



The Missing Link

Supply Chain and Digital Maturity



Digital Technologies Offer a Shot in the Arm for Traditional Supply Chains

Kimberly-Clark Corp., the US-based personal and healthcare products group, built a demand-driven supply chain using data analytics to gain better visibility into real-time demand trends. This enabled the company to make and store only the required amount of inventory needed to replace what consumers actually purchased, instead of manufacturing based on forecasts from historical data. Kimberly-Clark utilized point-of-sales (POS) data from retailers such as Wal-Mart to generate forecasts that trigger shipments to stores and guide internal deployment decisions and tactical planning. It also helped the company to create a new metric for tracking forecast error. This metric, defined as the absolute difference between shipments and forecast, and reported as a percentage of shipments, effectively tracked stock-keeping units and shipping locations.

Evaluating daily forecast using this metric, Kimberly-Clark has seen a reduction in forecast errors of as much as 35% for a one-week planning horizon and 20% for a two-week horizon. Reduction in forecast errors translated into one to three days less safety stock. More accurate forecasts and the corresponding reductions in safety stock have helped Kimberly-Clark reduce its finished-goods inventory by 19% in the last 18 months¹. This is only one instance of digital technologies coming to the fore in transforming supply chain operations.

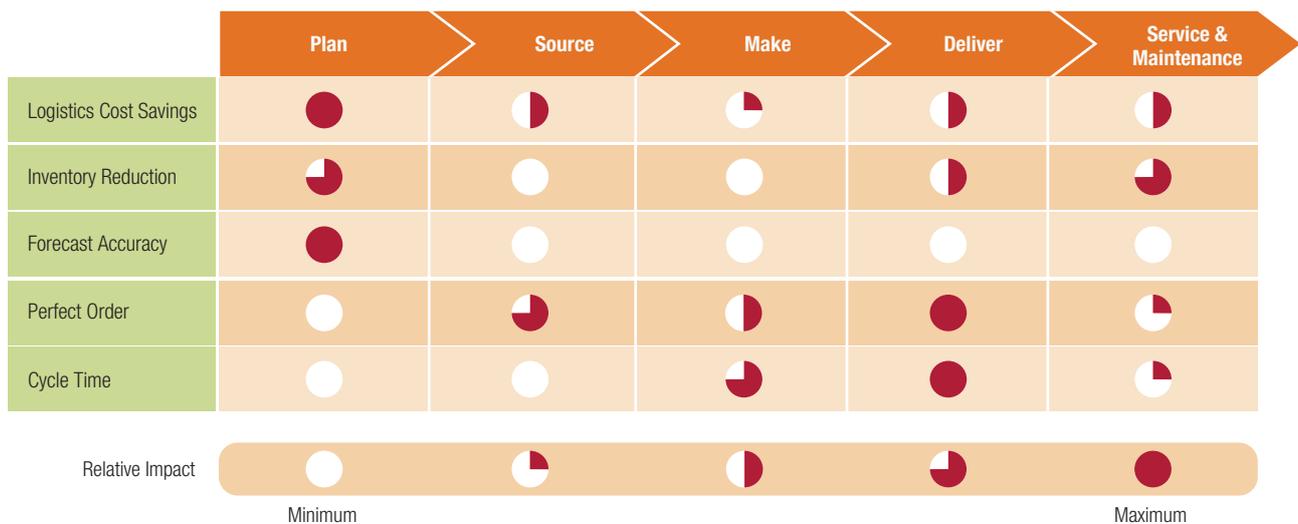
Digital technologies have been rapidly making their way across organizational functions. Customer-facing functions have been among the early adopters of digital technologies. These technologies also hold several benefits to back-end operations in general, and supply chain operations in particular.

So, what does a digital supply chain offer?

A digital supply chain enables the integration of supply chain tasks and collaboration across functions and partners. It provides a single real-time view of supply chain processes, improves operational performance and enables better cost management (see Figure 1).

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A demand-driven supply chain helped Kimberly-Clark reduce its finished-goods inventory by 19% in 18 months.
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Figure 1: Key Impacts of Digital Technologies Across Various Supply Chain Processes



Source: Capgemini Consulting Analysis

Digital Technologies Enable Effective Internal and External Collaboration

A digital supply chain offers a number of advantages. Digital technologies enable effective collaboration. This allows channel partners – which may be suppliers, intermediaries, third-party service providers, or customers – to share information on a real-time basis with the organization. Proactive supplier collaboration and raw material flow visibility improve order quality and have the potential to reduce costs in sourcing. For instance, cosmetics company L'Oréal is rolling out a cloud-based collaboration tool for all its suppliers. The aim is to have faster sharing of information².

Similarly, consider the case of Zara. Inditex-owned Zara's 'fast-fashion' business model is supported by its unique buyer-driven supply-chain capabilities³. The company follows a pull model in its inventory and supply chain management. Designers and the commercial team at the company's headquarters monitor real-time information of customer spending in the store to create new designs and price points. Standardization of product information enables Zara to quickly and accurately prepare computer-aided designs, with clear manufacturing instructions. The cut pieces are tracked with the help of bar codes as they flow further down the supply chain. Zara also leverages the close proximity of production to the central distribution facility, which reduces supply chain risk and lead-time. Its distribution facility functions with minimal manual operations as optical readers sort out and distribute more than 60,000 items of clothing every hour. The complete control over its value chain helps the company to design, produce and deliver new apparel to stores in around 14 days, where other industry players typically spend about nine months. Zara also produces smaller batches of products, which leads to higher short-term forecast accuracy and lower inventory cost and rate of obsolescence. Unsold items at Zara account for 10%

of stock, as compared to the industry average of 17% to 20%, lowering the sale mark-downs and contributing to higher profit margins. This is a direct result of the close collaboration that it has with its suppliers.

Digital tools also allow for more effective internal collaboration by enabling various functions such as Purchasing, Storage, Demand Forecasting, Sales and Customer service to come together on a common platform and streamline processes. Digitized internal and external collaboration improves forecast accuracy and thus cuts overall inventory levels.

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Strong digital collaboration within its supply chain enables Zara to deliver new apparel to stores in 14 days compared to nine months for other industry players.
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Digital Technologies Ensure Data Consistency

Consistency of data is a matter of significant concern for most supply chain organizations – an issue that digital technologies can help resolve⁴. One key approach to achieve this is through Master Data Management (MDM). MDM represents a set of processes, standards and tools used for defining and managing master data. Deploying an MDM solution has a positive impact on order quality, order cycle times and production costs. For instance, Qualcomm faced challenges in improving decision making, enhancing operational efficiency and reducing time-to-market for new technology. Post the deployment of an MDM solution, Qualcomm was able to shorten development time by up to 95%.

It also boosted performance through a single integration metadata catalog⁵.

Technologies Such as Big Data Analytics Have the Potential to Transform Entire Operations

The use of advanced digital technologies such as big data analytics offers significant potential for overall operations. This is particularly true when organizations embrace them fully rather than embarking on piecemeal deployment. UPS, a global logistics company, has been an early adopter of analytics solutions to streamline the daily deliveries of about 16 million packages. The company is rolling out a route optimization system, ORION (On-Road Integrated Optimization and Navigation), to derive insights and drive efficiency in its delivery operations. In the last four years, ORION has been rolled out to around 50 UPS sites and it will be rolled out throughout the organization in the next five years⁶. So far UPS has saved about 85 million driven miles per year, which equates to 8.5 million gallons of fuel saved. The onboard sensors installed on UPS trucks help calculate when the truck should be turned on and off during the delivery process, reducing 1.6 million hours of truck idling time⁷. Similarly, by running advanced analytics solutions, UPS's process management team is now able to anticipate when a given part is about to fail, helping in preventive vehicle maintenance.

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Advanced analytics technologies helped UPS save about 85 million miles per year.
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Supply Chains in Most Organizations Lack Digital Maturity

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One out of every two companies is under immense pressure to digitally transform its supply chain.
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With all these benefits, and clear examples of best practices, do we see more companies transforming their supply chains to better leverage digital technologies? We conducted a global survey with 130 companies to answer this very question⁸.

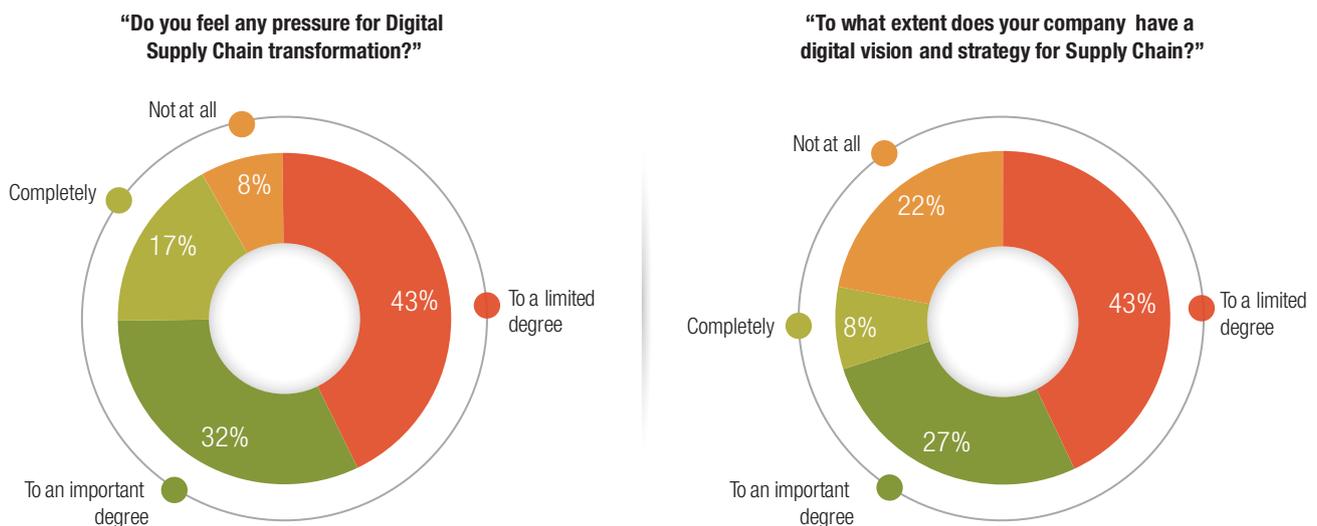
Supply Chain Organizations Realize the Importance of Digital But Don't Take Much Action

Our study revealed that about half of the companies (49%) are experiencing immense pressure to digitally transform their supply chains. However, the bigger challenge is that over 65% of the companies have not started or have only partly framed a digital vision and strategy for their supply chain (see Figure 2). In essence, despite feeling the pressure for transformation, many supply chain leaders have not taken much action.

Most Digital Supply Chain Initiatives are Only Standalone Tools

Our survey also revealed that many initiatives that organizations believe are in support of a digital supply chain strategy are actually standalone tool implementations. For instance, some 63% of respondents had one or more projects planned to support the implementation of a digital supply chain strategy. However, most of the projects mentioned were direct implementations of standalone digital tools and not holistic solutions. These include tools such as Advanced Planning and Scheduling Systems, Warehouse Management Systems, and Transportation Management Systems, among others. This was opposed to more holistic solutions around master data management, network optimization or order orchestration.

Figure 2: Supply Chain Organizations and Their Inaction on Digital



Source: Capgemini Consulting Analysis

Intel and the Digitization of its Supply Chain

Intel has digitized multiple aspects of supply chain management, such as demand forecasting, production planning, order fulfillment, warehousing, and logistics. Instead of relying entirely on forecasting demand, Intel is deploying systems that are sensitive to consumption and replenishment signals. It achieved a 32% reduction in inventory and 50% faster order-to-delivery time through automation and use of vendor-managed inventory hubs. 'eCustoms', Intel's Web-based invoicing system, enables suppliers to bill electronically and has helped reduce invoicing issues by 75%. The company benefited with 300% faster response to customers' orders and change requests through an integrated ERP system and the automation of various steps in the order management and planning business process.

Source: Gartner, "Intel Takes Its Supply Chain to the Next Level", April 2012; Intel IT Whitepaper, "Transforming Intel's Supply Chain to Meet Market Challenges", January 2012

Most Supply Chain Organizations Show Low Digital Maturity

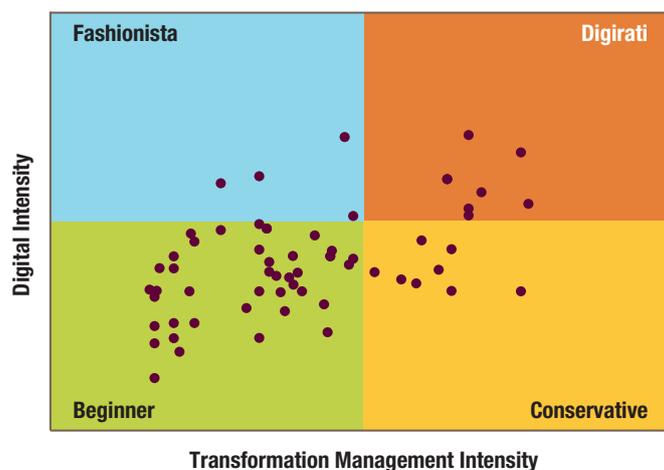
Digital transformation in many organizations has been concentrated around sales and marketing functions with a focus on building an enhanced customer experience. As a result, internal operations have been neglected. Recent research we conducted with the MIT Sloan Management Review revealed that 15% of companies globally are 'Digirati'⁹ or digital leaders while 65% are 'Beginners'¹⁰ in their digital transformation¹¹. However, results from the survey we conducted with supply chain professionals indicates that the performance of supply chain organizations lags even more. We found that only 11% of companies can claim to be a 'Digirati' and an overwhelming 69% were 'Beginners' when it came to digital maturity of their supply chain (see Figure 3).

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Over 65% of the companies have not started or have only partly framed a digital vision and strategy for supply chain.

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Figure 3: Digital Supply Chain Maturity Matrix



Digital intensity measures how advanced digital initiatives are within the supply chain organization

Transformation management intensity measures senior executives' capability to drive change throughout the organization. This includes creating and communicating a clear vision, establishing governance mechanisms, facilitating cross-silo coordination, and building a digital-ready culture.

Source: Capgemini Consulting Digital Supply Chain Survey.

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57% of companies agreed that they had a competency gap in carrying out a digital supply chain transformation.

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Lack of People Capabilities is a Key Factor in the Low Digital Maturity of Supply Chain Organizations

A significant 57% of companies in our survey acknowledged a competency gap in the people they have who can support a digital supply chain transformation (see Figure 4). Most companies agreed on the need for having people that have an understanding of the end-to-end scope, have a strong focus on the emerging digital customer, and strong analytical capacities.

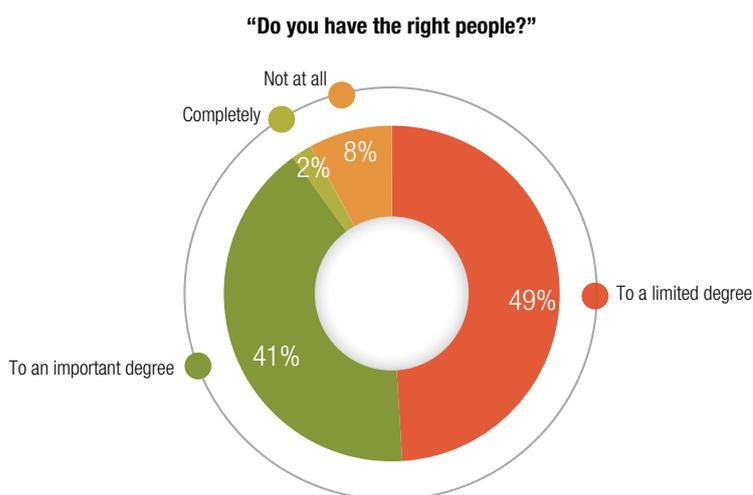
There is Poor Alignment between Technical and Supply Chain Teams

We also found that only 40% of the companies think that their technical teams and supply chains are sufficiently aligned

– in terms of vision, priorities, and actual fulfillment of business needs. This can be traced to the lack of an overall digital vision and strategy for the supply chain. Moreover, the continued focus on ad-hoc digital tool implementations – as opposed to supply chain-wide transformation using analytics or order orchestration – is also to blame for the poor alignment and subsequent low digital maturity.

The state of digital maturity in supply chain organizations is a matter of concern for organizations that are readying themselves to transform at an organizational level. In the next and concluding section, we propose some actions that organizations should take in order to drive the digital maturity of their supply chain.

Figure 4: Supply Chain Organizations Need More Digital Talent



Source: Capgemini Consulting Digital Supply Chain Survey.

Macy's Implemented RFID to Assist its Direct-to-Consumer Fulfillment Program

Macy's Inc., a leading US-based department store chain, integrated its physical stores more closely with its e-commerce operations in order to transform itself into an "omni-channel" enterprise. Macy's Logistics and Operations unit centrally manages the efficient and timely flow of goods to the stores, bulk merchandise to customer's homes, and fulfillment of Internet catalog orders. Faced by direct-to-consumer fulfillment challenges, the company equipped its stores to fulfill online orders both from inventory at warehouses and from stores. Currently, 292 of Macy's 844 stores are set up to fulfill orders for online purchases, up from 23 stores in 2012. The company aims to include 500 stores by end of 2013 to offer faster delivery, even same-day delivery of online orders. The retailer is also applying item-level RFID chips at source to better track and manage inventory and expand its direct-to-consumer fulfillment capabilities. This helped Macy's to conduct inventory audits 20 times faster than manual methods, with over 95% accuracy rates. By the end of 2013, 90% of Macy's inventory will be visible to sales associates on hand-held devices, which will help in assisting customers to find and deliver the right product anywhere from the company's network of stores.

Source: Internet Retailer, "Online sales surge 41% in 2012 for Macy's", February 2013; Retail Info Systems News, "Macy's Takes the Lead in Tech-Enhanced Shopping", May 2012; Retail Info Systems News, "Macy's Omni-channel Strategy on the Move", May 2012; Retailwire, "Omni-Channel at Macy's: It's About Inventory Too", April 2013

Rio Tinto Implemented Cloud-Based Solution for Sourcing, Supplier and Tender Management

Rio Tinto, a leading global mining and metals company, operates complex supply chain operations with over \$19 billion in spend across 200 locations and 40,000 suppliers. Managing large volume of data from a wide range of systems and sources and generating real-time information presents a significant challenge for the company in effective decision-making related to procurement and logistics. Rio Tinto has, among other projects, implemented cloud-based solutions to support sourcing, supplier management and the tender process. In a year of deploying upstream sourcing solutions across 700 users in 49 locations, Rio Tinto has run 4,900 sourcing projects resulting in \$475 million in savings. The company also uses an internal social networking platform and has seen greater use of bar-coding technology for its supply chain operations. Rio Tinto also developed 'Suppliers Centers' to educate supply partners about new processes and technology tools. The company intends to leverage greater involvement and engagement of its suppliers through initiatives such as master data management to drive further automation and efficiency in supply chain. Rio Tinto is now focusing on adopting technologies such as electronic data interchange (EDI), paperless processing, electronic invoice presentment and payment, and mobile applications to streamline the process and eliminate paper-based tasks.

Source: Presentation by Rio Tinto's Head of Procurement, "Global Procurement Transformation in the 'cloud'", April 2011; The Sydney Morning Herald, "Big companies count on technology for supply chain future", October 2012

How Can Organizations Scale-Up the Digital Maturity of their Supply Chain?

Digitization has affected all aspects of the supply chain through the integration of supply chain management systems, distributed order orchestration, and other technologies such as collaborative platforms, data analytics, RFID and GPS sensors. As we have seen from the results of our survey, supply chain organizations are not leveraging the full benefits that digital technologies have to offer. So, what areas should they focus on? In our opinion, organizations need to consider five dimensions to successfully implement a digital supply chain transformation (see Figure 5).

Organizations need to create a **clear digital supply chain strategy**. A key element in defining this strategy is a comprehensive analysis phase. This phase will highlight the value creation potential in the existing supply chain. Typical outcomes of such an analysis are the identification of instances of broken processes and the amount of visibility on customer/product profitability. A synthesis of these findings will lead directly to the design principles and value potential of a digital operating model.

The next step is to arrive at a **supply chain operating and governance model**. A digital operating model supports a

more flexible organizational design as it means information is no longer location dependent. In order to arrive at such a flexible organizational design, companies must take a closer look into internal alignment committees and procedures, service level agreements, and transfer pricing schemes. Once these artificial barriers are done away with, companies will start realizing the benefits. For instance, demand forecasting and supply network planning require the integration of information and processes across functions and regional units. If this is systematically done, it unlocks the hidden synergies in manufacturing and logistics networks alike.

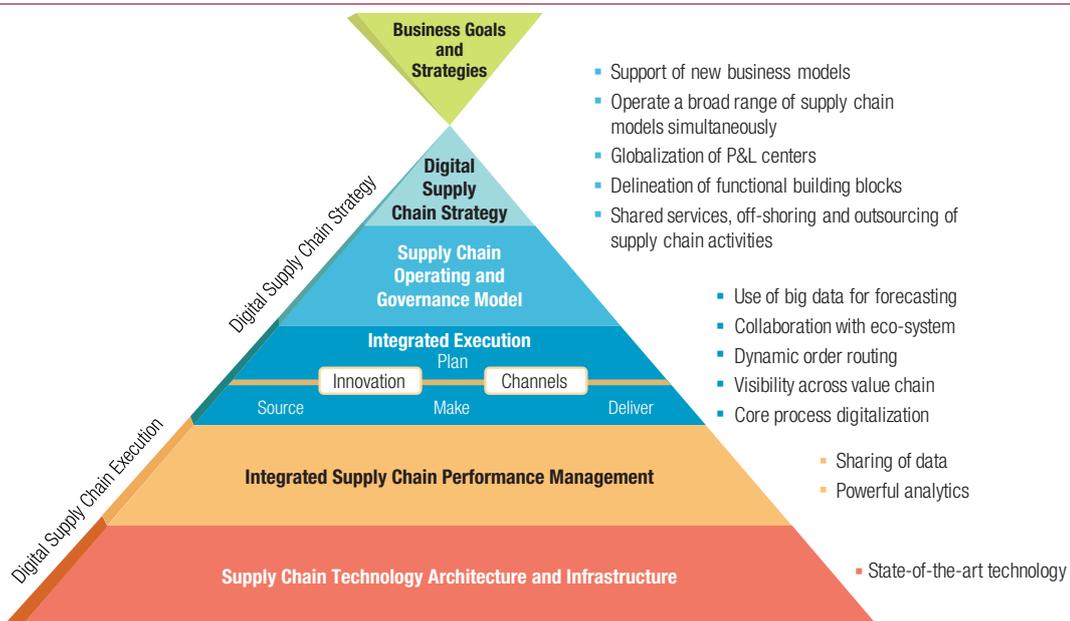
Integrated execution, where different supply chain functions are integrated, plays a key role in enabling access to the right information to all employees to enable straight-through processing. It is important to integrate the different supply chain functions such as product development, procurement, production, maintenance, and logistics across locations in order to minimize “waste” or non-value added activities. These include double entry of data, the reconciliation of information from different sources or the correction of customer invoices.

An integrated **performance management system** helps leaders in better decision making. Using digital technologies, every order or transaction can be traced in a digital operating model. Tagging technologies such as barcodes or RFID provide real-time data feeds for physical movements. Virtualized data centers make available information that was concealed, until now, by processing and storing data for multi-function and multi-location supply chains. Combining this operational data with financial information, along with data from external sources such as market data or benchmark information, will help in better decision-making compared to the reporting techniques often used today.

And finally, though many technology requirements may already be in place, the challenge is to select and implement **technologies that employ reusable and exchangeable components** with minimal investment in time and effort.

Digital technologies bring multiple benefits and opportunities to supply chain organizations. As more functions across the organization embrace digital technologies, it is up to the supply chain leaders to ensure they are not the missing links in their organization’s overall digital maturity.

Figure 5: Framework for Digital Supply Chain Transformation



Source: Capgemini Consulting Analysis

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 - 4 Supply Chain Quarterly, “Master data! Master data! My supply chain for master data!”, June 2013
 - 5 Informatica Case Study
 - 6 Wired.com, “The Astronomical Math Behind UPS’ New Tool to Deliver Packages Faster”, June 2013
 - 7 Fast Company, “Brown Down: UPS Drivers Vs. The UPS Algorithm”, January 2013
 - 8 Capgemini Consulting conducted a web survey and in-depth face-to-face interviews during Q2/Q3 2013 to get insights in the digital supply chain maturity of the Manufacturing, Consumer Packaged and Retail (CPR), and Transport sectors. In total 130 companies from Europe and North America participated in this survey.
 - 9 Digirati companies are companies that leverage digital technologies to transform. They have executives that share a strong vision for what new technologies bring, invest in and manage digital technologies quickly and effectively, and gain the most value from digital transformation.
 - 10 Beginner companies have been slow to adopt advanced digital technologies.
 - 11 Capgemini Consulting – MIT Sloan Management Review, “Embracing Digital Technology: A New Strategic Imperative”, 2013
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