Technology optimization and change management for successful digital supply chains

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Supply chain management today is a series of largely discrete, siloed steps taken through marketing, product development, production, distribution, and finally fulfilling customers’ needs. Digitization removes barriers across siloed processes, and enables the supply chain to become a completely integrated ecosystem that is fully transparent to all stakeholders from the suppliers of raw materials to the manufacturers of finished goods, to the customers.

The digital supply chain includes integrated planning, intelligent logistics visibility, smart warehousing, digital procurement, and prescriptive advanced analytics. The result enables companies to anticipate and proactively address disruptions in the supply chain by fully modeling the end-to-end supply chain, creating ‘what-if’ scenarios, and adjusting the supply chain in real time as conditions change. This offers a high degree of lean and agility allowing companies to achieve a competitive advantage by providing customers with the most efficient and transparent service delivery. In a nutshell, digital supply chain can advance a business’s performance by removing friction in processes and improving decision making.

In a recent KPMG survey and report, Retailers and Manufacturers were asked to identify their main reasons for investing in digital supply chain. Over half of the respondents identified the need for real-time product visibility as a leading driver. Retailers expressed the need for end-to-end visibility (53%) and the ability to manage new fulfilment nodes (50%), whilst Manufacturers were driven by the need to innovate faster (40%) with lower cost-to-serve (33%) through improved planning (KPMG, 2018a).

Also, 58% of all companies have stated they are rethinking their current business model as a result of or to take advantage of the changing digital landscape. Furthermore, 68% of high-growth companies have stated that industry disruption gives them a competitive edge and 70% of them have mentioned that accelerated digital transformation is a strategic focus (KPMG, 2018b).

Digital supply chain will be based on full implementation of several digital technologies: the cloud, big data, the Internet of Things (IoT), Machine Learning (ML), social networks, “what-if” scenario planning, “trace-and-track,” and others. Together, they are enabling new business models and strategies, the digitization of products and services, and the digitization and integration of every link in a company’s supply chain.

But if companies are to implement the digital supply chain ecosystem, they can’t just gather technologies and build technical capabilities (i.e. technology is not the silver bullet). They must have the right digital strategy, proven implementation methodology, an effective performance measurement system, people with the right skills, and the management needed to shift to a culture that is willing to carry out the change. In other words, they must transform their entire business.
The digital strategy should include key characteristics to improve the execution: 1) Flexible strategy as changes occur in the global marketplace in addition to being prioritized and actionable, 2) A three-to-five year roadmap that guides the transformation of supply-and-demand capabilities and takes planning processes to the next level, 3) Clear linkage to one or more corporate goals such as growth or customer service levels, 4) Both large opportunities for improvement that deliver significant ROI over time and “quick win” operations improvements with a fast payback, and 5) Elimination to outdated roles and responsibilities, unnecessary activities, and performance metrics that no longer reflect current realities.

Once the digital strategy is determined, companies must drive changes and develop new capabilities in several areas including the following:

1. **Processes:** Establish the new end-to-end supply chain processes connecting suppliers and customers that digitization makes possible and eliminate non-values activities at the touch points of functions and processes
2. **Technology:** Create a deployment road map for the technologies that will support the digital supply chain, including the information integration layer, database and analytics capabilities, security, and the cloud.
3. **Governance:** Establish a new governance for the new processes which enables the new business models. The new governance should include the following:
   a. **Organization Structure and Culture:** Generate an end-to-end understanding of the mechanics of the supply chain followed by an organizational realignment. This means switching from a firefighter mentality (solving each problem as it pops up) to becoming proactive and acting as a supply chain “orchestrator” (sensing, predicting, and taking prescriptive decisions). It also requires a shift to an open, fast-learning digital culture that promotes communication across different media and stakeholders.
   b. **Talent and Skills:** Develop the talent and acquire new expertise and skills needed to enable the new technology and carry out the new business models. It is rare to find a company with the required in-house digital capability from the beginning. Building strong expertise into an organization relies on the cultivation of long-term partnerships and ecosystems that can provide access to the required capabilities.
   c. **Performance Management:** Develop a set of key performance indicators (KPIs) to maintain the momentum and involvement of people and be able to measure progress. These KPIs should be comprehensive and drive the right behavior.
   d. **Partnering Policies:** Establish new policies to partner closely with other companies. The fully integrated end-to-end supply chain cannot be built without collaborating with a wide variety of suppliers, distributors, and technology providers.

Supply chains are extremely complex networks, and no company has succeeded yet in building one that is truly digital. While it is true that several successful digital use cases have been witnessed, the industry is still waiting for successful digital end-to-end supply chain transformation program. Also, many of the digital applications required are not yet widely used. But this will change radically over the next five years, with different industries implementing digital supply chain at varying speeds.

To add to the above challenge, 70% of all technology-driven transformation initiatives fail. They fail firstly because of lack of preparation and knowledge of the supply chain transformation life cycle, secondly because of a lack of a well-defined supply chain optimization strategy, and thirdly because of
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poor addressing or altogether neglecting the “people-related” aspects in transformation (Maurer, 2010; Sabri, 2015). Therefore, improvement initiatives have been short lived or incomplete and expected business benefits are not achieved or materialized. It’s important to note that these statistics are based on technology that is 5 to 10 years old and not the digital technology that is less mature.

In addition, although there is a lot of hype surrounding digital supply chain and multiple opportunities to apply it across an organization. Often (especially when ROI is unproven) the task of creating and implementing an effective digital strategy can seem overwhelming. 60% of digital laggards mentioned that digital transformations was held back by ROI uncertainty (KPMG, 2018b). One thing is certain, if businesses look to the fanciest new tech to save the day but ignore their overall performance goal, then their strategies are already set to fail.

Therefore, many companies are trying to understand the best practices and master the recipe for success of transformation programs. They are connecting with universities, research centers, and consulting companies. Therefore, the editor decided to write this book to help industry professionals improve their success rate in digital supply chain use cases and their transformation programs.

To address the above challenges in areas such as supply chain optimization, leveraging digital technologies, business transformation, performance measurement, and change management, there is a need for an edited collection of chapters. These chapters would help analyze situation in better way and provide important lesson learned and best practices.

This comprehensive and timely publication aims to be an essential reference source, synergizing with available literature in the field of digital supply chain and business transformation, and providing proven tactics from the industry.

The target audience of this book includes professionals and researchers working in the field of supply chain optimization and business transformation. This book provides:

- Insight and support to executives concerned with achieving value as an output of digital supply chain transformation programs
- Supply chain and IT managers with suggested process, technology, and governance best practices
- Academicians, researchers, and advanced-level students with an excellent reference on digital supply chain and transformations, business challenges, change management, performance measurement, digital supply chain strategy development, case studies, and opportunities to extend the research in this field.

The chapters stand alone in covering their individual topics, but also form a cohesive overview of library-related professional development as it stands now along with future trends in the field. The chapters in this book can be categorized in four broad sections of digital supply chain business transformation: digital supply chain strategy (Chapters 1-3), success factors for digital transformation (Chapters 4-7), recipe for success for optimizing certain supply chain processes in digital world (Chapters 8-12), and key supply chain enablers for digital supply chain transformation (Chapters 13-15).

The first chapter explains how a strategic approach to supply chain management needs to consider wider corporate strategic objectives and initiatives and contribute to the achievement of these goals. It also differentiates between strategic supply chain management (when the supply chain function provides unique competitive advantage) and supply chain strategy (when the supply chain function takes on a supporting role to corporate strategy). Finally, chapter 1 develops a case for strategic supply chain management based on edge computing applications through IoT sensors such as GPS or RFID. This
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illustrates that supply chain practitioners need to fundamentally rethink the way current supply chain systems process data and information and that the approach to collaboration between supply chain partners needs to change drastically.

Chapter 2 offers best practice strategies for procurement in the context of digital supply chains. It also provides a framework for executing these digital procurement strategies. In addition, the chapter consists of case studies from different industries such as manufacturing (Apple, Beta products, IBM), fast food (Chipotle), and logistics/pharmaceutical (DHL).

Chapter 3, which is final chapter in this section, provides a proposition for digital transformation of a global group into an efficient enterprise. At the heart of the proposition is a transformational practice aimed at creating a customer-focused strategy and data-driven global culture. It argues that the digital age has added a level of complexity to the way we acquire and serve customers. Performing well in the traditional channels is not enough anymore. Online is increasingly becoming the channel of choice with two main customer-interaction paradigms: sell and service. Building a great customer experience is probably the most essential factor of success for both functions.

The next three chapters focus on digital supply chain transformation and related success factors. Specifically, Chapter 4 provides a literature review on supply chain segmentation as a key success factor for digital supply chain transformation, and offers a practical supply chain segmentation framework for companies who are about to take the segmentation transformation journey. A case study from Dell is also presented to illustrate the framework.

Chapter 5 highlights the fact that several organizations are still facing numerous challenges to transform and perform. Perhaps the most common misunderstanding is that digital transformation is all about the implementation and use of cutting-edge technologies. This chapter dives deep to understand the major challenges to digital supply chain transformations, identify the key drivers and enablers of digital opportunity and provide change management framework for digital supply chain transformation. It builds the case that mastering change management is the most important success factor for transformation and offers several best practices and a roadmap for a smooth journey.

Chapter 6 explains the importance of the Program Management Office (PMO) in a digital supply chain transformation. It discusses the key issues in digital supply chain transformations in terms of managing the PMO, followed by a discussion of the solutions and best practices for mitigating these issues and ensuring the PMO is a value-added function and key enabler of a digital supply chain transformation.

Chapter 7 explains the final success factors for transformation: effective supply chain performance measurement and organizational alignment. This chapter describes how organizations can leverage the maturity model approach in conjunction with the foundational concepts of perspective-based performance evaluation models to define a comprehensive performance measurement framework. It also provides guidance on selecting the right ‘causal linkages’ between supply chain objectives and performance measures.

Next, the book drills down on the optimization of certain supply chain processes. Chapter 8 provides insights for companies that are seeking to enhance their Sales and Operations Planning (S&OP) process to the highest level of maturity which is Cognitive Integrated Business Planning. It addresses the questions amongst supply chain executives from “why do we need to improve at this time?” to “how do we do it?”

This chapter argues that to serve this diverse spectrum of customers, products, markets, and channels, and do so in a win-win profitable manner, organizations need a Cognitive Integrated Business Planning process. This process must have the ability to act with speed, agility, responsiveness, and flexibility. It must also leverage machine learning and artificial intelligence for predictive and prescriptive analytics,
enabling organizations to realign their plans quickly through an always-on, self-learning, and autonomous process.

Chapter 9 addresses the discipline of Category Management which has always played an important role within retailers as well as their CPG manufacturer suppliers. It argues that digitalization is undergoing a massive transformation and the approach to the process is getting disrupted through the availability of huge volumes of transactional data, customer loyalty data, and advancement in hardware technology through better scanners, image recognition devices, sensors, IoT devices, and machine learning and artificial intelligence. This chapter takes a closer look at the eight step Category Management process (the traditional approach) and the digital enabler (the new approach) along with its benefits and what the future may hold.

The main value proposition of Chapter 10 is providing the reader an overview of the Inventory Optimization (IO) basics including the multi-echelon optimization concept which enables them to understand important details for a digital transformation journey. It also provides an inventory planning maturity model.

Chapter 11 answers the following questions: 1) What is the capacity planning process? 2) Why do companies need to perform capacity planning? 3) What are the challenges in the capacity planning process? 4) What are the different levels in the capacity planning? 5) What are planning zones? 6) What does a capacity planning implementation journey look like in a digital world?

Chapter 12 explains how contemporary organizations have begun to implement the green supply chain management (GSCM) practices in response to demand from various stakeholders to create products and services which are environmentally sustainable. The digital technology has been a boon in erstwhile supply chain management practices. However, the impact of digital technology on various dimensions of GSCM practices has not been studied yet. This chapter explores the impact of digital technology on Green Supply Chain Management practices. A qualitative study is conducted on managers working in organizations using GSCM. The impact of digital technology is analyzed on the five dimensions of GSCM practices and future research opportunities are identified.

The final three chapters concluding the book cover specific enablers for digital supply chain transformation. In Chapter 13 readers learn how 5G technology is an enabler for digital technologies (namely Artificial Intelligence, Machine Learning, Augmented reality, Internet of Things, Virtual reality, Big Data) where extensive data sharing and analysis is required. This will only be possible if there is a robust telecom network. 5G with its features of low latency, high bandwidth, higher speeds, and low power requirements is expected to unleash the full potential of digital technologies and expedite the digital supply chain transformation.

Chapter 14 provides a scientific classification and practical model to digitalize supply chain processes. One of the essential prerequisites for digitization of supply chains is the ability to model underlying processes. This means that events, work steps, control flows, and resources are described roughly or even specified in full detail. This is especially true for supply chain workflows because modeling (understood as specifying activities, data, resources and control flows) is usually the first step in selecting and implementing digital approaches such as smart factories. It discusses the benefits of specific notations for classical as well as modern challenges of SCM to help in the selection of notations. The resulting specifications serve as basis for the holistic digitization of supply chains.
Lastly, Chapter 15 explores the role of supply chain analytics in managing digital supply chain, as well as the practical implementation approaches of supply chain analytics. The chapter first discusses a typical day in the life of supply chain analysts. It then discusses the categorization of supply chain analytics and some practical recommendations for the implementation. Finally, the chapter provides a case study illustrating some important considerations in supply chain design.

The authors of each chapter followed the adage of “write what you know,” having been personally involved in every topic they covered. After writing what they knew, they went beyond their experience to focus on future trends, assessment, and applicability to digital supply chain optimization and transformation. The result is a book that provides useful guidance to supply chain practitioners and researchers in a digital business world.

Thanks are given to the authors of these book chapters. Professionals from the industry and academia contributed excellent write-ups of their work in a timely and professional manner. In addition, many thanks are owed to the Editorial Advisory Board of this book. These experts reviewed proposals, and peer-reviewed the finished chapters quickly and thoroughly. This book would not have been possible without the Board’s assistance.

This book illustrates to the reader the best practices in optimizing and transforming supply chain management in contemporary organizations, and presents several ideas for change that provide a road-map for a smooth transformation journey. Let this book help you deal with the changes and keep current with the profession.

REFERENCES


