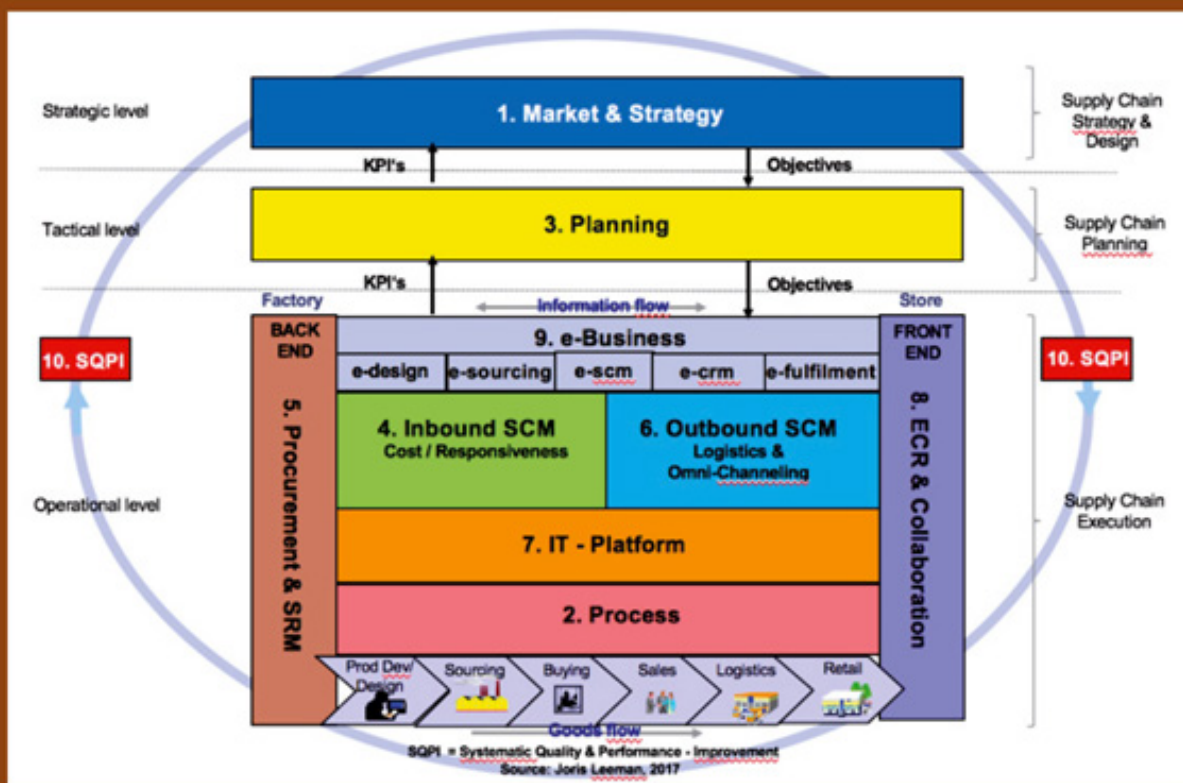


# SUPPLY CHAIN MANAGEMENT

Fast, flexible supply chains  
in manufacturing and retailing

2ND EDITION



Integrated chain management:  
10 building blocks

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CSCP, CPIM, CLTD, SCOR-P

**Institute II BPM**  
Business Process Management

For  
Mai-Lan

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# Foreword

As senior manager, executive director and board member of companies within the apparel, retail and medical industries, I experienced very often a lack of understanding and interest for the back-end part of the business. Too often senior management and board members are only focused on sales and forget about the organisation and operational completion of the sale.

In today's market field retail prices are under pressure, gross margins are shrinking and labour costs are going up. Additionally, more and more qualitative demands are being made by the retailers: more deliveries in smaller lots, faster and on-time deliveries, complete deliveries - no exceptions. All these demands require much more efficiency and effectiveness from the organisation to fulfil the completion of the sale. Trade offs between time and costs become very hard to make as 'Every order is urgent' and 'It should be produced and delivered at the lowest costs'. If these trade offs are not balanced upfront within the organisation and within the total supply chain, substantial process costs and/or service level deficiencies will be the result. Here's where my inspiration for this book started.

*'Profit and success are not earned exclusively in the buying and selling of the products anymore, but also in the efficiency and effectiveness of its integrated processes and systems to order, manufacture and deliver the products.'*



Why is it so difficult for executive management to balance the trade offs between time and costs for its processes and systems? As it requires on the one hand, a detailed understanding of the organisation's processes, and on the other hand, it requires knowledge of available IT-systems on the market. The lack of understanding starts here, as many directors do not fully know their supply chain processes and do not have enough IT know-how to judge which systems to use. In addition, the new technologies which integrate the buyer- and seller-processes / systems into end-to-end supply chain networks do not help to simplify the understanding for executives.

*'Many organisations lack persons or a department to bridge the lack of understanding of its processes and systems. This book tries to fill this gap. It shows what the strategic building blocks are for developing an end-to-end supply chain network within your company.'*

This book intends to be pragmatic. It provides a framework, toolkit and roadmap for developing your own end-to-end supply chain-system. The book should inspire you to explore the strategic building blocks and implement them within your (future) company.

# Preface

## **What's the purpose of this book?**

The purpose of this book is to help you with the development and implementation of a successful end-to-end supply chain management - strategy: optimising your processes from manufacturer to retailer. Brand label manufacturers and retailers are confronted with shortening product life cycles and a more demand, pull driven market, which lead to an increased importance of *time-to-market*, and *trade off - decisions* between time and costs. Thinking in the end-to-end supply chain requires a massive organisational change, in order to become faster, more flexible, transparent and driven at lower cost levels. On the one hand, internal cooperation between the internal departments product planning (merchandising), logistics and information technology is needed, and on the other hand, external collaboration with the partners in the supply chain: the suppliers, lead logistic service providers and retailers, is required. Functional silo's within and between organisations is 'out', collaboration is 'in'. This book answers four questions:

- How to develop an end-to-end supply chain - strategy?
- How to create the necessary supply chain infrastructure?
- How to make collaboration work between the partners in the network?
- How to plan and manage the supply chain flows?

In other words, how do I *plan, organise, lead* and *control* the total supply chain, in order to use supply chain management

as a weapon to create a competitive edge. This book provides a *framework, toolkit* and *roadmap* for developing your own end-to-end supply chain-system. A roadmap which reviews all aspects, relevant to your specific situation, based upon a framework. It will enable you to systematically improve your sales productivity in the retail stores, and to enhance the operational / qualitative performance of your own processes and processes of your partners in the supply chain.

On purpose supply chain management will be discussed in a broader spectrum. You will not find detailed analyses and extensive descriptions. For all those individual aspects enough books are already available in the retail store. However, you do find a complete overview of all the subjects which relate to supply chain management. The strength and added value of this book, is its combination of all relevant elements, presented in a logical order, to guide you how to develop the end-to-end supply chain-system. A path already completed by several companies successfully.

### **For whom has this book been written?**

*Supply chain management; integrated chain management: 10 building blocks* is written for higher education and university students. The book describes supply chain management at a strategic, tactical and operational level and combines theoretical descriptions with relevant practical experiences.

This book is useful for thinkers and practitioners! For everyone who wants to learn more about supply chain management and the development and implementation of an end-to-end supply chain strategy. If you are an executive, supply chain manager, marketing manager, purchase manager, IT manager, retail manager, wholesale manager, distribution manager, project leader, team leader, staff member or consultant, this book provides you with many useful insights, practice experiences and lessons learned.

## What is the structure of this book?

All figures as shown in this book are coming from the author, who is having the copyrights, unless stated differently. The book is divided into three parts: *product planning (merchandising)*, *logistics* and *information technology*. The parts on product planning and the IT-system consists of three chapters; the part on the logistics infrastructure composes four. The ten chapters together form the strategic building blocks necessary to develop and implement the end-to-end supply chain-system. In this 2<sup>nd</sup> edition a new chapter on process management is added to explain some basic theory.

- *Product planning and control*

**Chapters 1, 3 and 10** focus on *product planning (merchandising)* and provide answers to the questions 'how to develop an end-to-end supply chain management strategy' and 'how to plan and manage the supply chain flows'. **Chapter 1** provides an introduction to the *framework* and the *strategic building blocks* necessary for the development of the supply chain-system. It briefly describes the retail environment, scope and tasks for retailers and manufacturers.

**Chapter 3** focuses on the need for product - planning and development of the collaboration between retailers and brand label manufacturers to synchronise demand and supply of product flows into the retail stores. It describes where and how to influence the bottom line by means of its cost drivers.

**Chapter 10** connects the three parts of the book, by means of: *planning* the end-to-end supply chain-system, *organising* around the strategic building blocks, *leading* the change management process and *controlling* to realise systematic quality and performance improvement. It reviews all elements necessary for a successful implementation of end-to-end supply chain management

within your organisation. How do you successfully apply change management? What are the critical success factors?

- *Logistics*

[Chapter 2](#) is a new chapter, written for this 2<sup>nd</sup> edition. It contains basic theory on process management and terminology within the field of logistics and supply chain management. The [chapters 4, 5 and 6](#) are focused on Logistics and provide mainly an answer to the question '*How to create the necessary supply chain infrastructure*'. [Chapter 4](#) concentrates on how to setup inbound supply chain management, and facilitate its end-to-end thinking and management from 'point-of-sale' back into the factory. You get more insight in the value adds and costs of supply chain management; and how you can influence them. [Chapter 5](#) concerns procurement and supplier relationship management and how to integrate your suppliers on the back-end side of the supply chain. [Chapter 6](#) relates to outbound supply chain management, with a focus on omnichanneling, e-fulfillment and outsourcing logistic processes.

- *Information Technology*

[Chapters 7, 8 and 9](#) focus on information technology and provide mainly an answer to the question '*How to make collaboration work between the partners in the network*'. In [Chapter 7](#) the development of the IT-systems platform is being discussed to support the business process management model. [Chapter 8](#) focuses on ECR and collaboration with customers on the front-end side of the supply chain. [Chapter 9](#) focuses on building the E-business network to enable the organisation to manage the end-to-end supply chain-system. Hereby are discussed in this 2<sup>nd</sup> edition the increasing digitalisation, industry 4.0 and development of internet of things (IoT).

## **Didactical aspects**

In order to support you when reading *Supply Chain Management* each chapter contains:

- learning topics at the beginning of each chapter;
- tables, figures and other illustrations to easily pick up the most important aspects from the text;
- toolbox(es) which present a practical application of the theory;
- a summary of the chapter reviewing the learning topics;
- an opening case and an integrated case at the end of the chapter; the integrated case can be used within the group to analyse the most important elements of the chapter within a practical situation;
- summary questions to review the learning topics from the chapter and putting together a summary of the text;
- a summary of the chapter reviewing the learning topics;
- a list with abbreviations and terms as used in the text.

## **Supplements**

Additional information can be found on the website of the Institute for Business Process Management ([www.institute-bpm.com](http://www.institute-bpm.com)).

## **New in the 2nd edition**

In this 2nd edition of *supply chain management; integrated chain management*:

*10 building blocks* the following changes are made:

- the supply chain management - model is adapted to today's challenges, for examples by giving attention to procurement, demand-planning, supply chain planning and omnichanneling;
- the structure of the book is organised in 10 building blocks;
- a new chapter ([Chapter 2](#)) on process management has been added. It contains basic theory of processes and

terminology within logistics and supply chain management;

- in [chapter 3](#), [4](#), [5](#) and [6](#) an additional paragraph is added on supply chain design (3), inbound SCM (4), procurement (5) and outbound SCM (6);
- many new cases are included (Apple, UPS, supply chain planning, supply chain-finance, omnichanneling, LEGO, block chain technology, e-fulfillment, Walmart, Continental, industry 4.0, Toyota);
- new toolboxes with practical tools matching the relevant topic as discussed in the chapter;
- several tables and figures are adjusted;
- additional material for lecturer's can be downloaded at <http://scm.jimdosite.com>, for example powerpoint slides, cases and toolboxes.

This book on supply chain management focuses on retail and industry, and not necessarily on supply chain processes for services. It offers a practical approach how to organize and implement supply chain management as integrating element to departments within the own company and with its suppliers and customers. It provides building blocks and a roadmap to develop supply chain management within the own organization.

# Acknowledgments

## 1st edition

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Furthermore, I thank all persons and institutions for their authorization to use their copyright material.

I am grateful with the publication of the English version of this book in 2010.

Düsseldorf, October 2005/2010

Joris Leeman

## 2<sup>nd</sup> edition

Herewith I thank everyone who has their share in the development of this 2<sup>nd</sup> edition.



Especially, I would like to thank the persons who read through the script. Also, the persons who gave their permission for the use of their copyright material. Furthermore, I thank Wendelien van Voorst van Beest, Inge Klinkers, Rivka Mooren, Elle Kanters and the rest of the team of Pearson education for publishing the 2<sup>nd</sup> edition in Dutch language. Last but not least I thank my wife for her patience and support during the process of making all the adjustments.

Düsseldorf, August 2020

Joris Leeman

## **About the author**

Joris J.A. Leeman is the founder of the Institute for Business Process Management. He has extensive experience in organising the back-end part of the business: organisation, supply chain management, IT-systems, e-Commerce and e-Business, logistics, and sourcing operations. He is a consultant, lecturer and author. Prior to this he worked as a manager, director and executive for globally operating companies like MEXX, Johnson & Johnson, and Esprit.

Besides his consultancy activities, he is a part-time lecturer at the Arnhem Business School, HAN University of Applied Sciences, in The Netherlands. In addition, he acts as a freelance senior trainer in procurement and supply chain management for KPMG Germany. The trainings are for global leading companies and take place in Europe, Asia and USA.

He received his BA degree in Logistics & Economics from HAN University in The Netherlands. He received his MA degree in International Business and MBA degree from Webster University, St. Louis, USA. ASCM (APICS) certifications: CSCP, CPIM, CLTD and SCOR-P.

### **Institute for Business Process Management**

The goals of the Institute for Business Process Management are (1) to advise companies in improving their end-to-end business processes and organisation; (2) to train students, postgraduate students, employees, managers, and directors in the field of procurement, supply chain management, logistics, e-business, retailing, export management, and

services management; (3) to publish books which enhance the knowledge of managing end-to-end business processes.

### **Other publications**

2018 Joris Leeman, *Export Planning, a 10-step approach*, 2<sup>nd</sup> edition (English), Books on Demand, August 2018. ISBN 978 3752 847628.

2017 Joris Leeman, *Supply Chain Management, Integrale ketenbesturing*, 2e editie (Dutch), Pearson Education, May 2017.

2010 Joris Leeman, *Supply Chain Management, Fast, Flexible Supply Chains in Manufacturing and Retailing*, (English), Books on Demand, April 2010. ISBN 978 38391 37918.

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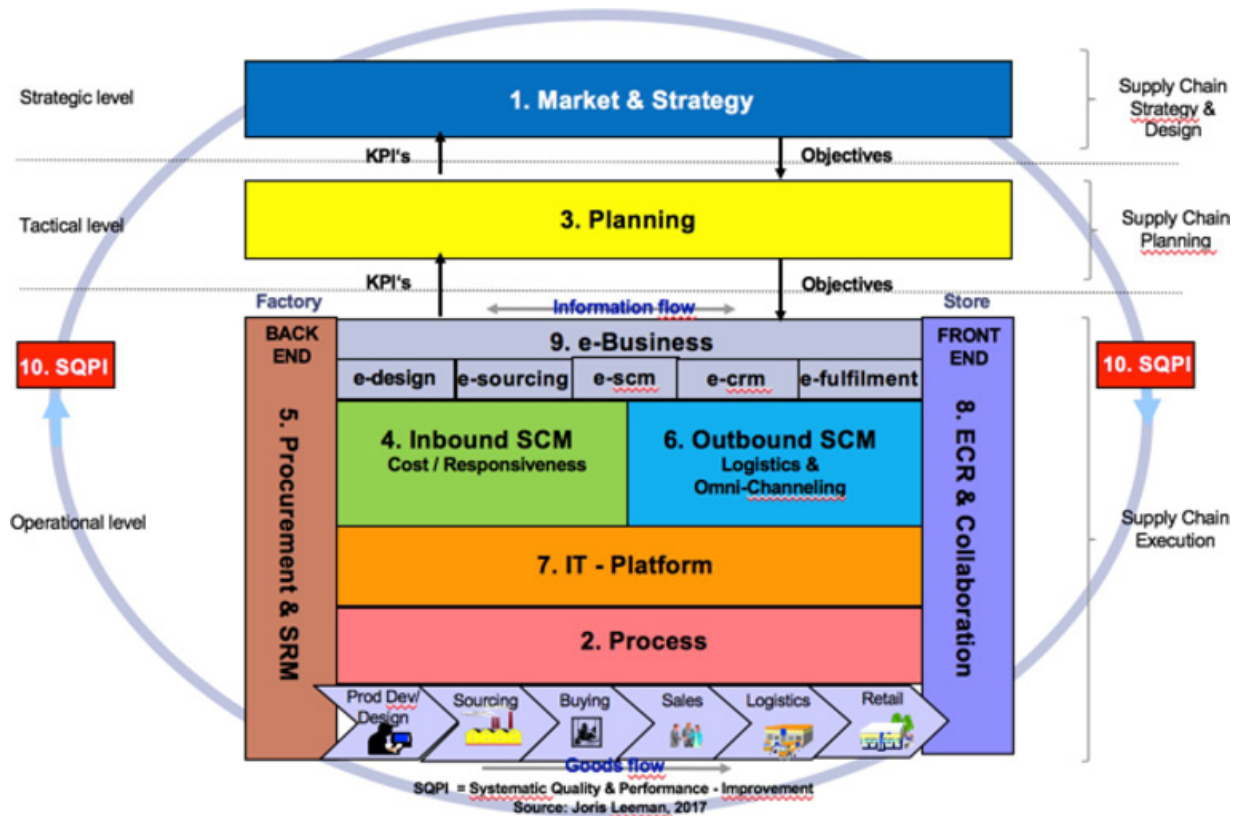
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# CHAPTER 1

## Market and Strategy



### At the end of the chapter you will be able to:

1. explain why verticalisation and supply chain management is so important for management today;
2. explain what distribution channels exist and which members are active in the supply chain-network;
3. name the three most important business drivers for brand label manufacturers and retailers;

4. provide a brief explanation of the supply chain-system - model and how to create a competitive advantage with it;
5. name the most important strategic building blocks for the development of an end-to-end supply chain-system.

## **Case Faster fashion puts new pressure on supply chains**

I can remember an audience of supply chain professionals left agog a few years ago, as they listened to Spanish academic José Luis Nuevo explain how Zara can see an outfit on the catwalk in Paris – and have a version of it on the shelves of its stores 24 hours later. Of course, that level of performance is exceptional – but even the norm of a few weeks was way ahead of its competitors who were still designing seasonal collections months in advance. Since then “fast fashion” has become a key ingredient in the product offer for many apparel retailers as they have realigned supply chains to push the moment of production as close as possible to the moment of sale. But achieving this is tough and some major retailers are still struggling to match the industry’s best.

For example, in March 2015, the CEO of Gap, Art Peck, said in a magazine article that it was taking Gap up to three times as long as competitor such as Zara and H&M to get product ideas into the store. And when it published its 2015 annual report earlier this year, Gap said: “For fiscal 2016, our top objective is to improve sales performance through a more consistent, on-trend, product offering. To enable this, we have several product initiatives underway, and in addition, we plan to continue

focus on our responsive supply chain and inventory management.”

But now, it seems, fashion is getting even faster. Next week Burberry will take the first step in a strategy that moves it away from its traditional four runway shows a year to just two, straight to consumer shows. CEO Christopher Bailey said its shows had been evolving to close the gap between when consumers could see collections on the runway and retail availability. “From live-streaming, to ordering straight from the runway, to live social media campaigns, this is the latest step in a creative process that will continue to evolve.” US designers Tommy Hilfiger and Tom Ford are also reported to be adopting “see-now, buy-now” strategies. Clearly, there are big wins to be had, but equally clearly, there are big implications for the supply chain. By definition, products have to be available immediately - no waiting to see how the collection is received. That means that the risks associated with a poorly performing line are going to be greater. So not only must supply chains be able to accommodate the increase in speed to market - they must also be more responsive and agile to deal with problems more quickly.

Source: M. Davies (red. 2016), ‘Faster fashion puts new pressure on supply chains’, *Logistics & Supply Chain*, 9/2016.

## **1.1 Strategy, verticalisation and supply chain management**

### **1.1.1 Strategy**

Successful companies work according to a certain strategy. Such a strategy is composed of elements which enable to create a competitive advantage. The competitive advantage has to be visible for the customer or consumer: on one hand via the *product* or service, on the other hand via its *process* (service, quality, time, cost). The development, production and delivery of a product or service is comprised of several process steps within the supply chain. Very often these process steps are being organized by several companies, operating in different countries. Hence, they are increasingly dependent on each other within the supply chain. Companies collaborate to maintain control. A specific form of strategic collaboration is verticalization. Verticalisation focuses on managing the supply chain based on a (planned) demand of the customer or consumer. Companies closely work together in planning, manufacturing and distribution of the product or service.

### **What is the situation in retailing?**

The opening case made clear that retailers, like Zara, with a smart business strategy respond to the everly faster changing requirements of the consumer. To have the right products is not enough, as products with a high demand also need to be replenished timely. Next, information systems are needed to identify bestselling products, and organize product planning and digital coordination of the product deliveries. The processes and systems enable fulfillment of the requirements of the customers. However, not all products can be sold and delivered following a similar pattern. Certain products are available all-year-through and therefore need to be replenished during the year. Other products are fashion-driven and as a result are only for a short-time period available on the market. Very often replenishments are not possible given the short-time availability. The inventory risk of not being able to sell the product is for both example-products different: products

which are available all-year-through (non seasonals) have less inventory risk compared to articles which are temporarily as a fashion-item on stock (seasonals). Therefore, the chosen product-strategy has a big influence on the inventory risk all members in the supply chain have. Moreover, the process-requirements are different too: non-seasonals have to be replenished very fast, which has demanding requirements for the different members in the supply chain. Articles which are only available for a limited time will be less frequently replenished and require less supply chain requirements. The chosen company strategy determines the level of coordination requirements with respect to processes and systems.

### **What is the situation in manufacturing?**

A similar situation as described in retailing is applicable for a company operating within a manufacturing environment. Companies like ThyssenKrupp, ABB, Philips and Siemens very often engineer, manufacture and distribute products on a project-base, sometimes even tailor-made developed, produced and delivered. Just think of elevators, transformers for machines in a factory, medical equipment for a hospital. The final product (the project) is often a composition of products of suppliers, assembly of part of these products in one's own product, and assembly and installation of all products at the customer's location turn-key. of the customer These types of projects are bound by quality, time, service and cost. Competitive rivalry is high and supply chain-performance of a timely project-installation is the key-factor. Most often these products are 'make-to-order' or even 'engineer-to-order', which means that also in the 'make'-industry the supply chain is demand driven; like in retailing! The case upon the 'make'-industry according to ING-Bank as shown at the end of this chapter confirms this line of reasoning.



## Competitive strategies according to Treacy and Wiersema

Treacy and Wiersema differentiate three competitive strategies, which are based on the three generic competitive strategies of van Porter.<sup>1</sup> Each strategy has a different emphasis on quality, time, service, and cost.

- *Operational excellence-strategy (lowest possible cost).*  
This strategy is focused on reaching an optimal combination of price, quality and buying convenience which cannot be matched by its competition. Its emphasis is on low prices and standardized processes to be able to operate efficiently.
- *Product leadership-strategy (best product.)*  
This strategy is focused on continuous (technological) innovation of the product assortment. Its emphasis is on product innovation and delivery of the the best product on the market.
- *Customer intimacy-strategy (customer intimacy)*  
This strategy is focused on creating a close relationship with the customer by fulfilling its requirements: *tailor-made services* and *mass customization*. Tailor-made services are individually composed for the customer. Mass customization organizes tailor-made services for a group of specific customers. Its emphasis is on service, quality, quality and services during the overall process.

### **Toolbox 1.1:**

#### *Value positioning-model of Treacy en Wiersema<sup>2</sup>*

Treacy and Wiersema developed a value positioning-model based on which companies can determine how to realize a competitive advantage with four elements. It is a useful and practical model to easily find out the strategic focus of a company.

$$\text{Value positioning} = \frac{\text{result x process}}{\text{price x effort}}$$

For example, the process is the experience of the booking of a train ticket and train journey itself. The product is the travel service from point A to B.

The two elements below the line are focusing on what the customer has to pay or has to do, in order to acquire the product/service. For example, the effort is what the customer has to do to purchase and receive the train ticket.

Based on the value positioning-model the company can choose with what strategic element to compete in order to realize a competitive advantage: via the final product (result), the process-experience, its price, or effort to acquire the product/service, or in a combination of these elements. Furthermore, the value positioning allows companies to compare their strategies. The three mentioned strategic directions - operational excellence, best product en customer intimacy - differ in the composition of the four value positioning elements.

*Task:* fill out the value positioning model for the three mentioned strategic directions. Evaluate what the essential differences are per strategy to create the competitive advantage.

### **1.1.2 Verticalisation**

Verticalisation within the supply chain is taking place at several industries; one of these industries is the apparel industry. The enormous success of vertical retailers like H&M, Zara, Gap and Next in the apparel industry since the '90-ties, as well as today, force brand label manufacturers

like Esprit, s'Oliver, Mexx, Tommy Hilfiger, Levis, Nike and department stores like Karstadt, Kaufhof, Lafayette, Printemps and El Corte Ingles to speed up their supply chains and verticalise/integrate their processes and systems upstream (towards their suppliers) and downstream (towards their wholesale customers) in the supply chain. The competitive environment is increasingly tough: the consumer is less predictable, demand increasingly fluctuates; retail prices are under pressure; competition is extending from products that were traditionally limited to upper, middle and lower segments of the market - and increasingly from the sports industry; gross margins are shrinking; retail store costs and personnel costs are going up.

Those who do not manage their assortment planning and inventories well are continuously under pressure to markdown their products, which makes it even more difficult for them to sell the next collection at its recommended retail price levels. The vertical retailers have responded by:

- increasing the probability of designing a bestselling product by dramatically shortening the product's time-to-market;
- piloting the products in the stores and then replenishing the bestsellers within 14 days by new type of make-to-order processes;
- driving the inventory sales productivity (as measured by stock turn, sales per square meter, markdown percentage) by keen assortment and delivery planning;
- integrating the IT-systems from point of sale back into production factories and from there towards fabric suppliers;
- focusing on quality of workmanship through fitting and process quality.

Brand label manufacturers traditionally do not own their retail stores and retailers (department stores) do not own their factories. This easily leads to a competitive disadvantage in comparison with vertical retailers, who have their own retail stores and have tight control over their manufacturers.

Verticalisation is also taking place in manufacturing. Many industrial companies try to manage the complete supply chain themselves, or try to do this via strict collaboration with suppliers. A firm like Thyssenkrupp makes steel in a firmness as required by the customer (engineer-to-order), after which the thick steel plates are being rolled and rolled-up, to enable the next production step of pressing the steelplates into a framework of a door for a car. Finally, these doors are delivered as finished product just-in-time at the car factory where they are assembled into the car. The five elements as mentioned for vertical retailers in retailing are also valid for manufacturing, or also referred to as 'make'-industry, only the measurement of the sales productivity is most of the time different.

### **1.1.3 Supply chain management**

You probably wonder what supply chain management in detail has to do with verticalization. Supply chain management concerns 'managing the supply chain', which means 'chain management', and this is exactly what is needed to have the product or service engineered, manufactured and distributed on time, correct, complete and at minimal cost. According to Chopra<sup>3</sup> a supply chain consists of all parties which are, directly or indirectly, involved with the fulfillment of a customer-/consumer-requirement. The supply chain not only exists of brand label manufacturers and suppliers, but also transport companies, employees in the distribution centers, retailers and customers. Within each organisation, like with the brand

label manufacturer, a supply chain consists of all functions which have to deal with receiving and fulfilling customer requirements. These functions concern product development, marketing, operations, distribution, finance and customer service.

### **End-to-end**

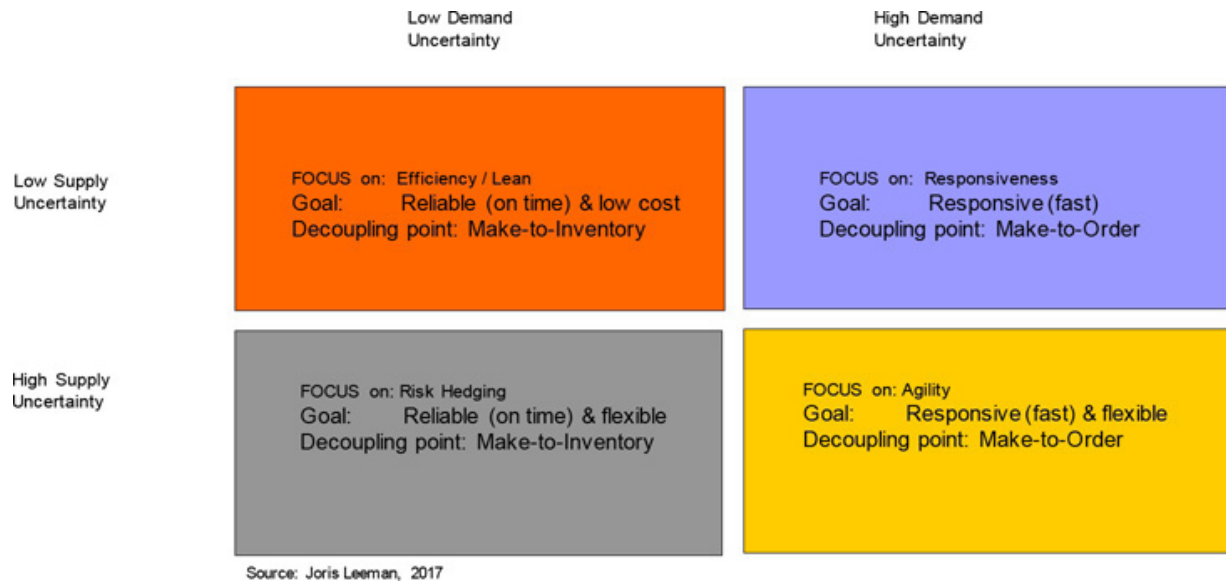
Supply chain management-thinking is thinking from the consumer back into the chain at the starting point of raw material. The physical goods flow is from supplier to customer, but the thinking is exactly the other way around; from customer back into the factory. Why is it like that? Because the customer directs the demand for products and services. This so-called supply chain-thinking is also named end-to-end supply chain management.

**Lesson learned:** To survive in today's marketplace against the vertical retailers, brand label manufacturers and retailers (like department stores) need to integrate their processes and systems from point-of-sale back into the factory.

### **Supply chain-strategies**

Companies on the one hand are being confronted with an increasing need to react faster to customer requirements. However, these customer requirements are more and more difficult to predict. Due to the increasing variability in demand it is not so easy to realize an accurate demand forecast. On the other hand, it becomes more though to deliver fast and correct, due to the fact that everything has to be produced in far away low-cost countries. This puts the supply chain further under pressure. So, what supply chain-strategy to choose? On what base? [Figure 1.1](#) provides an overview of generic supply chain-strategies.

### **How to manage Demand / Supply uncertainty:**



**Figure 1.1** Generic supply chain-strategies

The strategies are allocated based on two uncertainties: uncertainty on demand (low or high) and uncertainty in supply (low or high). In a situation of low uncertainty in demand and supply the supply chain can be easily planned and managed. As a result, efficiency optimization results can be realized. The supply chain-strategy can focus on a *efficiency/lean*- strategy. It is not a problem to hold inventories, as planning can be done very well. Therefore, the decoupling point could be MTS (make-to-stock). See further [chapter 3](#).

However, in a situation of high uncertainty in demand and supply it is much more difficult to plan the supply chain. It then becomes necessary to build in flexibility and responsiveness (speed in cycle/throughput time) This is named an *agile* supplychain-strategy. Maintaining inventories is risky, therefore many companies prefer to produce based on actual customer orders (make-to-order). The two other generic supply chain-strategies (responsiveness, risk hedging) are in the middle. *Responsiveness* has its focus on uncertainty in the demand-