

Digital Transformation Drives Supply Chain Restructuring Imperative

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IDC OPINION

Today's supply chains are experiencing high levels of change in terms of both internal and external pressures. There's every reason to believe that this pace of change will accelerate and that the supply chain of the future will be in a constant state of flux. Companies that can build supply chain flexibility more quickly will be better positioned to support their consumers/customers and thus grow their business more effectively. Based on survey results and domain knowledge, this white paper explores how digital transformation (DX) is driving dramatic restructuring changes in the supply chain. Insights in this white paper include the following:

- Overall, the state of DX maturity cited by survey respondents is somewhat more advanced than we have seen in similar prior surveys. The survey that underpins this document reflects only the supply chain, so in that way, it is different. In extensive conversations that IDC has had with manufacturers and retailers, we would not judge supply chains to be particularly advanced. It does appear that companies are assessing their digital transformation efforts as more mature than they are in reality. We would suggest that there is little to be gained by a company thinking that it is more advanced than it really is.
- Digital transformation is moving fast, and the time to understand its implications for the supply chain is **now**.
- Digital transformation isn't necessarily disruptive, at least not immediately. While there may be disruptive things to be done with new technology eventually, most of the near-term applications are about improving performance and efficiency of current approaches and processes — things that are at the core of improving today's supply chain.
- To be successful at deploying a DX initiative, companies need to leverage external integration support. This is not just because companies do not or will not have internal skills to understand and implement new technologies; it is also

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because the distraction of managing existing IT projects may preclude focusing on the new and exciting DX-related business opportunities.

- Most manufacturers are not technology companies — they are product and service companies. Yet all too often, manufacturers feel it's their responsibility to explore and understand new things. We contend that the exploration of technology is best left to companies that do it for a living and that partnership strategies are much better for manufacturers and retailers. Thus the overwhelming landscape of new technology becomes much more manageable.

DX is the approach by which enterprises drive changes in their business models and ecosystems by leveraging digital competencies.

IN THIS WHITE PAPER

Methodology

This white paper explores the connection between enterprise digital transformation and the necessary restructuring that results in the supply chain. The research hypothesis is that digital transformation must affect the way that supply chains are run, from both an IT perspective and a business process perspective. The conclusions and recommendations in this document are based on IDC's knowledge and prior survey work as well as on a recent survey conducted exclusively to test the research hypotheses. Specifically, the survey explored how digital transformation technologies are driving supply chain transformation initiatives. **Digital transformation is defined by IDC as the approach by which enterprises drive changes in their business models and ecosystems by leveraging digital competencies** and includes areas like cloud, mobility, big data analytics, the internet of things (IoT), machine learning, robotics, and B2B networks. In many important ways, B2B networks are different from these other digital technologies in the sense that they really support the underlying operation of the business much like ERP, CRM, and PLM. Supply chain transformation is the process by which companies engage in changes and enhancements to their supply chain organizations, which could include anything from restructuring logistics and distribution networks to realigning IT and B2B infrastructures to support new digitally enabled business processes or go-to-market models.

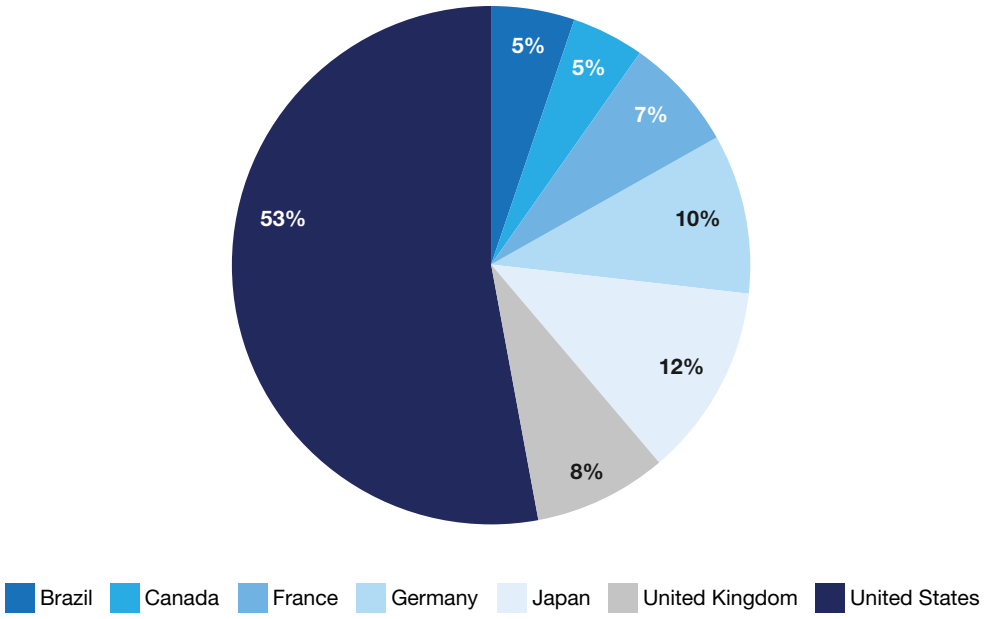
Note: All numbers in this document may not be exact due to rounding.

Survey Demographics

The survey that underpins this study, IDC's *Digital Transformation in the Supply Chain Survey,* was conducted in the fourth quarter of 2016 and included 254 respondents from manufacturing, retail, and consumer products across three company size ranges in seven countries (see Figure 1).

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FIGURE 1 Country Demographics



n = 254

Source: IDC's Digital Transformation in the Supply Chain Survey, December 2016

Key demographics include the following:

- Manufacturing accounted for 203 respondents; retail/wholesale accounted for the remaining 51 respondents.
- Within manufacturing, respondents range across multiple subsegments, including discrete and process, automotive, and consumer packaged goods.
- 12% of respondents were from large enterprise companies, 42% of respondents were from medium-sized companies, and 46% of respondents were from small companies.
- Respondents ranged from IT and sales/marketing to multiple areas within the supply chain.

Sample sizes for all countries included 30 respondents except the United States with 74 respondents.

One important goal of the survey was to poll a broad audience to generate as rich and diverse a set of results as possible. Given the overall sample size, however, narrow data cuts may fall below statistically significant sample sizes.

This document focuses on the overall findings while weaving in notable insights related to industry, country, and company size.

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Key Findings

The survey provided a wealth of data and insight for both DX and supply chain restructuring. Given the central research hypotheses, we have identified five key findings that we explore in greater detail in this document:

- DX is progressing rapidly, although adoption varies significantly by industry segment and country.
- Supply chain restructuring follows digital transformation.
- The highest maturity of new technologies is in cloud, analytics, and B2B.
- The IoT and cognitive analytics are the most interesting, emerging new technologies.
- A majority of companies — 66% — are considering outsourcing B2B infrastructure and capability; this investment could support faster and more agile digital transformation.

Current Situation

Supply chains are engaging in digital transformation for a number of reasons. It's partly about reconciling reality from aspiration and accepting that aspiration today is reality tomorrow. Not all things digital must be necessarily disruptive. IDC views DX as a continuum, ranging from things that are evolutionary, which result in better efficiency or effectiveness, to things that are revolutionary, which can enable a reimagined business. The inability to articulate the long-term strategic direction for a company's supply chain does not mean doing nothing even if the future is highly speculative and the ability to gauge when and if things become a reality is anybody's guess. The key point is preparedness: Being prepared to move quickly is just as important as, or perhaps more important than, having the idea in the first place.

In terms of the respondents to our survey:

- The primary driver of digital transformation is about meeting customer needs.
- The second most frequently cited driver is about balancing product/service flexibility.
- The third most frequently cited driver is about what competitors are doing.

It is not surprising that the primary driver is about the customer (or consumer); that's the world we live in. As companies use digital competencies to drive better products

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and services, companies that do not will find themselves increasingly uncompetitive. Clearly, these changes will occur at a different pace in different industries, but companies that compete in segments ripe for digital disruption must get started sooner rather than later.

Digital Transformation Maturity Assessments

There is a fair amount of confusion when it comes to digital transformation, with most companies having differing definitions. This is partly due to the relative lack of maturity of DX and partly due to the scale of the effort. For the purposes of this document, and the underlying *Digital Transformation in the Supply Chain Survey,* we have attempted to define DX as clearly as possible as well as articulate the various maturity stages that companies will be going through. As noted previously, the definition of DX is *the approach by which enterprises drive changes in their business models and ecosystems by leveraging digital competencies*. IDC defines the maturity stages as follows:

- **Ad hoc.** Management goals for digital transformation are poorly defined and occasionally chaotic. Success often depends on individual effort, and benefits are not widely shared within the business. Business and IT digital initiatives are disconnected and poorly aligned with enterprise strategy and not focused on customer experiences or customer services.
- **Opportunistic.** Basic capabilities are established. The necessary disciplines for digital transformation are in place to repeat earlier successes on similar initiatives. The business somewhat lags behind best-performing peers. Business has identified a need to develop digitally enhanced business strategies that directly impact customers, but execution is on an isolated project basis, and progress is neither predictable nor repeatable.
- **Repeatable.** Business-IT goals are aligned at the enterprise level to near-term strategy and include digital initiatives for product or service delivery and customer experiences but are not yet focused on their disruptive potential. Capabilities are documented, standardized, and integrated at the enterprise level. Digital transformation at the business level is a strategic business goal. The business maintains parity with its competitors and peers.
- **Managed.** Capabilities for digital transformation are embedded in the enterprise and tightly linked to an agile management vision. The business leads its peers and competitors. Integrated, synergistic business-IT management disciplines deliver digitally enabled product and/or service experiences on a continuous basis.

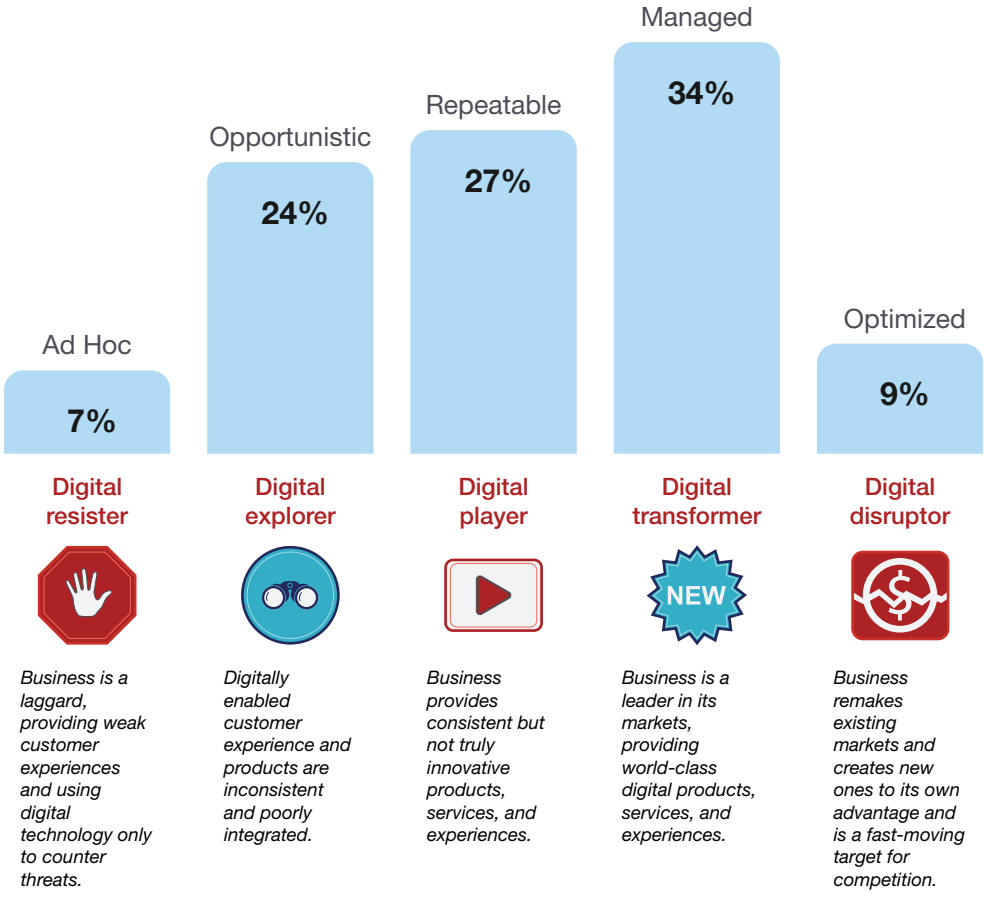
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- **Optimized.** Enterprise is aggressively disruptive in the use of new digital technologies and business models to affect markets. Ecosystem awareness and feedback is a constant input to business innovation. Continuous improvement is a core business management philosophy. Leadership embraces risk taking and experimentation to develop innovative, groundbreaking capabilities.

Based on these definitions, companies self-assessed their maturity (see Figure 2).

FIGURE 2 DX Maturity in the Supply Chain

Q. Which of the following best describes the state of digital transformation in your supply chain?



Source: IDC's Digital Transformation in the Supply Chain Survey, December 2016

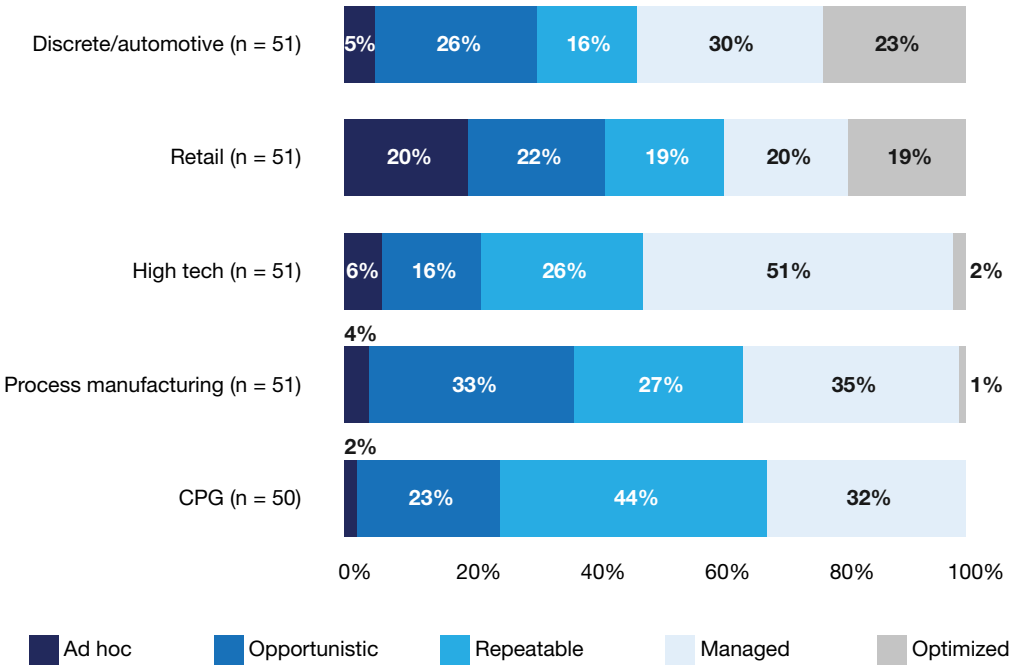
The kinds of activities that characterize each level of maturity will vary, and priorities will be different for different businesses. As a company moves up in maturity, digitally informed processes and capabilities become more widely used and the underlying, enabling infrastructure becomes more flexible to support new approaches and new market opportunities.

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In the survey, companies assessed their overall maturity level as somewhat more advanced than in prior IDC DX maturity surveys. After our extensive conversations with manufacturers and retailers, we would not judge supply chains to be particularly advanced. Consequently, it appears that companies are assessing their digital transformation efforts as more mature than they actually are. There is little that companies can gain by thinking they are more advanced than they are in reality. IDC has found that companies in the ad hoc and opportunistic stages tend to be behind their competitors, companies in the repeatable stage are on par with their competitors on average, and companies in managed or optimized stages are ahead of their competitors. Where things are more interesting is in how various subindustries viewed their DX maturity. Figure 3 offers a view into some notable differences in self-assessed DX maturity of the industry groupings polled in the survey.

FIGURE 3 DX Maturity by Industry Segment

Q. Which of the following best describes the state of digital transformation in your supply chain?



n = 254

Source: IDC's Digital Transformation in the Supply Chain Survey, December 2016

We sorted the responses by descending percentage of *optimized* respondents. Discrete/automotive and retail are driving almost all of the *optimized* responses, while high tech is driving *managed* responses. Further, while retail has some of the most optimized responses, it is also the most evenly distributed among all responses and

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holds the highest rate of *ad hoc* responses, begging the question of whether retailers are setting themselves up for a division of capabilities between leaders and laggards; if so, the retailers on the lower end of the spectrum are putting their competitiveness at risk. If we look at the median response — which is a more useful way of looking at the data — the results are as follows: early-stage managed for discrete/automotive and high tech, late-stage repeatable for retail, and early-stage repeatable for process manufacturing and consumer packaged goods (CPG). Interestingly, the level of maturity aligns quite well with those industries that appear to be more vulnerable to disruptions. In a world where owning assets is giving way to use rental models like Uber, the industries that make expensive assets like cars or farming equipment are feeling threatened. Whether overly optimistic or not, the trend is clear: DX is moving fast, and the time to understand its implications for a business is **now**.

There is an interesting mix between managed and optimized, but overall, the discrete manufacturing segments are by far the most advanced, according to the respondents' self-assessments. This closely relates to the focus of the respondents on changing their products and services through digital transformation, with more technology embedded in products, and developing new services, all to meet customers' changing expectations. That discrete manufacturers view themselves as more *optimized* than high-tech manufacturers, which view themselves as more *managed*, is curious. One interpretation of this — based on conversations with high-tech companies — is that optimized is viewed through the lens of *"where I am versus where I need to be."* In other words, optimized is about aspirational goals whereas managed is about achieved goals.

Emerging Technologies for the Supply Chain

When we think about DX, it's often in the broader context. Yet, this is not how companies are adopting these technologies. In the survey, we asked respondents about a broad range of different digital technologies and where they stood in terms of both current and expected future adoption. We see that the different technologies generally line up as either emerging or already emerged (see Table 1).

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70%

of respondents said they were using cloud based B2B networks across their supply chain operations today.

TABLE 1 Adoption Over Time (% of Respondents)

	In Use Currently in the Supply Chain	In Use in Three Years in the Supply Chain
Big data analytics	67%	73%
B2B cloud networks	70%	74%
Cloud applications	79%	80%
IoT	63%	73%
Wearables	49%	61%
Additive manufacturing (3D printing)	54%	67%
Machine learning	53%	71%

n = 254

Source: IDC's Digital Transformation in the Supply Chain Survey, December 2016

Big data analytics, B2B cloud networks, and cloud in general are clearly already mainstream, and companies have both discovered resulting efficiencies and identified new ways of working. We will certainly see new capabilities in these areas, but adoption is already beyond the early adopter phase. In fact, 37% of discrete manufacturers and 31% of high-tech manufacturers indicate that big data analytics is in full use across their supply chain. Things like wearables, 3D printing, and machine learning are still emerging for most industries, and the benefits are more speculative. We see robust adoption growth for these technologies within three years. IoT is in the middle, with high-tech manufacturers and discrete manufacturers leading the way. While there are a growing number of use cases, much growth remains for all industries.

In many important ways, B2B cloud networks are very different from the other disruptive digital technologies listed in Table 1, in that B2B cloud networks support the underlying operation of the business much like ERP, CRM, and PLM. **This is very different from IoT and wearable devices in the sense that these new disruptive technologies will drive the need for cloud networks to share data and thus lead to more companies using B2B cloud networks and ultimately B2B outsourcing.**

The implication here, much like the previous discussions on overall DX maturity, is that there remains much to learn. As these technologies make their way into the supply chain, significant adaption and restructuring will be necessary.

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Digital Transformation Requires Supply Chain Restructuring

The central theme of this document is that digital transformation must drive consequential supply chain restructuring and that the latter may be lagging the former. If supply chain restructuring is in fact lagging, is this "sustainable," or must supply chains act to catch up?

We asked the survey respondents about the relationship between digital transformation and supply chain management at their companies (see Figure 4).

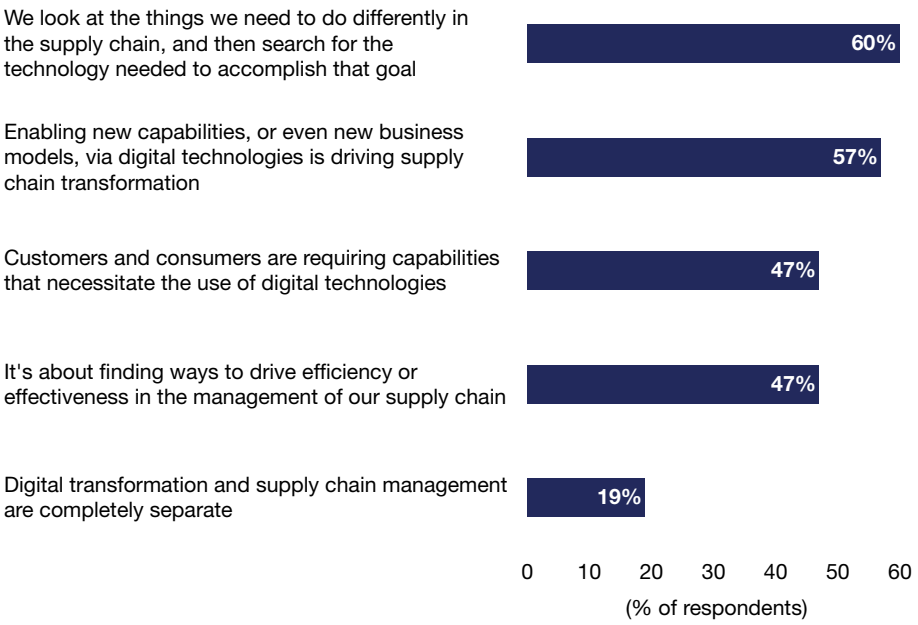
The top 3 responses align well with the comments that we received from manufacturers and retailers. First, it is encouraging that survey respondents view technology as enabling business needs. Far too often, companies take a "build it and they will come" approach to technology, which just doesn't work. It is much better to identify a business problem and then look for the technology that will solve it. Second, as we noted previously in this document, customers and consumers are increasingly demanding capabilities that necessitate the use of different digital technologies. Third, and most insightful, 57% of respondents feel that enabling new capabilities, or even new business models, via digital technologies is driving supply chain transformation.

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FIGURE 4 Drivers of DX in the Supply Chain

Q. How would you characterize the relationship at your company between digital transformation and supply chain management?



n = 254

Source: IDC's Digital Transformation in the Supply Chain Survey, December 2016

The emerging reality is that digitally transforming the supply chain is a multitier, nuanced effort that will involve most areas of the supply chain and progress over a period of years — a journey, really. Some activities should be done first — things like B2B integration, IT systems consolidation, and analytics adoption. Other initiatives can be done down the road, such as process outsourcing or go-to-market changes.

The Pace of DX Varies by Country

As one would expect, the maturity of digital transformation and attendant supply chain restructuring efforts vary by country. It is quite clear that in all countries, respondents feel that there is a strong correlation between DX and supply chain restructuring. Table 2 illustrates in detail how companies in different countries view the relationship between digital transformation and supply chain restructuring.

TABLE 2 DX and the Supply Chain by Country (% of Respondents)

Q. How would you characterize the relationship at your company between digital transformation and supply chain management?

	Brazil	France	Japan	Germany	United Kingdom	United States
We look at the things we need to do differently in the supply chain and then search for the technology needed to accomplish that goal	53%	60%	43%	47%	87%	64%
Enabling new capabilities, or even new business models, via digital technologies is driving supply chain transformation	60%	33%	57%	30%	43%	68%
Customers and consumers are requiring capabilities that necessitate the use of digital technologies	47%	57%	37%	33%	47%	51%
It's about finding ways to drive efficiency or effectiveness in the management of our supply chain	47%	47%	53%	53%	57%	42%
Digital transformation and supply chain management are completely separate	20%	7%	13%	10%	20%	23%

n = 254

Source: IDC's Digital Transformation in the Supply Chain Survey, December 2016

The differences are quite profound. For the United States, Brazil, and Japan, the connection between DX and supply chain is about enabling new capabilities (or even new business models). For France and the United Kingdom, it's about examining requirements and then identifying the enabling technology. For most of the countries

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listed, customers and consumers as the driver for the use of digital technology hovers at about 50%, with the exception of Japan and Germany where efficiency is a more compelling driver. Overall, about 20% of respondents, varying slightly by country, see DX and supply chain as completely separate.

Today, business networks are the essential enablers of DX. Companies realize the tremendous potential of expanding their focus beyond the four walls of their enterprises to collaborate with their business partners. However, despite the intrinsic global nature of these collaboration networks, the survey data shows that there is not a "one size fits all" approach. Regional variations around the concept of business network are apparent and worthy of a deeper look.

For example, while cost reduction and improved productivity are common sought-after benefits on networked collaboration across the countries, only German and British companies realize the opportunities for greater supply chain capabilities based on both existing reach and the potential to enable expanded market reach. In this case, the focus is on scale and breadth of the network. Conversely, other countries (like the United States) look at improved integration as a way to increase supply chain visibility, even to the point of improving quality, such as in France where business networks are more localized and thus become a tool to build trust and visibility among companies in the same value chain. Interestingly enough, both the United States and France show the highest number of companies declaring they had digitally transformed their supply chain already through end-to-end B2B integration and exchanging information with all their trading partners continuously in a collaborative way. Of course, quality is a very big issue across the world, and companies in most countries address this issue not through more collaboration but by exploitation of IoT to monitor each and every step in the value chain. Cognitive analytics (possibly deployed not only on top of the IoT infrastructure but also as a standalone) are also seen as a powerful tool to improve quality.

IoT is a game changer in the supply chain, and areas of implementation are geographically clustered. While continental European countries focus on IoT to support overall supply chain visibility, responsiveness, or simply order tracking, British, American, and Japanese companies also have a higher focus on internal activities such as inventory management and predictive maintenance. (This trend is particularly prevalent in the United Kingdom.)

When it comes to DX as a whole, one aspect that stands out is the different speed of the transformation. For example, Japan has been much slower at adopting IoT concepts than other European and North American countries, so it shows a slower pace in supply chain restructuring. Japanese companies generally prefer to develop

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their own IoT strategy rather than adopt an IoT strategy from another country, hence the Industrial Value Chain Initiative. On the other side, German companies are moving at full-blown speed, with automation sensors as a key enabler to DX. Despite all these variances, when looking at the steps companies are taking to enable DX, we see two common trends across the world: the need for consolidating multiple IT systems and the need for moving to the cloud.

How does one achieve this goal of consolidating IT systems or moving to the cloud? Companies in some countries realize the need to source new skills via either outsourcing (such as in France) or hiring (such as in Japan). Companies in other countries are looking at renewing their IT systems. Some companies — such as British companies — are looking at more traditional ways like ERP rejuvenation. Still other companies are moving to implement a new digital backbone to provide an integration layer across the business. This strategy — which IDC defines as the most advanced — is happening primarily in the United States.

The Future

Today's supply chains are experiencing high levels of change, in terms of both internal and external pressures. There's every reason to believe that this pace of change will accelerate and that the supply chain of the future will be in a constant state of flux. Companies that can build supply chain flexibility more quickly will be better positioned to support their consumers/customers and thus grow their business more effectively. As noted previously, digital transformation is partly about reconciling reality from aspiration and accepting that aspiration today is reality tomorrow. In addition, DX is about being prepared for the things companies cannot anticipate. Even if the future is highly speculative and the ability to gauge when and if things become a reality is anybody's guess, companies still must be prepared.

Beyond that, some broad macroeconomic trends that are poised to define the supply chain of the future, and thus the levels of transformation that must occur, are as follows:

- **Demanding consumers/customers.** Modern connected customers, whether B2B or B2C, expect and dictate increasing levels of service, forcing business cycles to compress in order to meet requirements related to speed, traceability, transparency, and brand reputation. Supply chain mistakes are as expensive as ever, and there is less and less room for process fine-tuning.
- **Nationalism.** Whether a return of manufacturing to the United States or Brexit, nationalism appears to be on the rise. What this specifically means for manufacturing supply chains (where and how things are made) is anybody's

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guess at this point. Yet it is clear that there is significant potential for material changes, and supply chains must be prepared to be flexible and nimble.

- **Technology advancements.** Digital enablement brings with it the ability for companies to do the things they can do today more efficiently and makes the things they cannot do today possible. Modern, digital technologies are changing the way business processes are run, making them more instrumented, interconnected, and intelligent. Ubiquitous connectivity and pervasive integration fosters an opportunity for operational technology, IT, and communications technology interplay, making data and information from every source a central pivot to process execution. As such, operators in all industries are looking for the truth in data as they seek valuable analysis of the volume, velocity, and variety of their data.

If one accepts the notion that change is inevitable, and that it is better to have a supply chain that is prepared rather than one that is not, where are the places to look for preparedness? It's also important to note that, perhaps for the first time, companies find themselves facing the prospect of more technology than they can possibly adopt and absorb. Consequently, companies need to adapt their approach. At IDC, we have discussions with manufacturers and retailers about technology all the time, and we always advise them to approach with care. While some manufacturers either already have established or are establishing internal software divisions to drive the development of more innovative products and services, a majority of manufacturers today are not technology companies. They remain product and service companies. Yet all too often, these companies feel it's their responsibility to explore and understand new things. At IDC, we believe that the exploration of technology is best left to companies that do it for a living. Therefore, partnership strategies are much better for manufacturers and retailers. Thus the overwhelming landscape of new technology becomes much more manageable.

One example of this partnership approach is B2B integration maturity. B2B integration is an important part of supply chain restructuring and an important enabler of digital transformation. Significant opportunities remain to automate manual paper-based processes in support of broader digital strategies. Figure 5 illustrates that there are certainly some companies that judge their B2B integration capabilities to be mature, yet they are in the minority, with most of them feeling much less secure and accomplished.

Only 8% of respondents say they have digitally transformed their supply chain though comprehensive B2B integration, with a further 18% of respondents getting close to doing so. That leaves a sizable group of respondents (74%) with much more progress

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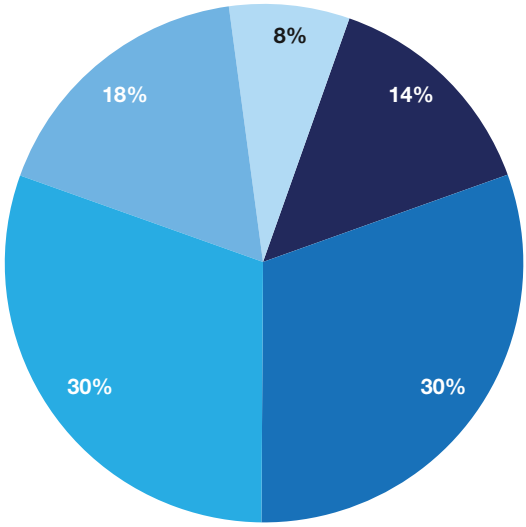
74%
of respondents have much progress to make.

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to make. Companies are starting to realize the need for a reliable technology partner in this space. Further, it's not just about implementation of modern B2B integration capabilities, it's also about how that capability enables and further promotes supply chain transformation.

FIGURE 5 B2B Integration Maturity

Q. What level of maturity do you have in your B2B integration platform?



- The information exchange process is informal and unstructured using fax- and email-based communication because our business model is simple and doesn't require complicated transactions to be managed.
- We unilaterally send information to our key trading partners, via web form technologies, so that they have the instructions required to fulfill our needs.
- We have automated a bilateral exchange of structured information, with most of our largest trading partners using either EDI software or web EDI portal technologies.
- We exchange information with all our trading partners continuously in a collaborative way. For example, B2B integration allows external trading partner transactions to be seamlessly transferred into back-office ERP systems.
- We have digitally transformed our supply chain already through end-to-end B2B integration, and we exchange information with all our trading partners continuously in a collaborative way.

n = 254

Source: IDC's Digital Transformation in the Supply Chain Survey, December 2016

How B2B Integration Drives Superior Supply Chain Performance (IDC white paper #IDCWP22W, March 2016) reveals that many companies are starting to realize the benefits of adopting a modern B2B approach. Such benefits go beyond cost reduction and can lead to performance advantages. What emerges is the strict correlation between having a pervasive, more modern, and collaborative B2B

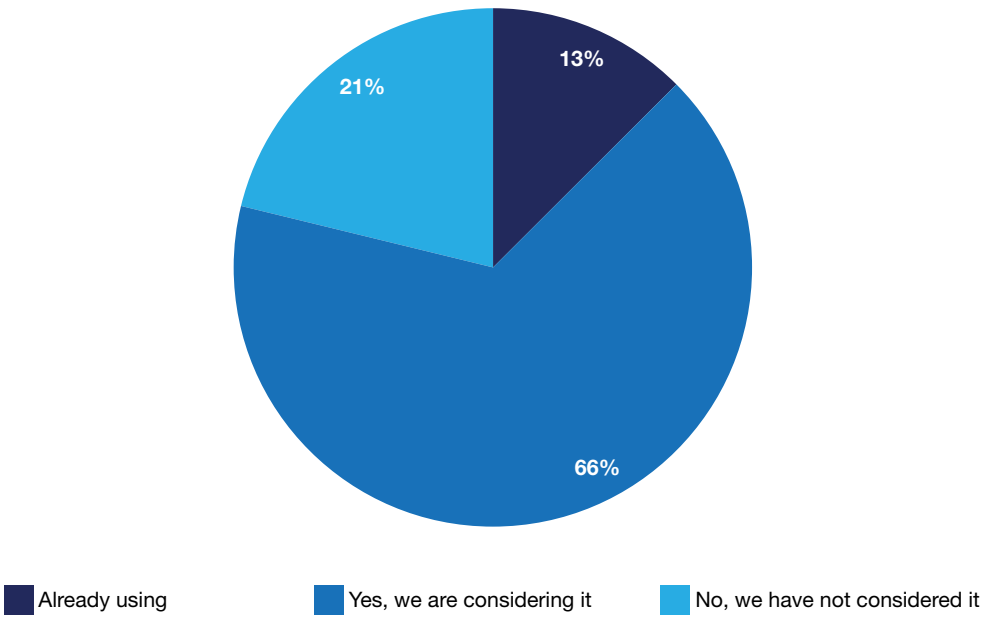
platform in place and being a leader in supply chain metrics. It is important to note that real benefits are apparent only when collaborative B2B integration — having customers and suppliers sharing a mutual and comprehensive view of the extended supply chain and being able to integrate and synchronize their strategies — is in place. Benefits ranged across many areas, from cycle time and inventory reduction to improvement in processes and productivity. Some companies realized business results such as on-time delivery or the perfect order. A number of intangible benefits, including enhancements in customer experience, customer retention, and speed of business, were reported. The strongest conclusion from this analysis is that adopting technology is important, but adopting the right technology is essential.

It is critical that companies realize that an outsourced B2B integration capability allows internal resources to be allocated to more strategic projects.

It is critical that companies realize that an outsourced B2B integration capability allows internal resources to be allocated to more strategic projects while ensuring that a best-in-class infrastructure is enabled. Not many of the companies we speak with cite B2B integration as a key core competency. This is not lost on companies, with 79% of companies either already outsourcing B2B or considering outsourcing it (see Figure 6).

FIGURE 6 B2B Outsourcing

Q. Has your company thought about using an outsourced or managed services approach to looking after your B2B infrastructure and capabilities?



n = 221

Source: IDC's Digital Transformation in the Supply Chain Survey, December 2016

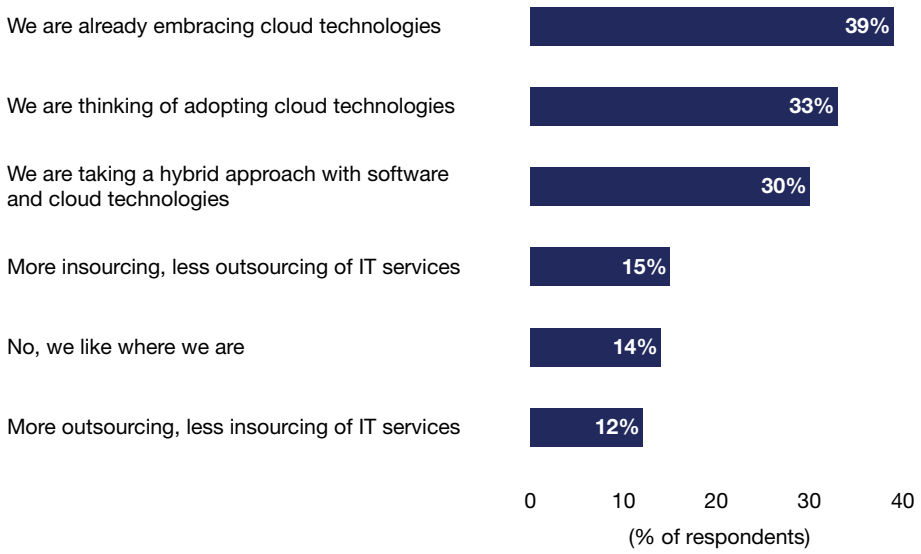
The move to managed services and a more ruthless recognition of what constitutes core competency appear to be accelerating with digital transformation. Ultimately, it's not about implementation; rather, it's about transformation, and things like B2B integration are increasingly sourceable.

How DX Will Change IT and Supply Chain Operations

We have discussed digital transformation at length in this document and touched on supply chain restructuring with the given impression that supply chain restructuring must proceed digital transformation. While this is true in some cases, certainly in terms of IT infrastructure "readiness," the reality is that supply chain restructuring and digital transformation will occur iteratively over time. In terms of IT, specifically, the overwhelming change has been the move to the cloud. Figure 7 shows that 72% of respondents believe that cloud will change the way they adopt, manage, and deliver IT services across the extended enterprise. Another 30% of respondents are taking an on-premises/cloud hybrid approach.

FIGURE 7 DX Changes IT

Q. Will the introduction of new digital technologies change the way in which your organization both procures and manages IT infrastructures?



n = 254

Note: Multiple responses were allowed.

Source: IDC's Digital Transformation in the Supply Chain Survey, December 2016

Yet, it's not just about IT and cloud; other technologies are affecting the supply chain dramatically already. The IoT, for example, is changing the way that companies

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manage inventory, address overall supply chain visibility, and enable responsiveness. In the survey, each of these three use cases was cited by more than 60% of the respondents, with order tracking a close fourth.

This reinforces an important point discussed previously: Digital transformation isn't necessarily disruptive, at least not immediately. While there may be disruptive things to be done with comprehensive supply chain visibility eventually, most of the near-term applications are about improving performance and efficiency of current approaches and processes.

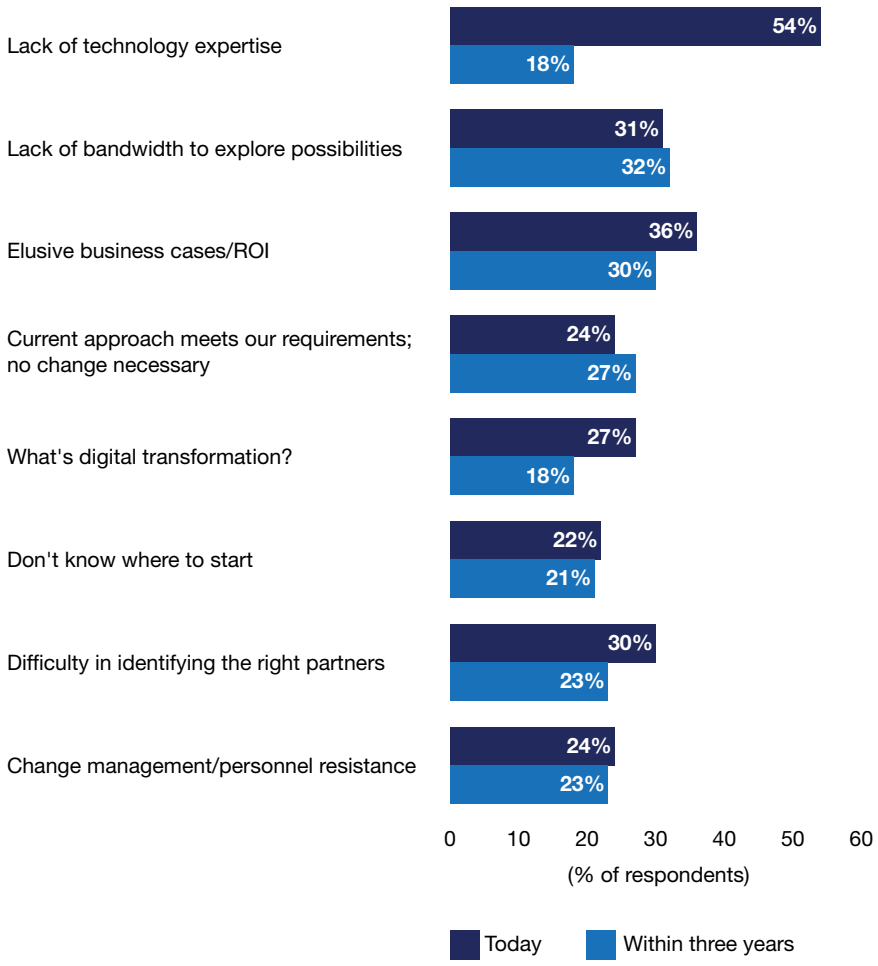
Implications of DX for the Supply Chain

The impact of DX on the supply chain is poised to be profound. The overwhelming nature of new technology can be mitigated somewhat by identifying and working with key technology partners; the manufacturing and retail supply chain organizations still have an important role to play in terms of business process integration and consumer/customer experiences. From a supply chain restructuring perspective, the results shown in Figure 8 are critical because they reveal a broad range of potential obstacles.

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FIGURE 8 DX Challenges in the Supply Chain

Q. Please describe the challenges you face in digitally transforming your supply chain.



n = 254

Source: IDC's Digital Transformation in the Supply Chain Survey, December 2016

In some ways, the technological barriers are the easy ones. Barriers such as a lack of technology expertise or a lack of bandwidth to explore possibilities are relatively easily remedied once the strategic decision is made to partner with external technology providers to absorb, integrate, and then adopt the technologies. It's a decision that must be made; if companies have additional external resources, then they can focus their efforts on new DX-type projects. Without these additional resources, these new DX projects will either not get off the ground or proceed too slowly.

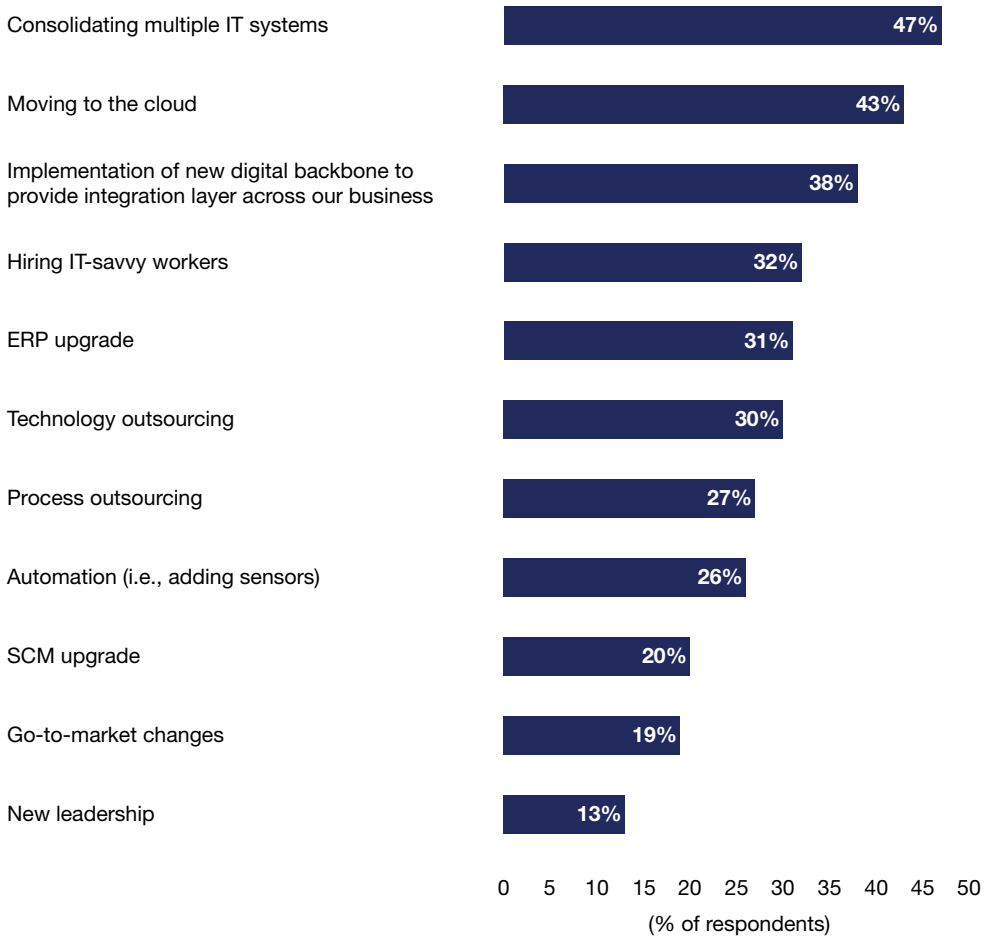
An elusive business case or the presumption that the current approach meets requirements is more difficult to overcome. While different business segments will

progress at a different pace regarding DX and the potential for disruption, it has been IDC's long-held view that by 2018, one-third of all industry leaders will find themselves disrupted by a 3rd Platform competitor — independent of industry or the power of industry leaders.

Figure 9 lists the activities that are directly supporting supply chain transformation initiatives. They are areas where companies need to focus 100%, which may mean that internal IT or line-of-business resources are diverted to these projects. B2B integration projects or day-to-day IT efforts may either be undersupported or distract from more strategic endeavors. **The transition to DX may be an opportunity to explore using a third party or trusted partner to manage B2B while focusing on undertaking these other, more strategic IT projects across the business.** Endeavors like IT systems consolidation, digital backbones, or cloud migrations are big projects, intolerant of resource limitations, and companies will be well served to look at operational B2B outsourcing as a way to help.

FIGURE 9 Preparations for DX in the Supply Chain

Q. What steps are being taken to transform supply chain operations to be able to leverage new digital technologies and processes?



n = 254

Source: IDC's Digital Transformation in the Supply Chain Survey, December 2016

The efforts to consolidate IT systems was the top response (47% of respondents), followed by moving to the cloud (43% of respondents) and implementing a digital backbone (38% of respondents). Specific percentages aside, the real story is the breadth of preparations already under way.

Benefits of DX/Supply Chain Transformation

A discussion of benefits is two pronged. The first area is that of benefits anticipated and the second area is that of benefits realized. These benefits are evolutionary (the percentages reflect respondents who selected the item as the top benefit); things that while important, exist within the paradigm of today — the things we can see, if you

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will. This doesn't mean they aren't important; indeed, the ability to benefit immediately means that transformations will proceed at a healthy rate. In Table 3, the benefits realized are closely aligned with the benefits expected, although there are some interesting differences. Cloud, for example, was expected to be about productivity, yet the actual results show visibility to be the biggest benefit. Overall, analytics, B2B cloud networks, and cloud are almost all about today's business models — productivity, cost, and visibility, respectively. Conversely, wearables, 3D printing, and machine learning are all more emerging than emerged, and in these areas, the benefits are new capabilities, expanded reach, and new products and services, respectively.

In our survey, wearables, 3D printing, and machine learning are projected to grow much faster than the more established digital transformation technologies, with machine learning having the highest expected growth (refer back to Table 1).

TABLE 3 DX Technology Benefits (% of Respondents)

Q. Please indicate what you expected, and whether you actually accomplished or realized tangible benefits for each goal related to digital transformation efforts for DX technology within your organization's supply chain?

	Top Benefit Expected	Top Benefit Realized
Big data analytics	Improved productivity (62%)	Improved productivity (63%)
B2B cloud networks	Reduced costs (44%)	Reduced costs (44%)
Cloud overall	Improved productivity (42%)	Increased visibility (42%)
IoT	Increased visibility (39%)	Improved service (36%)
Wearables	New capabilities (46%)	New capabilities (47%)
3D printing	Expanded reach (34%)	Expanded reach (34%)
Machine learning	New products/services (40%)	New products/services (40%)

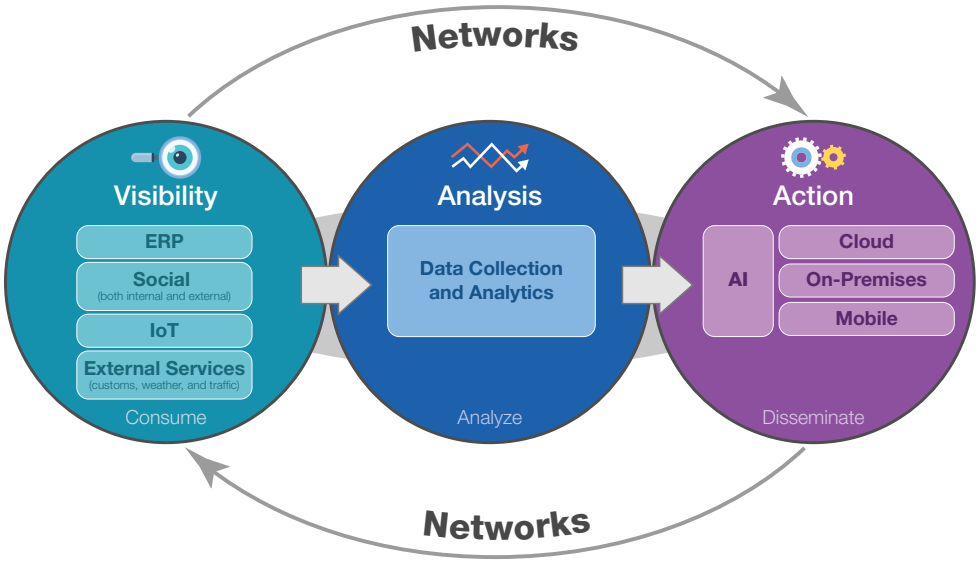
n = 254

Source: IDC's Digital Transformation in the Supply Chain Survey, December 2016

Companies may be innovators, or they may be fast adopters; regardless of the underpinning restructuring, digital transformation of the supply chain enables both innovators and fast adopters. Again, it's about being prepared. For technology areas that we assess as still emerging, future applications are still unclear. For example, how will machine learning be used? Almost certainly, it will leverage ERP and IoT data, comprehensive analytics, and the visibility and efficiency of B2B networks (see Figure 10).

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FIGURE 10 The Digitally Enabled Supply Chain



Source: IDC, 2017

Data generation derives from any source, both internal and external to manufacturers. We see comprehensive and fast analysis and then ubiquitous consumption. Consumption of analysis is initially with significant on-premises access but will decline over time in favor of cloud as machine learning complements human decisions.

Essential Guidance

Actions to Consider

As noted previously, this white paper explores the connection between enterprise digital transformation and the necessary restructuring that results in the supply chain. The research hypothesis was that digital transformation must affect the way that supply chains are run, from both an IT perspective and a business process perspective. Based on the results of the survey conducted, this hypothesis is borne out by the respondent companies. Though we articulate five key findings throughout the document, the following three findings are particularly relevant to this central hypothesis:

- DX is progressing rapidly, although adoption varies significantly by industry segment and country.
- Supply chain restructuring follows digital transformation.

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- A majority of companies — 66% — are considering outsourcing B2B infrastructure and capability; this investment could support faster and more agile digital transformation.

Indeed, to be successful at deploying a DX initiative, companies need to leverage outside resources. This is not just because companies do not or will not have internal skills to understand and implement new technologies; it is also because the distraction of managing existing IT projects may preclude focusing on the new and transformative DX-related business opportunities.

Today's supply chains are experiencing high levels of change, in terms of both internal and external pressures. There's every reason to believe that this pace of change will accelerate and that the supply chain of the future will be in a constant state of flux. Companies that can build supply chain flexibility more quickly will be better positioned to support their consumers/customers and thus grow their businesses more effectively. Also, digital transformation isn't necessarily disruptive, at least not immediately. While there may be disruptive things to be done with new technology, eventually, most of the near-term applications are about improving performance and efficiency of current approaches and processes — goals that are at the core of improving today's supply chain. Indeed, digital transformation is partly about reconciling reality from aspiration. The reality is that DX is happening now, and there are many use cases that can be adopted. The key is for companies to prepare today.

There is also an argument to be made that as digital transformation strays further from most companies' core competencies, "doing it yourself" won't allow them to keep up. In the view of IDC, internal technology "skunkworks" have long proven themselves inadequate.

In conclusion, companies need to answer the following three critical questions:

- Where is our business in terms of digital transformation?
- What will our supply chain need to be able to do, that it cannot today, to be a contributing partner to overall transformation efforts?
- What are our supply chain core competencies, and where should we be looking for new technology or business process partners?

No matter what companies might believe anecdotally, repeated surveys make it quite clear that DX is moving fast. There will be a restructuring burden on the supply chain, and the time to understand that is **now**.

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