 billion in annual sales revenue, a partial digitalization strategy that leverages the end-to-end capabilities of a digital supply network would save it upwards of \$387 million in its manufacturing and supply processes.

According to McKinsey research, companies that aggressively digitalize their supply chains can expect to boost annual growth of earnings before interest and taxes (EBIT) by 3.2 percent and annual revenue growth by 2.3 percent.<sup>2</sup>

So, where are companies on their supply chain digitalization journey? What kinds of technologies are they adopting today? Where will they invest tomorrow? And what benefits do they expect to reap from their investments?

To answer these questions, DHL Supply Chain surveyed nearly 350 supply chain and operations professionals in the five major regions of the world. The survey asked respondents about two types of supply chain digitalization – physical/mechanical and information/analytical. This report summarizes the key findings.

“**Digital supply chain management now includes gathering insights from distributed data, sensors, and connected assets to drive actionable improvements via advanced analytical and digital solutions.**”

Consulting firm Deloitte

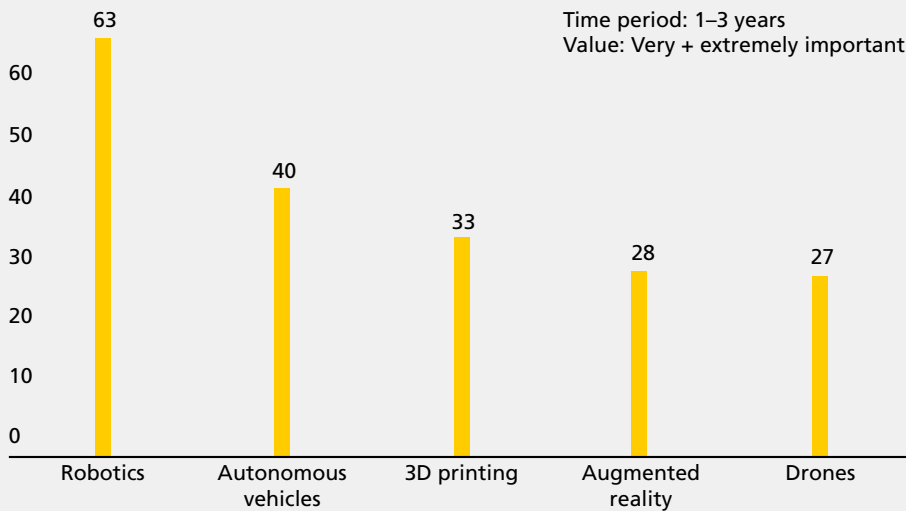
<sup>1</sup> [https://www2.deloitte.com/us/en/pages/operations/solutions/digital-supply-networks.html?id=us:2ps:3gl:confidence:eng:cons:::na:Rdzo1ftx::229772169289:b:Digital\\_Transformation::nb](https://www2.deloitte.com/us/en/pages/operations/solutions/digital-supply-networks.html?id=us:2ps:3gl:confidence:eng:cons:::na:Rdzo1ftx::229772169289:b:Digital_Transformation::nb)  
<sup>2</sup> <https://www.mckinsey.com/business-functions/operations/our-insights/digital-transformation-raising-supply-chain-performance-to-new-levels>

## SURVEY RESULTS: HOW TECHNOLOGIES STACK UP

The survey asked respondents to rank the relative importance of specific physical and information technologies to their supply chains over the next three years.

On the physical side, robotics won hands down, with 63 percent of the DHL survey group rating these technologies as either “very” or “extremely” important. Autonomous vehicles earned second place, with 40 percent ranking the category as “very” or “extremely” important. Drones in supply chain applications – e.g., delivery, security, inventory management – brought up the rear with only 27 percent (Figure 1).

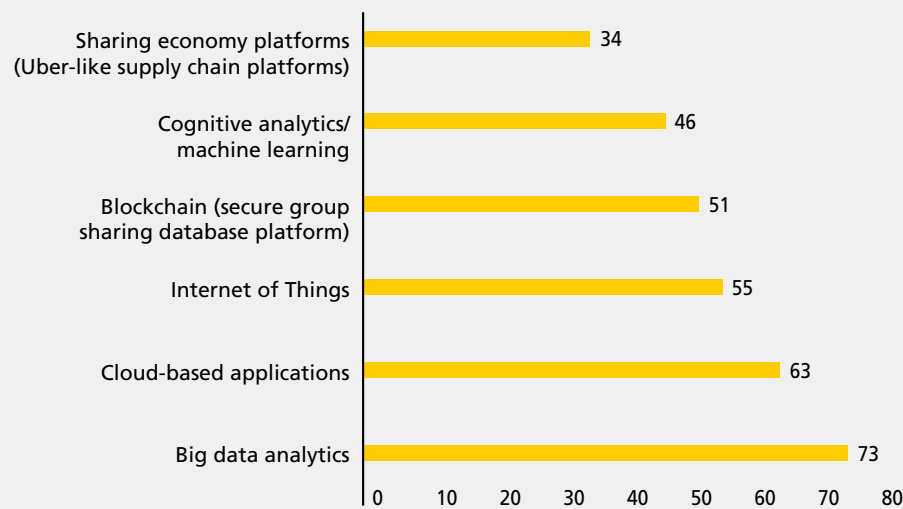
**FIGURE 1:**  
**IMPORTANCE RANKING – PHYSICAL TECHNOLOGIES**



On the information/analytics side of the digitalization equation, big data analytics won the vote for the single most important technology – by a 10 percent margin (Figure 2). Seventy-three percent of participants view this technology as significantly important. Cloud-based applications ranked second, at 63 percent, followed by Internet of Things at 55 percent. Sharing economy platforms received the lowest score in the ranking of important information/analytics technologies.

“Big data analytics won the vote for the single most important technology – by a 10 percent margin.”

**FIGURE 2:**  
**IMPORTANCE RANKING – INFORMATION/ANALYTICS TECHNOLOGIES**



Time period: 1–3 years Value: Very important + extremely important

**Adoption rates and maturity levels**

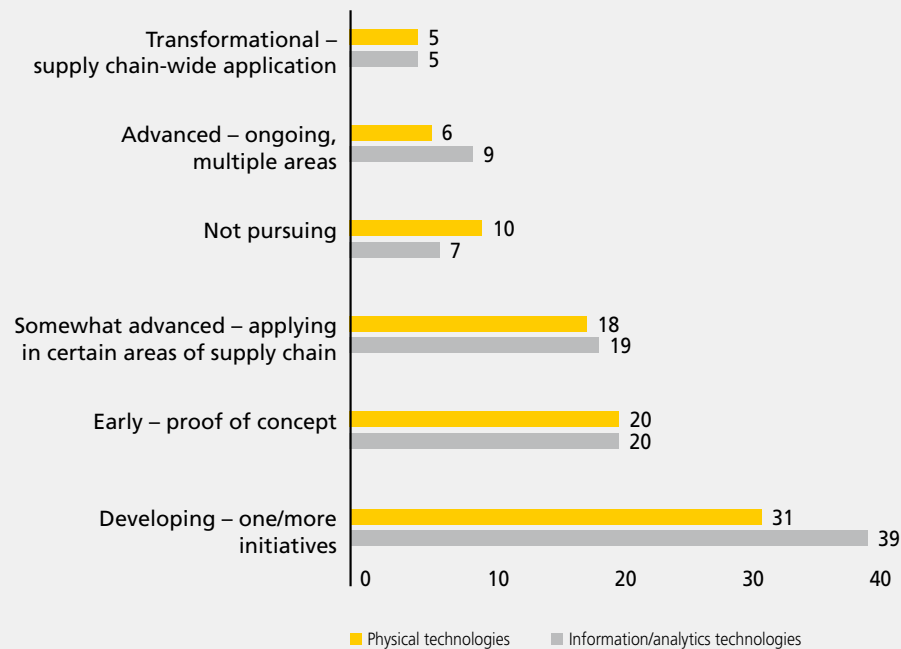
Supply chain organizations of all types, including internal corporate departments and external third-party logistics service providers (3PLs), still have a long way to go in terms of fully adopting both types of digitalization technology.

In the hardware category – robotics, autonomous vehicles, drones, etc. – only 5 percent of respondents are at the transformational stage, where they've implemented these technologies on a supply chain-wide basis. By contrast, the majority (51 percent) characterize themselves as in either the developing or early stages of adoption. And surprisingly, 10 percent say they are not pursuing physical supply chain digitalization technologies at all (Figure 3).

Turning to information/analytics, a similar adoption pattern emerges, with 59 percent of companies either in the developing or early stage (Figure 3). Here again, only 5 percent have executed these technologies supply chain-wide. And at the other end of the spectrum, 7 percent are not pursuing these technologies.

“Surprisingly, 10 percent [of respondents] say they are not pursuing physical supply chain digitalization technologies.”

**FIGURE 3:  
ADOPTION MATURITY**



**Insource or outsource the investment?**

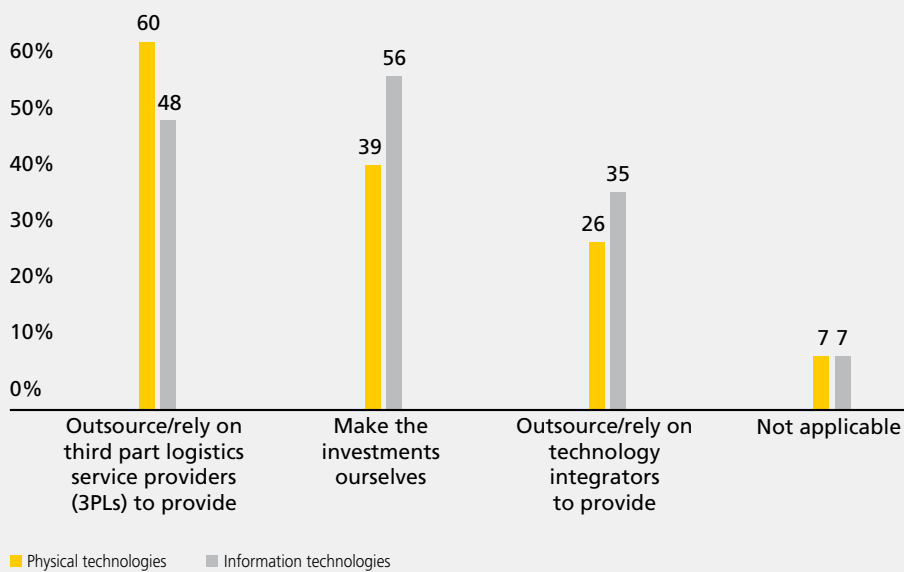
Do companies invest directly in digitalization technologies or do they rely on their outsourcing partners – either technology integrators or 3PLs – to do so? For physical/mechanical technology investments, 60 percent of participants look to 3PLs to make these investments, compared to 39 percent who invest in-house (Figure 4).

“60 percent of participants look to 3PLs to make investments [in physical/mechanical technology].”

On the information/analytics side, the response was the reverse (Figure 4). Fifty-six percent of respondents prefer to build their information capabilities in-house; 48 percent expect their 3PLs to make these investments, and 35 percent add technology integrators to the mix. There are two key observations on this finding:

- Information/analytics tools are essential not just to operating a supply chain, but to turning it into a competitive advantage. It makes sense that organizations would want to control this aspect of their digital future.
- The response spread between “insource” and “outsource to a 3PL” was only 8 percentage points. From this, one might infer that companies seek to develop a portfolio of information/analytics capabilities, and look to leverage 3PL investment as complementary to their own.

**FIGURE 4:**  
**INSOURCE OR OUTSOURCE?**



### Roadblocks and solutions

Supply chain digitalization is not easy. Companies face a myriad of roadblocks and challenges as they work to integrate the right technology portfolio into their supply chains.

Not surprisingly, the challenges cited are those that typically crop up in any significant organizational change scenario. For the application of physical technology, respondents ranked their top three potential roadblocks as:

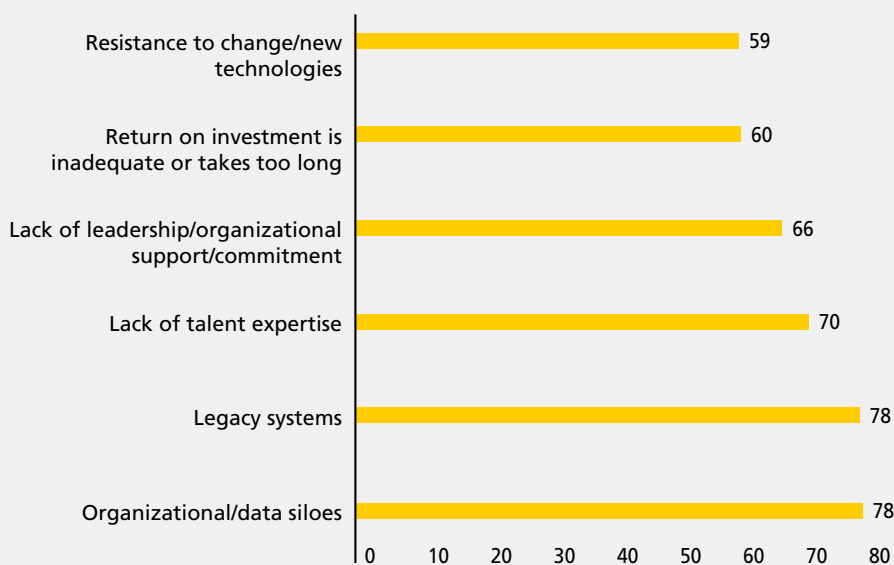
- Reliability concerns (68 percent)
- Resistance to change (65 percent), and
- Insufficient or too-extended return on investment (ROI) (64 percent).

Additionally, 42 percent saw no need for the technologies in their operations.

On the analytics front, organization/data siloes and legacy systems tied for first place as the top impediment (78 percent), followed by lack of talent expertise (Figure 5). This talent skills gap also surfaced in an earlier DHL survey on the [global supply chain talent shortage](#) >.

“Companies face a myriad of roadblocks and challenges as they work to integrate the right technology portfolio into their supply chains.”

**FIGURE 5:**  
**IMPLEMENTATION CHALLENGES – INFORMATION TECHNOLOGIES**



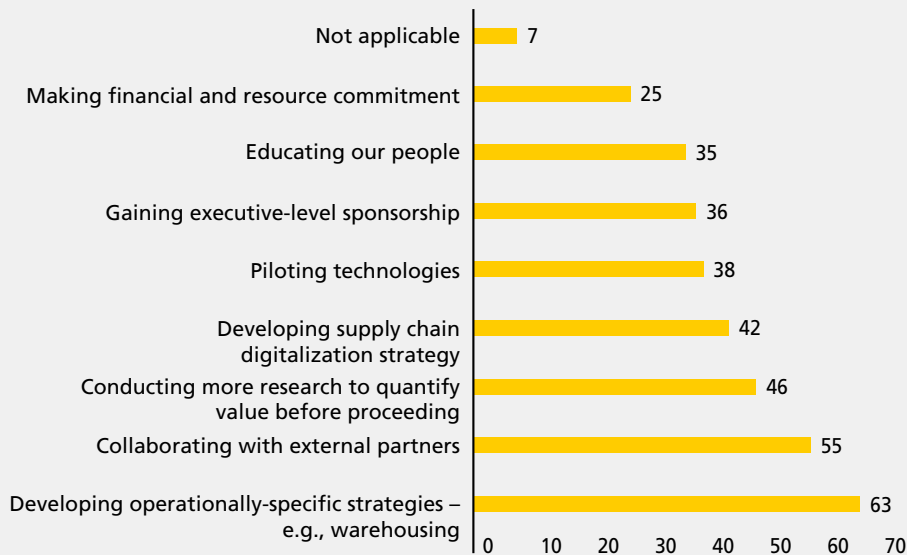


In resolving these challenges and roadblocks, companies deploy a variety of strategies and tactics (Figure 6). The largest group of respondents (63 percent) start in one area of the supply chain – like warehousing – and develop an operationally-specific digitalization strategy for that area. Fifty-five percent look outside their company for help, collaborating with their 3PLs in particular.

Finally, given the fact that most companies are still in the early or developing stages of digitalization, it makes sense that participating companies are first doing cost-benefit research (46 percent) and running test pilot programs (38 percent) to better understand the value proposition and viability of different solutions.

“Companies are first doing cost-benefit research and running test pilot programs to better understand the value proposition and viability of different solutions.”

**FIGURE 6:**  
**IMPLEMENTATION STRATEGIES FOR SUCCESS**



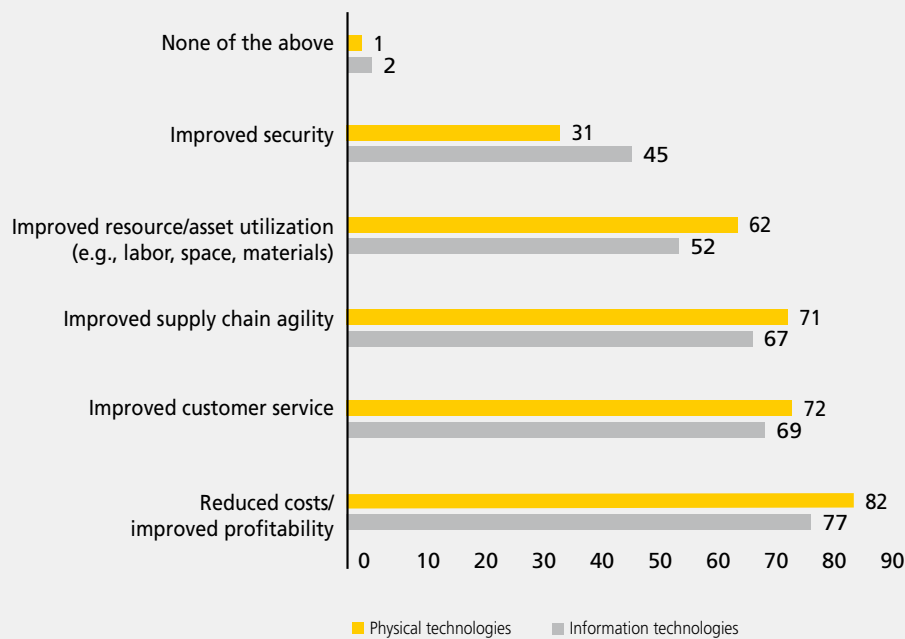
**The payoff**

Businesses expect to realize a number of similar benefits from both physical and information digitalization, according to the survey findings. First and foremost, organizations believe the technologies will help them reduce costs and improve profitability. Eighty-two and 77 percent of respondents respectively ranked these as the number one benefit. Improved customer service and supply chain agility ranked second and third. Figure 7 describes additional anticipated benefits.

When asked which type of digitalization technology – physical or information – will benefit their supply chain the most over the next three years, the emphatic response was information – 66 versus 31 percent.

“Organizations believe [digitalization] technologies will help them reduce costs and improve profitability.”

**FIGURE 7:  
BENEFITS**



**Beyond hype to reality**

There is no doubt that supply chain digitalization is here to stay, and that it will quickly expand in scope and scale over the next few years. Companies have a lot of options, as new products and applications enter the market, are field tested and gain acceptance. Having a deliberate, intelligent strategy for supply chain digitalization, therefore, is essential.

Three years from now, it will be interesting to see whether these technologies live up to the hype and fulfill McKinsey’s prediction of delivering real growth in earnings and profitability.

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