Designing the Supply Chain Organization in a Digital World
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He also spent 13 years with TXT e-solutions, a European-based SCM software vendor, where his roles included industry manager for Automotive, business development director for Manufacturing Industries and U.K. operations director. Before that, he spent two years at the Italian Ministry of Defense.

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Rethinking supply chain organizational design is becoming necessary since "business as usual" doesn’t work anymore. Global supply chains are threatened by calls of protectionism, product complexity is leading to an explosion of SKUs, incumbent startup competitors are rapidly eroding market share and technology-enabled supply and demand are imparting a formidable speed to businesses.

Chief supply chain officers (CSCOs) are turning to digitalization to navigate through these emerging challenges and create a more open and collaborative environment based on the opportunity of providing end-to-end visibility and speed of decision making across all organizational structures.

Digitalization is emerging as one of the most relevant supply chain strategies today, and is expected to be the most impactful on supply chain organizational structures in a long time. However, it often turns out that while most companies are trying to get better through digitalization, the results tend to fall short. Shortcomings in organizational structures emerge as one of the main barriers to company success in digitalization. The bottom line is that CSCOs shouldn’t start an end-to-end digital journey, unless they have also reviewed their supply chain organization’s design.

To get a picture of how companies are changing their supply chain organizational structure, in light of digitalization, we fielded the Team of Tomorrow 2018 Survey to over 500 practitioners across industries around the world. The survey investigated aspects of supply chain organizational structure, talent requirements and digitalization.
The key findings of this survey, corroborated by a number of interviews with leading supply chain organizations, point to the following six key organizational capabilities that companies need to put in place to support successful supply chain digital transformations:

- **Drive** — CSCOs are taking the lead on digitalizing their supply chain. They realize that digitalization is not a technical project but the most relevant transformation in supply chain strategies in a long time.

- **Design** — CSCOs cannot drive digitalization on their own and need to create a team that can test and learn about emerging digital technologies as they apply to supply chain.

- **Organize** — A key finding of this study is that CSCOs are planning to create a more centralized supply chain, breaking down functional and regional silos.

- **Skill** — The necessary approach to functional specialism is calling for cross-functional skill profiles that are able to thrive in an end-to-end supply chain organization.

- **Technology** — The technology approach facilitating centralized, end-to-end organizations passes through a control tower creating "one-version-of-the-truth" that supports an open and collaborative decision-making environment.

- **Operate** — The way centralized supply chains operate in the digital world is not dissimilar to what happens in social media. Empowered by real-time information available through the control tower, supply chain leaders will dynamically group in self-forming teams to address events as they are happening.
When the terrible tsunami hit Japan in 2011, Caterpillar’s supply chain was particularly impacted. However, it took over 15 days to create a complete map of its logistics network and estimate a detailed impact from the disruption. The company’s supply chain organization was siloed and relevant data was spread across more than 50 different systems. The company decided it was time to redesign their supply chain organization into an end-to-end structure, able to work by processes rather than by functions, thus connecting suppliers down to customers.

The glue keeping the new structure together is a centralized team that orchestrates the end-to-end supply chain through a control tower room, called the Assurance of Supply Center.\(^1\) This team continuously monitors supply chain conditions and identifies and prevents supply network issues. They are able to respond to possible supply chain disruptions by mobilizing the right team and the right suppliers in a matter of minutes.

Similarly, in 2015 Colgate Palmolive’s supply chain planning organization was decentralized and planning was executed sequentially, with few touch points between regional demand planners and production planners in the factories. Each planning function accessed different datasets and there was no one version of the truth. Therefore, planners had to spend a great amount of time gathering and combining data from different systems to be able to understand supply chain issues, rather than solving them.

As part of the Colgate Palmolive’s Global Supply Chain 2020 strategy, the supply chain leadership created an integrated, end-to-end supply chain operating model to support a more collaborative planning and execution environment.\(^2\) With the new operating model, a centralized team of supply chain network planning and inventory analysts coordinates an end-to-end supply chain planning process, working collaboratively with regional demand planners and production planners in the factories.

The common thread of these case examples — and many other supply chain transformation initiatives nowadays — is that supply chain organizations are often too fragmented in functional and regional silos, and too rigid in hierarchies and long chains of command.

For many years, functional specialism, as well as rigid hierarchical organizational structures, have been considered the best options to ensure organizational efficiency and effectiveness. Hierarchical and siloed organizations have been designed to focus teams to excel on one narrow set of tasks and responsibilities. A way to reduce risk, keep control and increase efficiency.
However, the efficiency benefits are relegated to the individual function, region or team, and more often than not, do not bring enterprisewide gains. The issue with companies traditionally organized in silos, is that they also tend to measure performance in individual silos. This often offers a misleading perception of the company’s performance along with a real risk of losing sight of the bigger picture. This is particularly true with customer experience that is very often forwent in siloed organizations.

Organizational silos is not only a structural issue but also a cultural and skill set one. The parochial mentality of employees who hesitate sharing information or collaborating across different functions and regions, often leads to underestimating or missing the implications of events across the end-to-end supply chain.

Long chains of command often mean that companies can’t be fast enough in their decision making. Modern supply chain organizations no longer have the luxury of extra time in today’s fast-paced business environment for functional silos that do not collaborate and hierarchies that slow down decision making. A more agile competitor is just behind the corner and is likely to get there before the siloed organization even knows there is an issue requiring a response.

CSCOs are turning to digitalization to create a more open and collaborative environment based on the opportunity to provide end-to-end visibility and speed of decision making across all organizational structures. However, many initiatives fall short because of physical and mindset silos hampering the cross-functional requirements of digitalization.

Therefore, CSCOs are called to redesign their organizational structures in light of digitalization. The goal is to create organizations that are conducive to higher levels of collaboration and agility, and that are ready to harness the power of digitalization. CSCOs need to seamlessly integrate functional and regional silos with technology capabilities in a continuum that will create a fast-paced, decision-making environment.
Supply Chain Organizational Design

Rethinking supply chain organizational design is becoming necessary since "business as usual" doesn’t work anymore. Designing a new organizational structure is a comprehensive and holistic approach to supply chain improvement that touches all aspects of supply chain: structure, process, technology, data and people.
A growing share of companies are managing each and every function centrally, while decentralized functions are being used less today than they were three years ago.
Supply chain organizational design defines the structure of the end-to-end supply chain in a way that facilitates optimal deployment, allocation, coordination and supervision of resources and capabilities to meet the challenges posed by current business realities and future business goals. The supply chain organizational design process is an act of balance. It must lead to a more effective and efficient supply chain organization that significantly improves both customer experience and profitability.

Organizational design can be discussed by the way it articulates and interconnects organizational groups and hierarchies as follows:

- **Groups** — This defines how teams are grouped across the organization, including functional, regional and business unit groups.

- **Hierarchies** — This defines the way different groups are interconnected through reporting lines (solid or dotted lines) and number of layers.

In a simplistic but effective way, organizational structure can be designed through a bi-dimensional matrix as in Figure 1. In general, there is an inverse relation among the two dimensions: the smaller the number of hierarchical levels is, the larger are the groups in terms of team members. Designing the “right” organizational structure is therefore about balancing these two dimensions.

**1. Organizational Design**

Organizational design can be defined by the way it articulates and interconnects different groups and hierarchies.
Organizational Groups

Organizations that are traditionally structured by functions typically have silos that are efficient, but do not support speed very well. In Gartner SCM World’s Innovation Success Rate report, the notion of "integrated organization" is discussed, where silos are broken down and all functions work together in an open and collaborative environment.\(^3\)

Our research shows that only 31% of organizations are fully integrated today, while the majority sit somewhere in between being linked and semi-integrated. The same survey confirms a completely different picture for the most innovative organizations with two-thirds (67%) being integrated, demonstrating a correlation between innovative and integrated organizations.

Silos do not only exist among corporate functions but also within one function. In traditional supply chain organizations the team is often split in different groups — such as sourcing and procurement, manufacturing, logistics, planning, etc. — often with independent reporting lines up to CxO level.

### 2. Integrated Organizations

Silos are broken down and all functions work together in an open and collaborative environment

- **Pure Silo**
  - Sales and marketing are isolated from both supply chain execution and product development.
  - Trade-off decisions are made sequentially with partial information.
  - Lessons learned in operations, product development and sales do not inform each other.

- **Linked**
  - Sales and marketing are in contact with supply chain and product development.
  - Trade-off decisions are made with reference to other functions, but no systematic view of life cycle impacts.
  - Lessons learned in operations, product development and sales are captured, but not exploited.

- **Semi-Integrated**
  - Supply chain and product innovation are integrated, but only loosely tied to customer need via sales and marketing.
  - Trade-off decisions are made with precision on cost issues, but not life cycle profit impact.
  - Lessons learned in operations and product development feed continuous improvement, but not new product hit rate.

- **Integrated**
  - Sales, supply chain and product innovation are equal partners in an orchestrated development and launch process.
  - Trade-off decisions are made holistically against full life cycle profit goals and constraints.
  - Lessons learned in operations, innovation and the market inform and support future generations of product.

Source: SCM World, A Gartner Community (July 2018)
Organizational Hierarchies

Traditionally, supply chain organizational design has swung between centralized organizations — aligning enterprisewide standards, maintaining tight cost control and leveraging economies of scale — and decentralized organizations — remaining close to the customer and enabling product localization.

Centralization tends to favor standardization and cost control but, traditionally, at the expense of customer-specific needs. Decentralization tends to allow customization and a higher level of personal customer service, but usually at a higher cost to serve.

One way that makes sense to describe supply chain organizational structure comes from Gartner’s research which has found that one of the following four core organizing models is at the heart of each supply chain:

- **Decentralized** — Supply chain functions report directly to business units or regions. There is no central supply chain team or coordination across the enterprise.

- **Centralized** — There is a central supply chain function with solid reporting lines throughout. Standards are ensured by central centers of excellence (COEs) and service centers.

- **Center-Led** — There is a small central supply chain team with weak dotted lines to business units and regional supply chain. Council-driven structure and COEs ensure a minimum level of standards across the organization.

- **Distributed Matrix** — Mix of centralized, decentralized and center-led models are cemented through a matrix structure based on a range of double reporting lines.

To get a picture of how the elements of supply chain organizations are managed today, we fielded the SCM World Team of Tomorrow 2018 Survey.
Survey data points to an evolving supply chain organizational design strategy. This strategy is not only very different from that which might have made sense in the mid-to-late 20th century, but also evolves from the findings of the 2015 SCM World report "Supply Chain Organizational Design."

In fact, when we compare current survey results with those gathered in 2015, we see that there is a growing share of companies that are managing each and every function with a centralized or central-led model. Additionally, the share of respondents reporting that their functions are decentralized or managed with distributed matrix has decreased.

The key research finding of this report — as discussed across the following chapters — is that digitalization is driving centralization of supply chain organization. Indeed, with the exception of manufacturing and customer service, all supply chain functions are centralized or center-led according to over 50% of respondents. It’s the power of digital that enables efficient centralized organizations to also have access to local, real-time data, making them as effective as decentralized organizations.

In the words of former CSCO at Unilever, now President of Unilever Southeast Asia and Australasia Pier Luigi Sigismondi, "global scale and local agility" is the company's key source of competitive advantage.

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3. Supply Chain Functional Structure

Q. Which of the following organizational structures most accurately describes your core supply chain functions today?

<table>
<thead>
<tr>
<th>Function</th>
<th>Centralized</th>
<th>Center-Led</th>
<th>Distributed Matrix</th>
<th>Decentralized</th>
<th>Don’t Know/Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply chain strategy</td>
<td>55</td>
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<td>20</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>Procurement/sourcing (direct materials)</td>
<td>46</td>
<td>9</td>
<td>25</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Procurement/sourcing (indirect materials)</td>
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<td>27</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Supply planning</td>
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<td>22</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>Demand planning</td>
<td>36</td>
<td>20</td>
<td>15</td>
<td>25</td>
<td>4</td>
</tr>
<tr>
<td>Customer service</td>
<td>34</td>
<td>23</td>
<td>14</td>
<td>24</td>
<td>5</td>
</tr>
<tr>
<td>New product introduction</td>
<td>33</td>
<td>22</td>
<td>23</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Distribution/logistics</td>
<td>31</td>
<td>21</td>
<td>19</td>
<td>27</td>
<td>3</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>25</td>
<td>16</td>
<td>23</td>
<td>21</td>
<td>16</td>
</tr>
</tbody>
</table>

Source: SCM World’s Team of Tomorrow 2018 Survey

Numbers may not total 100 due to rounding.
COMPANY SPOTLIGHT:
CISCO’S DIGITAL JOURNEY STARTED BY BREAKING SILOS

At Cisco, digitalization is one of the core drivers for supply chain strategy. The Supply Chain Transformation (SCT) team at Cisco plays a critical role in enabling the supply chain to adapt rapidly to the changing needs of the business. SCT’s goal is making sure that Cisco’s supply chain is able to capture the values that digital technology offers, while the company transforms its products, business model, operations processes, systems and policies.

The Digital Journey

Cisco’s digital journey started in 2011 with the completion of a very significant ERP and product data management (PDM) systems upgrade, which laid the foundation for the digital journey and created a uniform data strategy. This upgrade wasn’t just a technical initiative; it was also an opportunity to deeply transform the supply chain organizational structure.

In the past, the company’s supply chain was divided in two very separate units. The fulfillment supply chain focused on plan, source, make, quality and deliver, while the development supply chain focused on product innovation, manufacturing engineering and new product introduction. In this siloed organization, information was not shared broadly, hindering an ability to increase collaboration. The result was that Cisco wasn’t able to be fast enough to fulfill the needs of a fast-paced market.

As part of their digital journey, Cisco broke down organizational barriers, simplified and eliminated many business processes, created integrated end-to-end processes and used digital technologies to open lines of communications. The company now has one supply chain function, managing the entire product life cycle, from product concept to recycle.

With the data strategy and organizational design sorted out, in 2014, the company started its second phase of its digital journey, by implementing a business analytics strategy. By leveraging technologies such as big data and the Internet of Things (IoT), the company launched a number of digital initiatives. These initiatives included a new supplier collaboration portal, increased visibility of energy usage, digitalization of their warehouses and improved quality testing by remote monitoring of contract manufacturers’ test equipment.
Today, the company is working on its third phase of their digital journey, with a focus on enabling end-to-end supply chain orchestration by incorporating digital technologies across the supply chain. One core target of this phase is achieving a more automated decision-making capability, and the company is investing the use of technologies such as machine learning and Blockchain.

**Organizational Capabilities**

The Cisco digital journey can be summarized in four organizational capabilities:

- Digitalization is one of the core drivers for Cisco’s supply chain strategy and, as such, it is driven directly by SVP of Supply Chain Operations John Kern.

- Digitalization is seen as a strategic opportunity for supply chain and, therefore, Senior Director (reporting into John) and Head of Supply Chain Transformation Michelle Fleury, is designing the digital journey.

- To support the digital journey, Cisco redesigned its supply chain organizational structure by breaking down organizational barriers and creating integrated end-to-end processes.

- Cisco created a global talent management program called Career Power to specifically address the challenges of digital and its implications on the future of work.
Digitalization Is Calling for a New Operating Model

Very often, it turns out that while most companies are trying to get better through digitalization, the results tend to fall short. Shortcomings in organizational structures emerge as one of the main barriers to a company’s success in digitalization.
The bottom line is that CSCOs shouldn't start an end-to-end digital journey, unless they have also reviewed their supply chain organization's design.
The Theory of Constraints teaches us that "a chain is no stronger than its weakest link." This is especially true for digital supply chains, where the value of applying digital is multiplied when it is applied end-to-end, as opposed to individual functions. Indeed, one-off initiatives launched in separate functions or regions don't have a big enterprise wide impact.

In our recent Gartner SCM World Team of Tomorrow Survey 2018, we investigated the digital supply chain maturity in organizations. In the survey, we defined the following five progressive supply chain digital maturity levels:

- **Predigital Supply Chain.** This is for companies that have some level of digital capabilities, but digital is far from being a standard across the supply chain.

- **Digitalized Supply Chain Functions.** This is for companies that have good digital capabilities within individual functions, but are still siloed and lack an end-to-end, collaborative, decision-making capability.

- **Digital Supply Chain.** This is for companies that have good digital capabilities across their internal supply chain. However, they are lagging behind in terms of digitally integrating the extended supply chain outside their span of control and are not connected with commercial and product development teams.

- **Digital Value Network.** This is for companies that have the ability to digitally orchestrate the end-to-end supply chain from the customer back. They have open lines of communications with critical trading partners and are collaborative with commercial and product development teams.

- **Digital Ecosystem.** This is for companies that are digitally connected to the ecosystem of external trading partners that combine to deliver customer experiences. Digital enables entirely new business model creation and rapidly connects ecosystem partners.

Survey results shown in Figure 4 demonstrate that the issue of organizations being siloed is reflected in the approach to digitalization. Nearly 45% of respondents declared that they have good digital capabilities within individual functions, but they are still largely siloed and lack an end-to-end, collaborative, decision-making capability. Worse than that, 25% of organizations have just some level of digital capabilities, but they don't have digital standards across their supply chain. The remaining 31% are doing better in regards to digitalization within their company, but the vast majority are still lagging behind with end-to-end supply chain integration outside their four walls.
### 4. Digital Supply Chain Maturity

**Q. How would you best describe your organization’s digital supply chain maturity?**

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predigital Supply Chain</td>
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</tr>
<tr>
<td>Digitalized Supply Chain</td>
<td>44</td>
</tr>
<tr>
<td>Digital Supply Chain</td>
<td>24</td>
</tr>
<tr>
<td>Digital Value Network</td>
<td>5</td>
</tr>
<tr>
<td>Digital Ecosystem</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: SCM World’s Team of Tomorrow 2018 Survey  
% of respondents | n = 483

#### The "Yin and Yang" of Digitalization

As it turns out, digital transformation requires companies to rethink their supply chain organizational structures. CSCOs need to commit to a next-generation supply chain organizational design by combining digitalization and operations capabilities in an integrated, well-orchestrated and synchronized structure.

CSCOs need to break functional silos, create end-to-end processes and connect multiple data lakes. This means, for example, breaking common silos between planning and execution, supply and demand, manufacturing and engineering, logistics and e-commerce.

The approach that makes sense is twofold as follows:

- **New organizational structure** — Design a new supply chain organizational structure that is centralized or center-led, has no siloed functions and is agile, open and collaborative.

- **Digital roadmap** — Create an overall digital roadmap that supports a shift away from launching individual digitalization initiatives in a piecemeal manner from inside functional or regional silos.
5. The "Yin and Yang" of Digitalization

Digitalization and supply chain organizational silos are highly interweaved. Agile organizations, that are not structured in functional or regional silos, are open, collaborative and cross-functional. This is conducive of fast decision making.

Source: SCM World, A Gartner Community (July 2018)

The two approaches are highly interweaved, as one requires the other to be effective. The digital transformation requires organization to be more integrated, while organizations require supporting technology to be able to break silos. In other words, in mid- to long-term horizons, it is impossible to separate digital supply chain transformation from the necessary revision of supply chain organizational structures. The bottom line is that to fully transform, CSCOs shouldn't start a digital journey without a long-term vision that recognizes the need to redesign their supply chain organizations.

Organizational Capabilities for Digitalization

The results of our Team of Tomorrow 2018 Survey, corroborated by a number of interviews with leading supply chain organizations, point to the following six key organizational capabilities, that companies need to put in place, to support successful supply chain digital transformations:

- **Drive** — CSCOs are taking the lead on digitalizing their supply chain. They realize that digitalization is not just a technical project, but the most relevant transformation in supply chain strategies in a long time.

- **Design** — CSCOs cannot drive digitalization by their own, and need to create a team that can test and learn about emerging digital technologies as they apply to supply chain.

- **Organize** — A key findings of this study is that CSCOs are planning to create a more centralized supply chain, breaking down functional and regional silos.

- **Skill** — The necessary approach to functional specialization is calling for cross-functional skills profiles that are able to thrive in an end-to-end supply chain organization.
Technology — The technology approach facilitating centralized, end-to-end organizations passes through a control tower, creating "one-version-of-the-truth" that supports an open and collaborative decision-making environment.

Operate — The way centralized supply chains operate in the digital world is not dissimilar to what happens in social media. Empowered by the real-time information available through the control tower, supply chain leaders will dynamically group in self-forming teams to address events as they are happening.

Over the following chapters, we will discuss each of the six capabilities in more detail.

6. Organizational Capabilities for Digitalization
The six essential capabilities of supply chain organizational structure for digitalization

Drive: CSCO, the driving force for digital supply chain

Design: Center of excellence for digital supply chain

Organize: Centralized supply chain organizations

Skill: End-to-end processes and M-shape skills

Technology: Control towers

Operate: Self-forming teams

Source: SCM World's Globalization Survey
Leading CSCOs view digital as a strategic opportunity to transform their supply chain. They have great expectations about the importance and disruptiveness of a number of technologies in respect to supply chain strategies. Additionally, they are ready to take ownership for the digital transformation of their supply chain.
CSCOs should consider setting up a center of excellence for the digital supply chain that is tasked to create a roadmap and test and learn about needed emerging technologies. The approach should be based on agile methodology.
In his legendary 1955 novel, "On the Road," Jack Kerouac wrote, "Nothing behind me, everything ahead of me, as is ever so on the road." As the novel's protagonist traveled without a clear direction — but with a focus on experimentation and spontaneous creativity — so should today’s companies in their approach to the digital transformation. With technology developing at a stellar pace, everything is ahead of us. It’s clearly a new world — one which requires experimentation and spontaneous creativity.

Many companies are traveling without a clear direction and, to get back on track, they need to experiment with what works and what doesn’t work in their supply chain. They should then use spontaneous creativity to plan for their future supply chain’s direction. This is the roadmap to the digital supply chain.

I recently conducted a digital supply chain roadmap workshop with a large European-based, high-tech organization. Attended by the CSCO and the entire supply chain leadership team, the meeting started with a representative of supply chain strategies sharing a slide summarizing the most relevant, ongoing digital initiatives impacting the supply chain. The slide was impressive, with a long list of initiatives touching each and every corner of the end-to-end supply chain.

However, lack of orchestration and coordination among those initiatives was evident. Some were driven by supply chain, although the majority were from a functional or regional perspective. Many were driven from outside the supply chain — from IT, sales and marketing or other functions that impact the end-to-end supply chain. Above all, the CSCO and each participant in the workshop were aware of only a portion of those initiatives. The CSCO wasn't on the driving seat of, and was overwhelmed by, digitalization. The bottom line was that the company had too many open initiatives that were not tied to an overall roadmap.

**CSCO: The Driving Force for Digital Supply Chain**

The situation discussed earlier is still common among many companies. The picture that emerged from survey results is that the majority of organizations have a siloed approach to supply chain digitalization. One that is driven by the needs of individual functions, rather than by an overall digitalization roadmap for the benefits of the end-to-end supply chain.

However, many organizations have moved on from this siloed approach. Forty percent of respondents see the CSOs driving an end-to-end supply chain digital roadmap, directly or in partnership with the chief digital officer (CDO), the chief information officer (CIO) and the chief technology officer (CTO).
The CSCO plays a central role in supply chain digitalization as only less than 10% of supply chain organizations’ digitalization strategies are driven only by the CIOs, and 5% only by CTOs. Also new emerging job titles (e.g., CDO) appear as having limited roles in driving supply chain digitalization. Besides defining the overall direction for the company’s digitalization strategy, the CDO drives the digital supply chain roadmap without collaboration of the CSCO in only 5% of organizations.

Additionally, by segmenting survey data by levels of supply chain digital maturity, it is evident that the more mature the supply chain digitalization, the more that CSOs are in the driver’s seat. It is in less digitally mature supply chains that the most common approach to technology adoption is by individual functions.
8. The CSCO Is the Driving Force Behind Digital Supply Chain

Q. Who is driving your digital roadmap for supply chain in your organization?

<table>
<thead>
<tr>
<th>N/A</th>
<th>Digital Ecosystem</th>
<th>Digital Value Networks</th>
<th>Digital Supply Chain</th>
<th>Digitalized Supply Chain Functions</th>
<th>Predigital Supply Chain</th>
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<td>26</td>
<td>5</td>
<td>32</td>
<td>38</td>
<td>38</td>
</tr>
</tbody>
</table>

- Individual supply chain functions have their own specific digital roadmaps and implementation strategies
- Chief Supply Chain Officer (CSCO)
- CSCO in partnership with CDO/CIO/CTO
- CDO, CTO, CIO and others
- Too small of a sample for cross-tabulation

Numbers may not total 100 due to rounding.
Source: SCM World’s Team of Tomorrow 2018 Survey  
% of respondents | n = 481

Leading CSCOs view digital as a strategic opportunity to transform their supply chain. They have great expectations about the importance and disruptiveness of a number of technologies in respect to supply chain strategies. Additionally, they are ready to take ownership for the digital transformation of their supply chain.

To support CSCOs taking the lead on supply chain digitalization, we have created the Matrix Framework. The Matrix Framework is emerging as the methodology of choice for CSCOs that are willing to create an overall roadmap to make their end-to-end supply chain digital.
Center of Excellence for Digital Supply Chain

CSCOs cannot create a digital roadmap on their own. They are like the conductor of an orchestra and, as such, they provide vision, strategy and direction. CSCOs need to select the members of the orchestra among senior executives. These senior executives will need to drive the digital transformation efforts day-by-day.

CSCOs should consider setting up a center of excellence (COE) for the digital supply chain. This team may coincide with the supply chain transformation team such as Cisco’s (see Company Spotlight page). Alternatively, it may be an ad hoc COE setup much like Schneider Electric’s (see Company Spotlight page). Regardless of the setup, this team should be separate from the ordinary supply chain team, so that they have the time to create a roadmap, without being caught up in day-by-day issues.

Starbucks, for example, launched a Digital Ventures team, hiring vice presidents from Google, Microsoft and Razorfish to help drive outside thinking. Starbucks’ Digital Ventures is a fully owned, venture-capital-style incubator for digital technology. However, the unit is separate and works autonomously from the company, yet it closely collaborates to drive innovation in the company’s digital strategy.10
By combining the levels of digital maturity, with shares of companies who set up COEs for testing new digital technologies, our survey returns a view of organizations that are more digitally mature because they are leveraging such COEs. Indeed, over 50% of organizations that are digitally mature have set up a COE.

The COE should be tasked to create a digital supply chain roadmap to identify and prioritize investment initiatives across the end-to-end supply chain. Then, they should be tasked with testing and learning about needed emerging technologies.

In today’s fast-paced marketplace there is not time to wait for technology to be deployed traditionally, though extremely long timeframes and the so-called big bang approach. So, the approach of the COE for supply chain innovation should be based on agile methodology.
Team members of this COE need to feel comfortable trying things that might fail. Their mindsets need to be about seeking innovation rather than optimization. To make this happen, CSCOs must empower the team and, through actions, make it clear that they must celebrate learning from failures.

The Harvard Business Review article titled, "Agile at Scale" discusses how agile organizations can manage an incremental and adaptable path to innovation.\(^{11}\) The agile methodology, originally created for software development and based on the "Agile Manifesto," focuses innovation on an incremental, step-by-step approach based on short test and learn cycles.\(^{12}\) Agile breaks the innovation process into one- to four-week "sprints," followed by a team "scrum" meeting. Following each sprint, the project team delivers a working version of the innovation that can be demonstrated to stakeholders.

This is how Elon Musk’s SpaceX mission to Mars is being developed. Musk set the target to begin transporting people to Mars by 2024 and, to eventually, create a self-sustaining Martian city. As of yet, SpaceX engineers don’t exactly know how that will happen, but they have a few ideas in mind, and a vision that it is possible. An agile product development process, based on a test-and-learn approach, is how SpaceX manages innovation.
COMPANY SPOTLIGHT:  
GLOBAL SUPPLY CHAIN CENTER OF DIGITAL INNOVATION (CODI)—INDUSTRIALIZED INNOVATION

Rapid developments in technology are outpacing the capability of most traditional businesses to understand, assimilate and harness the digital transformation in a meaningful way. In the last several years, emergence of trends including IoT, cognitive computing, crowdsourcing, the sharing economy and augmented and virtual reality have created an environment of incredible opportunity.

While historically, Schneider Electric has had a very strong culture of innovation and technical aptitude, the Global Supply Chain (GSC) organization needed a multidisciplinary, centralized function. This function needed to be innovative, have the ability to incubate new ideas and bring cutting-edge technologies to the team quickly, to enable the company to improve and grow.

CODI was created in mid-2016 and is one of the centerpieces of Schneider Electric’s bimodal approach to driving supply chain innovation. This new approach allows for small, focused teams to address projects with a minimal amount of bureaucracy, thereby accelerating the company’s ability to find new areas of innovation more quickly.

Center of Excellence for Supply Chain Innovation

CODI facilitates open and transparent collaboration among an innovation network of suppliers, channel partners, educational institutions, industry coalitions and customers, creating opportunities to improve supply chain challenges. By adopting this approach both Schneider Electric and their customers can benefit from the developments that occur by leveraging advanced technologies.

Development of the team that supports CODI brings together experts in IT technology from information, process and organization (IPO), as well as professionals from business units with very diverse backgrounds. This approach assures that while the latest technologies and ideas are vetted, there is an eye toward scaling up and increasing adoption within the business of any pilot that demonstrate business value.

The company also launched an extension program to involve high-potential employees called CODix. This expanded team is involved in the development, evaluation and execution of proof of concept (POC) programs across the entire supply chain as a way of furthering the development of the overall culture of innovation at every level.

In 2017, the CODI identified 111 new opportunities, tested and evaluated 45 and ran rapid POCs on 25 projects.
Industrialization of the Innovation process by applying a governance structure was a critical step. The company developed an automated method to collect process inputs like customer net promoter score (NPS) feedback data, organizational strategy, employee feedback and KPI and/or performance gaps. This data feeds a prioritization process which ranks and evaluates potential areas of focus for pilot activities. Schneider Electric then evaluates the weighted options with a Monte Carlo assessment to determine the optimal portfolio of programs to run at a given point in time, based on suitability and available resources.

Two executive steering committees are in place to guide progress — one to oversee general operations and one to vet projects for wide adoption after POC. Execution of individual pilots and projects take place on an accelerated schedule — typically 90 days from inception to POC delivery. This rapid turnaround allows the company to demonstrate unique value to customers as well as business stakeholders, at a very fast pace. It also enables the company to try more things, more often and increase overall CODI function throughput.

**Blockchain, Artificial Intelligence and the IoT**

After being established in mid-2016, CODI is already seeing the first few ideas graduating from the incubator and moving on to the industrialization function to be deployed broadly across the GSC network.

An example of a new technology that has been developed within CODI is the LiveShip program, a globally capable, real-time geolocation and tracking technology, designed to prevent customer dissatisfaction in shipping. LiveShip allows Schneider Electric to prevent damaged products from ever reaching customers.

LiveShip is a combination of several technologies:

- Internet of Things (IoT) connected sensors, which capture temperature, vibration, shock, infrared and humidity measurements
- Global Positioning System (GPS), which uses multiple positioning technologies to improve geolocation accuracy
- IBM’s Watson Artificial Intelligence (AI) for automated prediction and detection of damage in transit
- Blockchain for communication of exception events to third-party logistics providers and internal parties

Feedback from one customer has been overwhelmingly positive, to the extent that they are willing to pay a premium to have this technology embedded in everything they order from Schneider Electric. Another customer informed, that the elimination of damaged materials in transit to them, is a key differentiator when compared to other manufacturers that are not able to deliver this capability.
Making a Supply Chain of One

Digitalization is accelerating the shift toward centrally coordinated supply chains. It helps companies find the right balance among global efficiency and local customer attention. The power of digital can transform elongated physical supply chains into digitally short supply chains.
As supply chains are getting more and more centralized, they don't have to miss the opportunity to maintain a local touch by establishing a control tower and unleashing self-forming teams.
An interesting article from McKinsey explains the issue of siloed organizations through the familiar story of the blind men and the elephant. In this ancient Indian parable, a group of blind men, who have never come across an elephant before, are learning what the elephant is like by touching it. Each blind man can feel just one different part of the elephant body, and their descriptions on what an elephant actually is, are completely different.

Much like the blind men and the elephant, with regards to supply chain, "when employees lack insight into the broader context in which a business competes, they are less likely to recognize the threat of disruption and to know when the rest of the organization should be alerted. They can only interpret what they encounter through the lens of their own narrow area of endeavor."13

**Unity Is Strength**

At the beginning of this report, we discussed about centralized versus decentralized supply chain organizations. Additionally, we concluded that today, the majority of companies are heading to a centralized approach for most of the supply chain functions. How is digitalization influencing this path toward centralization?

Survey results shows that centralized functions are more common among more digitally mature organizations — those with either a digital supply chain, digital value networks or digital ecosystems maturity level. While digitally immature companies — those with either a predigital supply chain or a digitalized supply chain maturity level — tend to rely on decentralized functions more frequently.

The bottom line is that digitalization is accelerating the shift toward centrally coordinated supply chains. This highlights the role of digital technologies in enabling centralized organizations to work effectively, despite being physically far from local markets.

As companies are maturing along their digitalization journey, they will progressively learn how to leverage central data to scale. Simultaneously, they will also get really good at identifying where to be different, while adding value to local customers and be more agile to demand.

Therefore, digitalization helps companies find the right balance between global efficiency and local customer attention. Digital can transform physically elongated supply chains into digitally short supply chains. It’s the power of data to create global scale and local agility, through remote monitoring and real-time awareness.
10. Digital Supports More Centralization of Supply Chain Functions

Q. Which of the following organizational structures most accurately describes your core supply chain functions today?

**Digital Immature**

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<th>Centralized</th>
<th>Center-Led</th>
<th>Distributed Matrix</th>
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**Digital Mature**

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Numbers may not total 100 due to rounding.

Source: SCM World’s Team of Tomorrow 2018 Survey

% of respondents | n = 499
End-to-End Processes and M-Shaped Skills

In traditionally organized companies, every employee is required to be great at just one thing. In these organizations, roles like product design, sales and manufacturing all need depth of functional expertise — often referred as "I-shaped" people, to resemble functional organizational structure.

11. I-Shape, T-Shape and M-Shape Functional Specialisms

Q. Which of the following best describes your organization’s approach to functional specialism and development today and in five years?

As companies are working hard to break silos, they require multidisciplinary people who possess a depth of cross-functional expertise in multiple areas — or "T-shaped" people.

Finally, when the skill set is extended to depth of functional expertise across multiple areas, people become "M-shaped," meaning they thrive as members in a high-performance, cross-functional team. They are the "connective tissue" between functional specialists, and can be the leaders able to make a centralized, end-to-end organization work as clockwork.

In our Team of Tomorrow 2018 Survey, we investigated what is supply chain organizational approach to functional specialism, today, and in five years from now. We specifically defined the three functional specialism approaches as follows:
• **I-Shape** — Functional specialists focus purely on their own functional disciplinary skills

• **T-Shape** — Functional specialists are given a wider understanding of related functional processes

• **M-Shape** — Functional specialists are developed to have a multiskilled profile, with a deep understanding of the end-to-end supply chain process

**12. M-Shape Organizations Call for End-to-End Processes**

Q. Which of the following best describes your organization’s approach to functional specialism and development today and in five years?

The most common approach today, is still traditional, with most companies split among those who have mainly an I-shaped functional specialism approach and those that have mainly a T-shaped functional specialism approach. Less than 10% of organizations can say that their approach to functional specialism is reflected in M-shaped employees.

The ambition in five years from now is to drastically steer direction and quickly move toward an M-shaped functional specialism approach. With this being said, it seems quite ambitious to drive such a significant change among supply chain employees, especially those organizations that need to move from being I-shaped today, to M-shaped in just five years from now.
Survey evidence also shows a correlation among functional specialism and higher levels of digital maturity. The higher the digital maturity is, the higher the share of companies embracing M-shaped skill sets is. In five years from now nearly 90% of the more digitally mature organizations will have adopted an M-shaped functional specialism approach as compared to just over 60% of predigital supply chain organizations.

It is, therefore, crucial for enterprises that are moving along their digitalization journey to sustain this functional specialism process change, moving supply chain employees’ talent development from I- to T- to M-shaped skill sets. Within this group of workers, aim to inspire confidence to explore the new depths of functional expertise, and build a work environment that strongly supports M-shaped workers who represent the future of your supply chain and company success.

**Control Tower**

As companies are getting more and more centralized, they don’t have to miss the opportunity to maintain a local touch. Digital is coming in to help. One approach for facilitating the shift toward an end-to-end supply chain is setting up control towers that sit atop existing organizations, processes and data.

A control tower is a decision-making environment, supporting the entire supply chain based on common dashboards, KPIs and performance metrics. This capability is still largely missing because most companies don’t have the abilities to correlate, analyze and find insights across end-to-end supply chain data for many reasons. These reasons range from data siloed in a number of different reporting tools and systems, to lack of proper digital technology to find insights in large pools of data.

Creating control towers — for both planning and execution, globally or regionally — is the most common priority in the digital roadmap of nearly 300 survey respondents. As discussed in SCM World’s report "Jumpstarting Your Digital Roadmap: Benchmark Your Digital Supply Chain Maturity," this refers to creating a “sense and response” capability to harness the power of all data available along the end-to-end supply chain.\(^{14}\)
Self-Forming Teams

Just as with social media, the availability of real-time, end-to-end supply chain information — delivered through the control tower to everyone in the organization and the supply chain — can enable self-forming teams to spot and manage events as they happen.

The notion of self-forming teams is fascinating, yet very difficult to achieve through traditional supply chain organizational silos. Different metrics, processes, reporting lines and datasets hamper the ability for self-forming teams to happen. To support self-forming teams, CSCOs should shift organizations from siloed to end-to-end, reducing hierarchies and chain of command and creating control towers.

However, it is not only a matter of organizational structure. The bigger stumbling block to self-forming teams is rather a mindset and culture of silos. CSCOs should empower supply chain leaders at any level of the organization to take action and make decisions, they should foster a culture of innovation where everyone feels comfortable at taking risks and should celebrate learning from failure.
COMPANY SPOTLIGHT:
SANOFI’S DIGITAL SUPPLY CHAIN TRANSFORMATION STRATEGY

In 2017, Sanofi, the world’s fifth-largest pharmaceutical company by prescription sales, started a four-year transformation program called Global Supply Chain 2020. The aim of the program is to improve supply chain performance and enable growth. The program is articulated in the following five key areas of transformation:

- **Integrated Business Planning** to extend the current S&OP process from balancing supply and demand volumes, to optimizing value creation in terms of revenue and margin growth, customer satisfaction and cash optimization.

- **Patient- and Customer-Driven Supply Chain** to improve "on-time-in-full" delivery and achieve perfect orders by implementing segmentation strategies and control towers for service, cost and cash optimization.

- **Tailored Supply Solutions** to be able to execute customized "last-mile" requests, including e-commerce, direct-to-patient and direct-to-pharmacy capabilities.

- **Digital Transformation** to leverage breakthrough digital technologies and optimize the supply chain process and organizational structure.

- **World-Class Supply Chain Teams** to create talent development programs and accelerate functional capabilities across the end-to-end supply chain.

The company is well on its way in this transformation program, with 2017 mostly spent to set up the program, design new processes, align strategies across the end-to-end supply chain and establish a COE. During 2018, the company is launching operational projects and rolling-out solutions throughout the business. The plan is for a program completion by 2020.

**Digitalizing the End-to-End Supply Chain**

Core to the Global Supply Chain 2020 program is the Digital Transformation initiative, called SC-CORE. Its objective is to leverage digitalization to drive end-to-end supply chain visibility, enable tighter integration of the end-to-end supply chain and support higher levels of agility. With this initiative, Sanofi is expecting to transform supply chain capabilities to improve performance across all global business units and markets. To deliver supply chain excellence, they are working on setting up new and improved processes, standardizing technology platforms across the organization and testing and learning about emerging digital capabilities. Sanofi set the following three directions for the digital transformation initiative:
• **Digital Value Networks** — Leverage breakthrough digital solutions to transform and integrate the supply chain end-to-end from patients and customers back to suppliers.

• **Digital Business Intelligence** — Leverage advanced analytics and data science to find business insights and enable faster decision making.

• **Digital Organization** — Drive organization transformations via new digital capabilities.

**Supply Chain Organizational Structure**

The digital transformation initiative also required innovation in Sanofi’s supply chain organizational design, leading to a centralized, end-to-end supply chain structure. As part of the new structure, both global business units’ (GBUs’) supply chains and regional supply chains directly report into the global head of supply chain. To coordinate and integrate these two sets of supply chains, the global head of supply chain has also created three COEs as follows:

• Planning COE aimed at defining the company’s end-to-end supply chain planning strategy, including leading the integrated business planning initiative and fostering the adoption of advanced analytics and data science.

• Customer Care & Order-to-Cash (OTC) COE aimed at defining the customer and channel collaboration strategy, including leading innovation on e-commerce, direct-to-patient and direct-to-pharmacy strategies.

• Logistics COE aimed at defining distribution and network design strategies that meet the needs of direct-to-patient and direct-to-pharmacy strategies, as well as sustainability strategies.

These COEs serve the supply chain globally. They are virtual centers concentrating expertise and resources to build and sustain world-class performance capabilities. The role and mission of the COEs can be summarized as follows:

• **Strategy** — COEs take care of supply chain strategy including measuring competitive benchmarking, sharing best practices across the organizations and delivering strategic transformation projects.

• **Innovation** — COEs act as the center of technology innovation by testing and learning a number of emerging digital capabilities such as advanced analytics, data science and supply chain IT applications.

• **Continuous Improvement** — COEs define, adapt and standardize core work processes and supporting tools and systems. They define performance metrics, dashboards and targets, and establish flow design and network excellence.

• **Talent Development** — COEs develop common role descriptions and skills matrices. They create functional talent development programs to accelerate functional capability by setting up training and establishing peer networks.
Conclusion & Recommendations

Supply chains in most of today’s organizations are made of a series of largely discrete, siloed steps taken through marketing, product development, manufacturing, distribution and customer fulfillment. Digitization brings the opportunity of breaking down those silos, as long as organizations understand that digitalization is not a technology project. Instead, digitalization is the most relevant transformation of supply chain strategies and structures in a long time.

CSCOs need to consider transforming their supply chain organizational structure to support digitalization and achieve enterprisewide benefits. Supply chain organizational design is a comprehensive and holistic approach to supply chain improvement that touches all aspects of supply chain.

CSCOs should be following these recommendations:

- **Centralized supply chain structure for global scale and local agility** — Very often CSCOs struggle with developing the “right” supply chain organizational design that fits the purpose of today’s fast-paced and increasingly digital marketplace. CSCOs should create a more centralized supply chain that leverages standard practices and KPIs to benefit from efficiency. Combined with extensive digitalization, this creates end-to-end supply chain visibility that enables self-forming teams to address any issues by making informed decisions with a local touch.

- **End-to-end processes connecting suppliers down to customers** — In a centralized supply chain organization, processes are the backbone of supply chain operations. Driven by customer excellence, CSCOs should design end-to-end processes that cut through the centralized organizations and connect suppliers down to customers. To make this happen, CSCOs need to break functional, regional and business unit silos and, instead, create global COEs that control and orchestrate end-to-end processes. One key COE that CSCOs must create is the one that would drive the digital roadmap — composed of a team that follows the agile methodology and is tasked to test and learn all the necessary emerging technologies.
• **Control towers to supports orchestration of the end-to-end supply chain** — At the base of a successful supply chain is data. Companies are sitting on piles of data, but they struggle to transform data into insights because they lack an end-to-end supply chain data strategy. The digital roadmap should encompass a data strategy and with that laid out, CSCOs can create a control tower that supports orchestration of the end-to-end supply chain. The control tower should be accessible by anyone in the organizations and should support self-forming teams to make informed decisions.

• **Digitalization to drive transformation of supply chain structures** — The digital transformation is not only about new technology adoption. It's about embracing change across several aspects of supply chain. Among the technologies that can better integrate supply chain organizations, CSCOS should consider cloud, the Internet of Things and Blockchain to support the ability to gather, store and trace real-time data from across the end-to-end supply chain. Additionally, CSCOs should consider big data analytics and machine learning to find often-unspotted insights. Finally, CSCOs should also consider collaborative robotics, 3D printers and drones to take automation to the next level of agility.

• **Dynamically created, self-forming teams with cross-functional skill sets** — Within a centralized organization, where silos have been broken down and hierarchies reduced to the essential, people — with their skills — are the driving force. CSCOs need to make sure that they invest in their people, by expanding cross-functional skill sets and by moving their talent from an I- to a T- to an M-shaped skill set. The success of centralized organizations is based on dynamically created, self-forming teams. CSCOs should empower supply chain leaders, at any level of the organization, to take action and make decisions. CSCOs should foster a culture of innovation where everyone feels comfortable at taking risks and should celebrate learning from failure.
About the Research

In May 2018, SCM World sent invitations to complete an online survey to its members, and to a wider group of practitioners in supply chain and other functions globally. We received 503 completed responses during the survey period.

Key demographics are as follows (all figures represent percentage of respondents):

### Industry Sector

- **Food & Beverage**: 14
- **Industrial**: 11
- **CPG**: 11
- **Hi-Tech**: 10
- **Chemicals**: 8
- **Retail**: 7
- **Healthcare & Pharma**: 7
- **Utilities & Energy**: 7
- **Logistics & Distribution**: 4
- **Agriculture & Mining**: 4
- **Automotive**: 3
- **Media & Telco**: 2
- **Construction & Engineering**: 2
- **Medical Equipment & Devices**: 2
- **Fabric & Apparel**: 2
- **Others**: 6

### Job Function

- **Supply Chain**: 50
- **Purchasing/Procurement**: 12
- **Logistics/Transport & Distribution**: 9
- **Operations**: 8
- **General Management**: 4
- **Manufacturing/Production**: 3
- **IT/IS/Technology**: 3
- **Engineering**: 3
- **Other**: 5

### Job Level

- **SVP/EVP/Board Level**: 9%
- **VP/Director**: 40%
- **Manager/Head**: 39%
- **Other**: 12%

### Company Size

- **Less than $1bn**: 14%
- **$1bn-$5bn**: 16%
- **$5bn-$10bn**: 12%
- **$10bn-$25bn**: 5%
- **$25bn plus**: 33%

### Location

- **Europe, Middle East & Africa**: 44%
- **Asia & Australia**: 15%
- **Rest of the World**: 1%
- **North & South America**: 40%

Source: SCM World, A Gartner Community (July 2018)
References


About SCM World

SCM World is a cross-industry learning community of the world’s most influential supply chain practitioners. Owned and managed by Gartner, the community exists to advance the profession of supply chain management.

As a community of leading practitioners we work with global chief supply chain officers (CSCOs) and their teams to provide them with a highly valuable, external perspective on supply chain. This is achieved through a combination of exclusive peer connections, practitioner-driven content and predictive research. Members of our community include Unilever, Amazon, Nike, Caterpillar, Cisco, Chevron, Dell, Nestlé and General Mills.

Subscribers to our Gartner for Global CSCOs platform gain access to the community’s forward-thinking research, which highlights ways to drive supply chain innovation. The SCM World agenda is set by its advisory board, made up of the world’s most respected supply chain experts and representatives of leading business schools.

The SCM World community strongly believes in supply chain’s increasing role in creating competitive advantage and shareholder value for business, as well as its impact on critical world issues such as the distribution of food, delivery of healthcare and environmental sustainability.