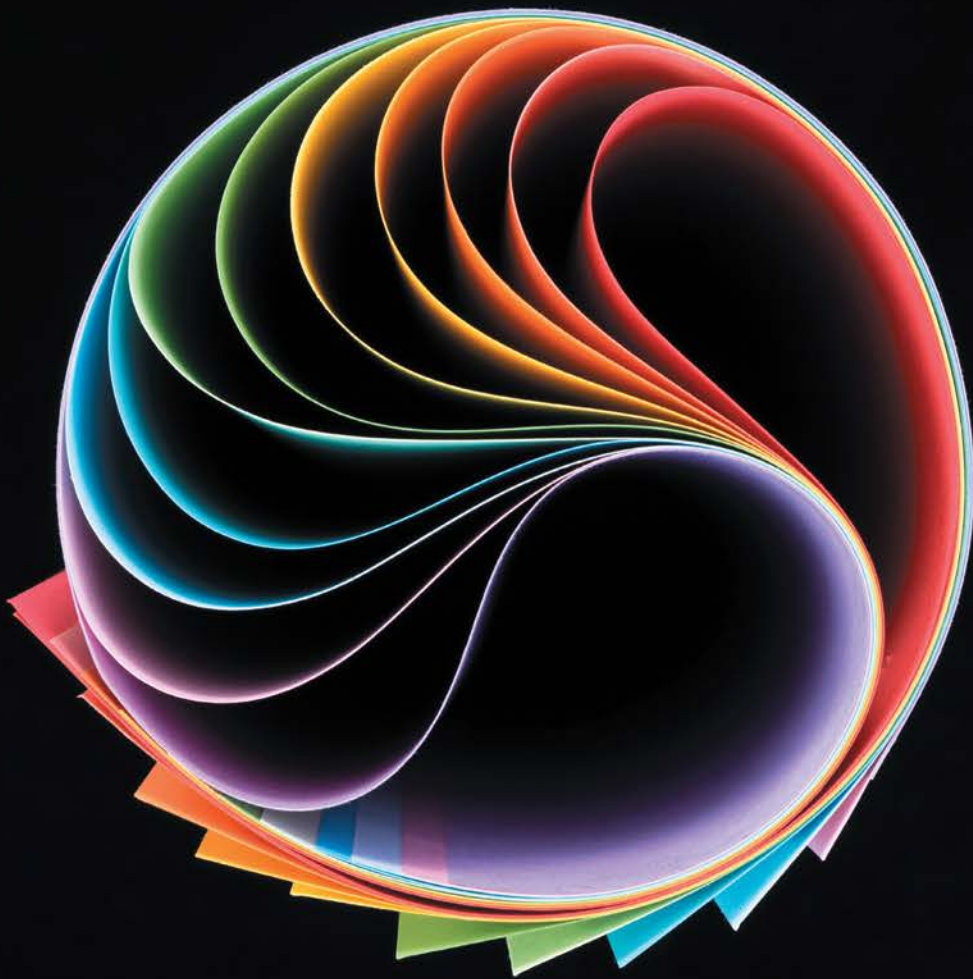
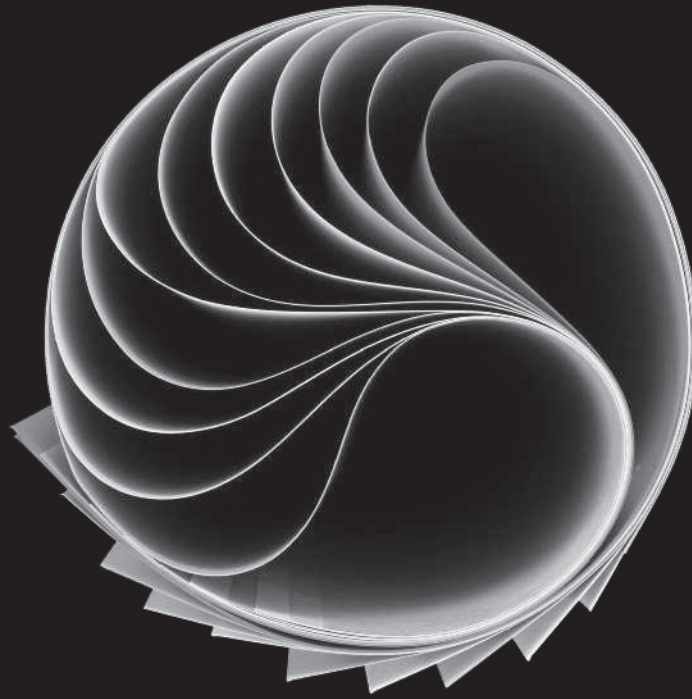


PROCUREMENT AND SUPPLY CHAIN MANAGEMENT



ARJAN J. VAN WEELE AND FRANK ROZEMEIJER



PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

EIGHTH EDITION

ARJAN J. VAN WEELE AND FRANK ROZEMEIJER



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Preface to the eighth edition

It is both an honour and pleasure to welcome you on the very first page of this unique procurement book.

The increasing complexity of supply markets and the growing dependency on powerful key suppliers across supply chains puts higher demands on the procurement function than ever before. This is also true for the professionals who work in this important business domain, who need to reflect regularly and check whether they work in line with the contemporary theories, concepts and tools to meet today's and tomorrow's business needs. This is exactly what this new book intends to be. A fresh, profound and complete update on procurement as it should be today, heading for the challenges of tomorrow. It provides a balanced and structured overview of all the pillars of a performant procurement function, blended with inspiring business cases and practical insights. It is a must read for every inquisitive student, ambitious young procurement professional, seasoned procurement manager/leader or visionary board member.

Throughout the book it becomes clear that suppliers are not just supplying their products and services. The supply base of any organization is, as I have experienced in my career, also an extremely powerful source of expertise. Expertise that can instantly and constantly contribute to process improvement, product development and competitiveness. Suppliers often know more about what can be improved than their customers. It is their field of expertise, their passion and they never stop learning from their collaboration with multiple customers from different industries. They master best-practices, know the pitfalls, have roadmaps for innovation and are able to share their views on effective collaboration models. Procurement is more and more about unlocking that supplier expertise to continuously improve products and processes, set up streamlined end-to-end supply chains, source innovation and last but not least, implement digital processes to facilitate smart interaction and collaboration. Pure logic and so much to gain!

This requires both effective and efficient procurement processes and tools at the operational, tactical and strategic level, based upon a clear digital procurement vision and roadmap. Organization models are also transforming in an organic way. Procurement and supply chain management are heading towards full integration. Procurement teams show a growing mix of own payroll talent blended with flexible 'plug and play' expertise. When all the right procurement processes and enablers are in place, the procurement department will be able to drive financial performance, innovation, sustainability and supply risk mitigation. This book is full of inspiration on how to best develop the procurement function to the highest professional standards.

Authors Arjan van Weele and Frank Rozemeijer have been for many years leading procurement ambassadors and sources of inspiration on an international scale. What makes them unique is their firm belief in the power of blending academic research and insights with business cases and industry reality. For this, they continuously interact with a broad international network of CPOs, procurement executives, industry leaders and board members. Arjan and Frank are extremely curious to find out about the next development for our procurement profession and more specifically how to bring that into practice. I have never seen them refuse an opportunity to share their academic knowledge, including the latest best-practices, and they act as a kind of inspiration engine for procurement professionals and guide them towards their next growth step.

Arjan impacted strongly on my own professional procurement path starting from reading his books, visiting his seminars and collaborating for the very first time when delivering a procurement excellence program at Nyenrode University for an international FMCG company. Frank is far more than a colleague to me. He is a personal friend, a 'compagnon de route'. We share the same excessive level of passion for procurement and interact in different settings to mix theory and practice to inspire and support multiple companies in almost any industry. Arjan van Weele and Frank Rozemeijer: there is no stronger duo I can think of to deliver this excellent book. I wish you a lot of inspiration!

*Manu Matthyssens; Founder and Managing Partner SOLVINT Group;
Professor Strategic Procurement at Antwerp Management School; Entrepreneur*

New to this edition

This eighth edition is a major update and previous edition users may find the following notes useful when making the transition to the new edition.

To reflect contemporary thinking and practice, the term ‘procurement’ rather than ‘purchasing’ is used throughout this book, as this term has a broader coverage and depth, and aligns the text with the leading professional body in the industry.

Chapters have been re-organized into four sections: I Introduction and context, II Processes and strategies, III Interfaces and IV Enablers. New and updated content is provided on innovation sourcing, procurement with purpose: driving sustainability in supply chain relationships, supplier relationship management, and procurement systems. As a result some chapters are new whilst others are renamed to reflect the arrangement of content; the box below provides a comparison between the 8th and 7th editions. Key changes are as follows:

- Large parts of the text on ‘Procurement and business strategy’ (Chapter 7 in the 7th edition) have been integrated in to the new Chapter 3 ‘Procurement as a business function’.
- A chapter is now dedicated to the important topic of Supplier Relationship Management (Chapter 10).
- A new chapter is now included on ‘Procurement systems’ (Chapter 14).
- Chapter 15 on how to drive sustainability in supply chain relationships has been significantly expanded and updated.

Throughout the book, introductory cases have been replaced and updated, as have many memos and illustrations. A new feature for this edition is the ‘Theory snapshot’ added to introduce the reader to important theories and academic perspectives. To facilitate teaching, the eight case studies for classroom discussion have been retained.

Contents overview comparison: Procurement and Supply Chain Management, 8th versus 7th edition

| 8th edition | 7th edition | New title |
|-------------|-----------------|--|
| Chapter 1 | Chapter 1 | Introducing procurement |
| Chapter 2 | Chapter 2 | The procurement process |
| Chapter 3 | Chapters 3, 7 | Procurement as a business function |
| Chapter 4 | Chapter 8 | Outsourcing |
| Chapter 5 | Chapters 7, 9 | Category sourcing: developing effective sourcing strategies |
| Chapter 6 | Chapter 4 | Sourcing business services |
| Chapter 7 | Chapter 5 | Contracting and contract management |
| Chapter 8 | Chapter 6 | Public procurement |
| Chapter 9 | Chapter 11 | Procurement and supply chain management |
| Chapter 10 | Chapters 10, 14 | Supplier relationship management |
| Chapter 11 | Chapters 10, 14 | Innovation sourcing |
| Chapter 12 | Chapter 15 | Procurement with purpose: driving sustainability in supply chain relationships |
| Chapter 13 | Chapter 12 | Organizing procurement |
| Chapter 14 | | Procurement systems |
| Chapter 15 | Chapter 13 | Managing procurement performance |

Introduction

Procurement and supply management on the move

Over the decades, procurement and supply management as a discipline has changed considerably in many companies. This is reflected in the increased attention this discipline is receiving from business managers and practitioners. Considering the amount of money generally involved in the preparation and execution of procurement and supply decisions, this is not a surprise. An effectively and efficiently operating procurement and supply function can make an important contribution to company results. However, there is more. As a result of the implementation of improvement programmes in engineering, manufacturing and logistics management, many companies feel the need for improved relationships with suppliers. These relationships necessarily should result in more innovative products and customer solutions, a faster time-to-market, just-in-time delivery and zero defects. More than that, these relationships should result in a better value proposition to the company's customers. Traditionally, the procurement department acts as the intermediary which negotiates the agreements and contracts with suppliers and supervises their compliance with the agreements. This traditional role is, however, changing rapidly as can be seen from the procurement practices in some major, leading edge companies. Moving away from their traditional operational roles, procurement and supply managers are assuming more strategic roles in their organizations, focused on active management of supplier relationships in order to get better performance from them.

These are a few important reasons why management is becoming increasingly interested in procurement and supply management as a business discipline.

Why this book?

Compared to other management disciplines, relatively little academic research has been undertaken in the area of procurement and supply management. Although procurement consultancy has prospered and grown immensely, most consulting firms do not openly share their models, ideas and experience with the outside world. This explains why there is quite a gap in the development of a solid body of knowledge in procurement compared to other disciplines in business administration. Fortunately, some new textbooks covering modern procurement practices have become available in recent years. Most of these, however, have been written from a truly academic background and insufficiently cover the developments which are at present taking place in the procurement and supply practices of large, global companies. Practical descriptions of procurement situations, which can serve as a learning vehicle and study material for students, are few. This contrasts with disciplines such as marketing, financing, organizational behaviour and other management disciplines, where many student and practitioner textbooks exist.

It is encouraging that an increasing number of business schools and academic institutions have decided to include procurement and supply management in their curriculum. This initiative has no chance of success, however, if there is no effective and up-to-date supportive learning and teaching material. This book aims to meet this need.

Intended audience

This book is intended for those who are interested in procurement and supply management in its broadest sense. Its contents aim to provide an in-depth discussion of procurement and supply issues, both from a strategic and a

managerial perspective. Reading this book will neither make you a buyer nor a procurement manager. In this, the text differs from the more practitioner-oriented literature.

In particular, this book is intended for:

- bachelor and master students in business administration and industrial engineering, who want to specialize in business strategy, technology management, operations management or supply chain management
- professional managers in trade and industry, active in procurement or supply chain management, who are interested in opportunities for improving the effectiveness and efficiency of the procurement and supply function in their companies
- executive students, who participate in management development programmes in the area of strategic management, technology management, operations management and supply chain management
- account managers and industrial sales representatives who in their professional capacity regularly meet with professional buyers, and who are interested in the way these buyers perform their tasks
- those who supervise procurement staff directly or indirectly, and who come from a non-procurement background and are interested in the latest developments in the area of procurement.

Framework

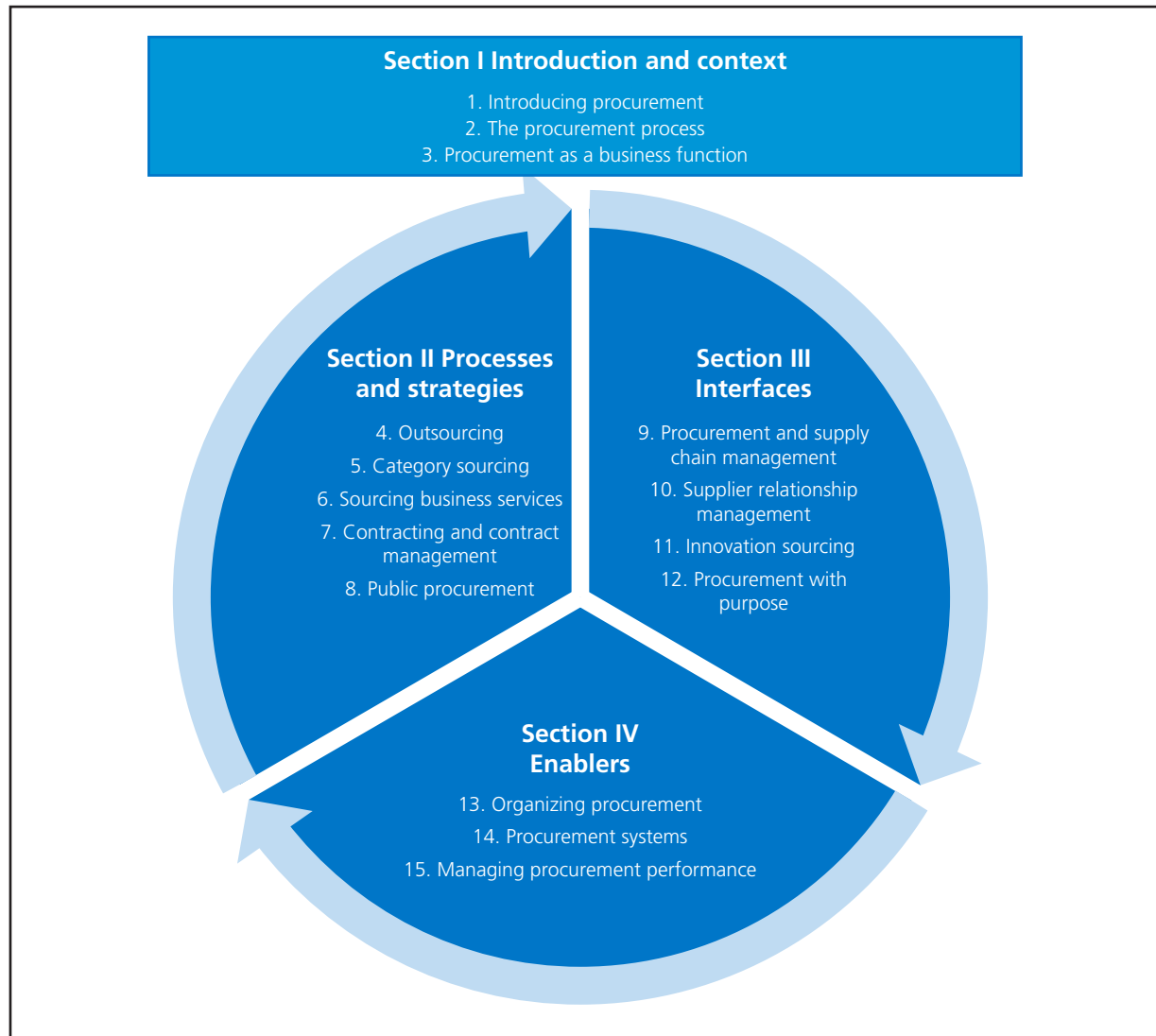
The book has been developed using the following principles:

- Strategic management perspective. In this book, the subject of procurement and supply management is presented as an essential link in the business system. This business system is only as strong as its weakest link. The way procurement and supply management is executed or should be executed is presented from a strategic management perspective. This implies, for example, that attention is given to subjects such as how company objectives may influence procurement and supply strategies and policies, how procurement and supply strategies should support overall business strategy, how to develop these strategies, how to execute them, how to manage the procurement process and how to monitor and manage procurement performance.
- Practical orientation. Business administration and industrial engineering are concerned with analyzing and solving practical business problems. For this reason, the various subjects are discussed from a practical point of view. This book does not aim to transform the reader into a professional buyer. The intention is to introduce the reader to the discipline and familiarize them with the key concepts. Literature and theory are provided where we thought it needed to give a broader perspective.
- Scientific basis. In discussing the subject matter, repeated reference is made to existing theories in management literature. In this way individual readers can broaden their orientation if they so desire. When necessary, views on procurement issues are illustrated with research results from national and international specialist literature. Recent literature references have been used, as well as references from a more mature age where we felt these to be still relevant to the subject. However, in order to increase the readability of the text, references are kept to a minimum.
- Identical structure of each chapter. Every chapter is alike in structure and encompasses:
 - the learning objectives
 - an introductory case to illustrate the practical relevance of the subject
 - an introduction which provides a survey of the most important subjects which will be discussed in the chapter
 - a body text explaining the core concepts and techniques
 - practical illustrations and memos to emphasize and illustrate certain subjects in a chapter
 - a summary at the end of each chapter
 - assignments for classroom discussion, if desired.

Structure

The book is divided into four parts, each containing several chapters. The overall structure is presented in the figure below.

Figure 0.1 Structure of the book



Section I: Introduction and context is aimed at becoming acquainted with the discipline. The key concepts and terms are presented in these chapters.

Section II: Processes and strategies is about how to decide between make or buy, i.e. when to outsource business activities and when not. If a decision to outsource is made, the right business partner needs to be selected and contracted. This includes category sourcing which can be aimed at products, services or solutions buying. Category sourcing results in contracts with suppliers and service providers which obviously need to be managed.

Section III: Procurement interfaces is about how to manage the relationships between procurement, supply chain management, other business disciplines and suppliers. These relationships are important in order to drive both innovation and sustainability in supply chain relationships.

Finally, **Section IV: Enablers** discusses what it takes to get organized for professional procurement, what it takes to recruit the right staff for procurement jobs, what systems to use to manage the complicated procurement processes and how to get the best possible performance from a procurement organization.

Let's have a quick look at each chapter.

Chapter 1 focuses on the role and significance of the procurement function for industrial and service companies. This is done by describing procurement's role in the company's value chain. Further, definitions of important terms and concepts are provided. We explain why we prefer to use the term procurement rather than purchasing. In the remainder of the book a clear distinction is made between the activities of the procurement department and the procurement function. This chapter also discusses the differences between the different kinds of products and services that can be bought. In doing so, this chapter provides a framework for the rest of the book.

Chapter 2 addresses the buying behaviour of organizations. The major differences between buying behaviour of consumers and organizations are discussed. Various models of organizational buying decision-making, developed in the (industrial) marketing literature, are presented. A core model in this chapter is the procurement process model, which is described in detail. Through this chapter the reader will gain insight into the complexity which characterizes many procurement decisions in organizations.

The core of Chapter 3 is how procurement may support the company's business objectives and strategies. In order to be effective, management needs to give attention to each element of the procurement management process. This starts by defining procurement and supply goals and objectives and strategies needed to realize these. Procurement goals and objectives need to be aligned with the company's goals and objectives. Procurement strategies need to be worked out into time-phased action plans. Next, the implementation of these action plans needs to be monitored and followed up. The procurement development model describes how procurement and supply as a business function may develop over time. In general, six different stages of development may be identified. In this way the procurement development model may serve as a vehicle to provide guidance for a company on how to professionalize procurement in the future.

Outsourcing and risk management are the prime topics of Chapter 4. Attention is given to the growing trend towards outsourcing. Many companies decide nowadays to focus on what they can do best and those activities that provide them with a competitive edge in their end-user markets. Non-core activities are increasingly outsourced to specialist suppliers. This is, however, not without problems, as companies run the risk of becoming too dependent on their suppliers. This chapter deals with the issue of how outsourcing may be structured in a company, the underlying change processes that are required and how companies can reduce their risk profile vis-à-vis their suppliers.

Overall procurement and supply strategies need to be worked out in specific category sourcing strategies and plans. This is the central topic of Chapter 5, which discusses category sourcing. Here the question is addressed of how to get the best results from suppliers for different purchased categories and commodities. Key to category sourcing is to select the right number of suppliers, and to decide about the right type of relationship and the right type of contract that should be put in place. Building on strategic marketing concepts, a procurement portfolio approach is presented on which four basic differentiated supplier strategies are based. It will be explained that in order to develop effective category sourcing strategies, the company also needs to understand its position in the supplier's customer portfolio.

Chapter 6 deals with how to buy and contract for business services. It will become clear what specific difficulties may arise when buying services. A classification on how to differentiate between different types of business services is provided. Next, the implications for how to structure the procurement process and/or sourcing process for business services are discussed. Specific attention is given to how to specify for services, how to select service providers and how to contract for their services.

Chapter 7 discusses contracting and contract management. Contracting for investment goods, infrastructural and civil works is an art itself. It represents a new task-buying situation where many stakeholders are involved. The varying degrees of complexity are reflected in different contract types such as construction only, design and construct, engineer–procurement–construct and design–build–finance–maintain contracts. The key characteristics of each of these contract types are discussed as well as when to apply these contracts.

Chapter 8 describes the specific characteristics of public procurement, i.e. buying for governmental institutions. We do so, mostly from a European perspective. The text has been adapted to the most recent changes in European

procurement law. From this chapter it will become clear that large differences exist between buying for government and buying for private enterprise. Governmental bodies are not free to choose their procurement procedures. Therefore, this chapter gives elaborate attention to the most important EU directives on public procurement, its procurement procedures and how to work with these.

Chapter 9 describes the role of procurement within supply chain management. After providing some key definitions, the basics of supply chain management are presented. This is achieved by providing a logistics reference model, which differentiates between several manufacturing situations (ranging from assembly to order to job shop operations). This model explains why procurement operations within different companies and industries may be vastly different. Next, it covers a detailed discussion on materials requirements planning, just-in-time management and the required information technology.

Chapter 10 presents a framework for supplier relationship management (SRM) explaining the different activities involved in developing and managing supplier relationships. The chapter stresses the human aspect in relationship building and that it takes time and effort to develop trustful supplier relationships. In doing so, procurement professionals should aim first at getting the basics right, i.e. getting procurement processes and systems organized in their company. Part of this is about how to set up a proper supplier quality assurance (SQA) policy and practice to achieve zero defects delivery from suppliers. SQA will enable buyers to provide timely and actual feedback to suppliers on how they perform. Next, procurement professionals may discuss with suppliers what will be needed to consistently improve their performance (i.e. supplier development). This is important as the best performing suppliers are invited to engage in the company's innovation and new product development programmes. In this way, this chapter creates a useful stepping stone to Chapter 11, which deals with innovation sourcing.

In Chapter 11 we present both closed versus open innovation, and the differences between the two. As companies want to speed up innovation, they need to rely more on outside knowledge and expertise. However, most suppliers are not willing to share their knowledge freely and at no cost. This chapter therefore discusses what is needed to involve suppliers early, timely and effectively in innovation and new product development. The development portfolio is presented as an instrument to help organizations make decisions on how to engage suppliers in their NPD projects.

Chapter 12 contains an updated text on the important subject of how procurement and supply professionals can contribute to sustainability or 'people, planet, profit'. This topic is very real today in many large companies and public organizations. Buyers in Western companies have a great responsibility of buying for a better world. New material on circular sourcing is presented. Besides corporate social responsibility (CSR), this chapter also deals with procurement ethics and business integrity. Together, these three concepts create the necessary purpose for every modern procurement organization.

The subject of how to organize for procurement is covered in Chapter 13. In practice, a large variety of organizational structures is observed and the most important of these are discussed. There is no one best way to organize for procurement. Specific attention is given to the issue of how to create procurement leverage in a multi-plant environment. Here, different structures are discussed through which companies may capture procurement synergies. Next, the issue of how to organize for efficient procurement at the business-unit level is presented. Finally, different job profiles and competencies in procurement are discussed.

Chapter 14 is a new chapter and deals with procurement systems. Procurement is about information processing, communication and data management. In this chapter, we present and discuss the ongoing digitalization of the procurement function. Contemporary IT solutions in procurement aimed at supporting spend analytics, e-sourcing, purchase-to-pay, and contract management and supplier management are introduced. Next, we discuss the value of emerging digital technologies for procurement (e.g. artificial intelligence) and identify how these create procurement's future landscape. Chapter 15 deals with procurement performance measurement and governance. The central issue here is how to measure and assess the performance of the procurement department. Several important methods and (benchmarking) techniques are presented.

What instructor's material is available?

Teachers and instructors who have selected this book as the major textbook for their course work, may use the teaching materials that are available and further details are provided on the following page 'Teaching & Learning Support Resources.' Teaching materials consist of a teacher's manual, answers for the end of chapter discussion questions, PowerPoint presentations and case studies. This should enable them to teach their courses in both an attractive and efficient manner.

List of abbreviations

| | |
|----------------|--|
| ATO: | Assembly to order |
| BOM: | Bill of materials |
| CODP: | Customer order decoupling point |
| CPFR: | Collaborative planning, forecasting and replenishment |
| CSR: | Corporate social responsibility |
| EOQ: | Economic order quantity |
| ERP: | Enterprise resource planning |
| ESI: | Early supplier involvement |
| ETO: | Engineer to order. All manufacturing activities from design to assembly and even procurement of the required materials are related to a specific customer order |
| IPO: | International procurement office. Large companies operate IPOs in different parts of the world |
| JIT: | Just-in-time |
| LCC: | Low-cost country sourcing |
| MSS: | Making and sending to stock |
| MRPI: | Materials requirements planning |
| MRP II: | Materials resources planning |
| MPS: | Master production scheduling |
| MRO: | Maintenance, repair and operating supplies |
| MTS: | Make (and distribute) to stock |
| MTO: | Make to order |
| NPR: | Non-product-related |
| OEM: | Original equipment manufacturer |
| PR: | Product-related |
| RFI: | Request for information |
| RFP: | Request for proposal |
| RFQ: | Request for quotation |
| ROI: | Return on investment |
| RONA: | Return on net assets |
| SLA: | Service level agreement |
| SQA: | Supplier quality assurance |
| SRP: | Socially responsible procurement |
| SRM: | Supplier relationship management |
| TCO: | Total cost of ownership |
| VMI: | Vendor-managed inventory |

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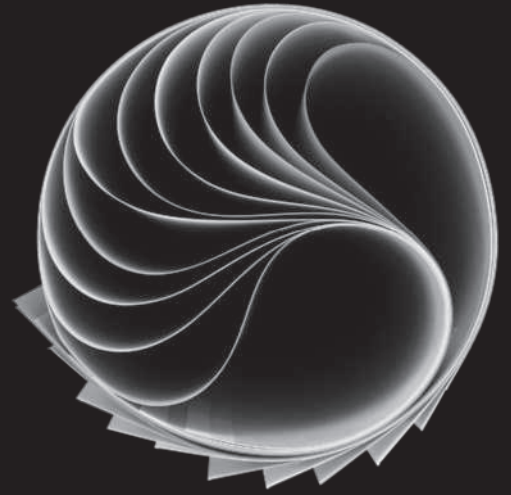


An open-access area for students including, for example, useful weblinks and glossary terms.

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Introduction and context



- 1 **Introducing procurement**
- 2 **The procurement process**
- 3 **Procurement as a business function**

SECTION I

1 Introducing procurement

Learning objectives

After studying this chapter you should understand the following:

- The role and importance of procurement in the value chain.
- The difference between concepts such as ordering, buying, purchasing, procurement, sourcing, supply management, supply chain management and value chain management, and how these are interrelated.
- New developments in procurement and supply chain management practices of organizations.

Procurement The management of the company's external resources in such a way that the supply of all goods, services, capabilities and knowledge which are necessary for running, maintaining and managing the company's primary and support activities is secured under the most favourable conditions.

Supply chain management The management of all activities, information, knowledge and financial resources associated with the flow and transformation of goods and services from the raw materials suppliers, component suppliers and other suppliers in such a way that the expectations of the end-users of the buying company are being met or surpassed.

Introduction

As business is becoming more and more competitive, **procurement** is increasingly recognized by top managers as a key driver for business success. Chief Procurement Officers (CPOs) and their teams can contribute significantly not only to the company's bottom line but also to its top line (Foerstl, Franke & Zimmermann 2016; Hartmann, Kerkfeld & Henke 2012). Since most companies today spend more than half of their sales turnover on purchased parts and services, efficient and constructive relationships with suppliers are key to the company's short-term financial results and long-term competitive position (Chen, Paulraj & Lado, 2004; Ellram et al., 2002; Gonzalez-Benito, 2007; Narasimhan and Das, 2001; Paulraj, Chen & Flynn, 2006).

Many companies cannot escape from exploiting the huge potential that procurement and **supply chain management** represent to them today. The case study on Damen Shipyards illustrates the complexities that go with these activities. Procurement and supply chain management have different roles within this company. First, it is important to secure the supply for all projects and shipyards. Component deliveries should be made by suppliers and subcontractors on time and their quality should be flawless. Next, prices of purchased materials should be within the project budget, in order not to jeopardize project and company profitability. Where purchases of components can be leveraged across different projects and clusters, this is done. However, project-specific purchases are tailored to the project. Deliveries are made based upon detailed project planning in order to avoid the buildup of unnecessary inventory and to keep working capital minimal. This all calls for careful supplier selection and differentiated sourcing strategies and for highly professional procurement and supply chain organization.

Case study

Procurement and supply chain management at Damen Shipyards

The supply chain department at Damen Shipyards at Gorinchem, the Netherlands, is responsible for purchasing all ship components, ordering, logistics, warehousing, inventory management, management of the international purchasing offices in China and Vietnam, technical document control, parts management and materials planning. In total about 250 specialists are employed in this department. The sales and construction of different types of vessels are allocated to different business clusters. Every cluster specializes in a specific type of vessel and employs different building methods. Luxury yachts are built according to customer specification and are usually one-offs, which means that every purchase is unique for that specific project. However, tugboats, barges and other heavy-duty vessels may be produced in small series as the bodies and physical characteristics may be common among different clients. Hence, purchasing concentrates on buying parts for the preplanned production series.

The procurement function is organized around different clusters each with a dedicated procurement manager and ten specialist buyers who ensure that parts arrive on time, prices are negotiated within the project budgets and that parts comply with all specifications. Damen Shipyards employs category management across these clusters for parts that may be common to all clusters (such as ship engines, propellers, instrumentation, safety equipment), as it makes no sense to source these parts for each project individually. About 20 lead buyers are responsible for managing these cross-cluster categories, whereas three supply chain managers orchestrate the respective materials flows. This is characteristic of Damen's matrix organization: every procurement manager is not only responsible for managing all purchases for a specific cluster but at the same time leads all purchasing activities for one or two corporate categories. Careful orchestration of the purchasing spend of about €1.5 billion, which represents about 68 per cent of sales value, is necessary in order to secure the materials flow of the different shipyards while at the same time contributing to company profitability. The largest category is ship engines, which are obtained from Caterpillar, among others. Parts and components are delivered by over 600 suppliers. Building a ship requires the engagement of about 100 to 200 suppliers who deliver over 3000 components. These are just a few numbers that illustrate the sourcing and supply chain complexity at this type of company.

Damen Shipyards started as a family-owned business in 1927. When Kommer Damen, the current chairman of the supervisory board, took over from his father he steered the company on a course of international expansion. In order to achieve growth and stave off fierce competition, he introduced a new business model. Damen Shipyards would specifically focus on sales, customer contacts and design, whereas the actual construction and assembly of ships would be outsourced to specialist suppliers and subcontractors who actually built the vessels using Damen's shipyard infrastructures. Through product and component standardization, bodies for smaller vessels were sourced from low-cost countries in small series and shipped to the specific shipyards where they would be finished. Here, the customer could choose from a number of standard options that were built into the ships according to their wishes. Due to standardization Damen was able to offer very competitive prices to customers. This business model is one reason for the impressive sales growth.

Meanwhile, the company operates over 32 shipyards globally: 15 of these focus on maintenance and repair, whereas 17 shipyards are focused on building new ships and minor maintenance work. Damen employs about 9000 people, the majority of whom are employed in Vietnam. Damen today is the undisputed market leader of heavy-duty vessels and tugboats.

In this chapter, we discuss the role and importance of the procurement function. We will take Porter's classic value chain as a point of departure to show that we need to differentiate between direct procurement and indirect procurement. Some time is spent in defining important terms and concepts, and we elaborate on the role which procurement professionals may play in cost reduction, and product and process innovation. The chapter concludes by describing some important trends and developments which are perceived in the procurement strategies of companies that are leading edge in procurement and supply chain management. Therefore, this chapter sets the stage for the remaining chapters in Section I.

Value chain

management All stakeholders belonging to the same value chain are challenged to improve the (buying) company's value proposition to its final end-customers, i.e. consumers.

Value chain Composed of value activities and a margin which is achieved by these activities. Value activities can be divided into primary activities and support activities. The margin represents the value that customers want to pay extra for the company's efforts compared with the costs that were required for these.

Primary activities

Primary activities are those activities that are required to deliver the company's value proposition to its customers. They consist of inbound logistics, operations, outbound logistics, marketing and sales, and customer service activities.

Support activities

These are activities that are required to support the company's primary activities. These include procurement, technology development, human resources management and facilities management (i.e. those activities aimed at maintaining the firm's infrastructure).

Raw materials

Materials which have undergone no transformation or a minimal transformation, and they serve as the basis materials for a production process.

The role of procurement in the value chain

In many business strategies, the concept of **value chain management** plays a central role. Therefore, this subject is elaborated in this section. When describing the role and position of the procurement function in industrial companies, the **value chain** of Porter (1985, p. 37) is often taken as a term of reference.

The value chain is composed of value activities and a margin which is achieved by these activities. Value activities can be divided into physically and technically different groups of activities. Porter differentiates between **primary activities** and **support activities**. Primary activities are those which are directed at the physical transformation and handling of the final products that the company delivers to its customers. Distribution to the customer and providing services are part of these primary activities. Support activities enable and support the primary activities. They can be directed at supporting one of the primary activities as well as supporting the whole primary process.

Porter differentiates between five generic categories of primary activities (1985, pp. 39–40):

- **Inbound logistics.** These activities are related to receiving, storing and disseminating inputs to the production process, such as inbound transportation, incoming inspection, materials handling, warehousing, inventory control and reverse logistics.
- **Operations.** These activities are associated with transforming inputs into the final product, such as machining, assembly, packaging, equipment maintenance, testing, printing and facility operations.
- **Outbound logistics.** These are activities associated with collecting, storing and physically distributing the final product to customers, such as finished goods warehousing, materials handling, outbound transportation, order processing and scheduling.
- **Marketing and sales.** These activities relate to advertising, promotion, sales, distribution channel selection, the management of channel relations and pricing.
- **Services.** These activities are associated with providing services to customers to enhance or maintain the value of the product, such as installation, repair and maintenance, training, parts supply and product adjustment.

Support activities are grouped into four categories:

- **Procurement.** Relates to the function of purchasing inputs used in the firm's value chain. These may include **raw materials**, supplies and other consumable items as well as assets such as machinery, laboratory equipment, office equipment and buildings. These examples illustrate that purchased inputs may be related to primary activities as well as support activities.
- **Technology development.** 'Technology' has a very broad meaning in this context, since in Porter's view every activity embodies technology, be it know-how, procedures or technology embodied in processes, systems or product designs. Most value activities use a technology that combines a number of different sub-technologies involving different scientific disciplines.
- **Human resources management.** These are all the activities directed at recruiting, hiring, training, developing and compensation of all types of personnel on the company's payroll, active in both primary and support activities.
- **Firm infrastructure.** The whole company is the customer of these activities. Infrastructure supports the entire set of company processes. Examples include

management, planning, finance, accounting, legal, government affairs, quality management and **facilities management**. In larger companies, which often consist of different divisions and business units, one sees these activities divided among headquarters and the business units.

All activities need to be performed in such a way that the total value generated by the company, as perceived by its customers, is more than the sum of its costs. In Porter's terms, the total value of the company is determined by the whole of its sales value. The value chain, then, relates to all activities, both inside and outside the company, that create value for the company's final customers. The margin reflects the rewards for the risks incurred by the company. Porter regards procurement as a support activity that should provide support to the following business activities:

- **Primary activities.** The procurement function should be able to meet the material requirements related to operations management and inbound and outbound logistics. Operations may have a different structure among manufacturing companies. Usually manufacturing processes can be characterized according to the following categories:
 - **Make (and distribute) to stock (MTS).** Standard products are manufactured and stocked, and customers are serviced from an end product inventory. Production is on dedicated machinery, often in large batches. Materials requirements planning (and therefore also planning of purchased products) is based on sales forecasts. Examples are raw materials and most semi-manufactured products such as steel plate, tubes, food ingredients and most building materials.
 - **Make to order (MTO).** Products are manufactured from raw materials or the purchased components inventory after a customer order has been received and accepted and are, hence, made to order. This is common in situations with very large or customer-specific product ranges (e.g. packaging solutions for cosmetic products) or bulk products that are very expensive to stock (e.g. computers and laptops).
 - **Engineer to order (ETO).** All manufacturing activities from design to assembly and even procurement of the required materials are related to a specific customer order. Production is usually on multipurpose machinery, requiring highly skilled operators. Examples are luxury yachts, special purpose vessels, customer-specific production equipment and machines.

These contrasting manufacturing situations explain why procurement activities may be radically different between companies and industries. In some cases, procurement is focused on supporting diverging materials flows, where raw materials are processed to manufacture a wide range of products (for example, bakery products). In other cases, procurement needs to support a converging materials flow, where a large variety of components is to be assembled into a limited range of final products (for example, car industry, aircraft industry). Procurement operations for a car manufacturer producing cars in large batches (e.g. Tesla, Toyota, BMW), controlled by a materials requirements planning (MRP) system, may differ significantly from those produced in a job-shop environment (e.g. Koenigsegg, Pagani). The latter are more like a shipyard, where every vessel may be new to the organization and where materials are obtained from a vast, frequently changing supplier base. Buying for primary activities will be referred to throughout this book as 'product related buying' (PR), 'buying of production items' or **direct procurement**. Usually this area gets most of the attention from management.

Facilities management

Relates to the management (planning, execution and control), and the realization of housing and accommodation, the services related to these (e.g. security, cleaning, maintenance, catering), and other means in order to enable the organization to realize its mission.

Direct procurement

Procurement of all materials and products that are used for manufacturing a company's end products.

- Support activities. Procurement activities may also be related to supplying products and services for the other support functions. Some examples are the buying of:
 - laboratory equipment for research and development
 - computer hardware and software for the central IT department
 - lease-cars for the sales force
 - strategy consultants for senior management
 - office equipment for administrative staff
 - machinery and equipment for the production department
 - maintenance, repair and operations (MRO) supplies for the maintenance department.

Investment goods or capital equipment

Products which are not consumed immediately, but whose acquisition value is depreciated during their economic life-cycle.

Indirect procurement

Procurement of all materials, components and services that are used to support the company's infrastructure and back-office activities.

Again, we see that the procurement function aimed at providing supplies and services for the support activities is very different in character. Some of the purchases to be made are routine purchases and may be repetitive and low in value. Other purchases may have a 'project character' and may be unique and high valued (**investment goods or capital equipment**, computer systems, buildings).

In general, this type of purchase will be referred to as 'non-production buying (NPR)', '**indirect procurement**' or 'general expenses'. They may be classified into: MRO supplies, investment goods¹ and services. The high variety and fragmented nature of this type of purchase makes it difficult to support these by one uniform procurement procedure. As a result, indirect purchases are often done by the internal user departments, who are usually lacking professionalism in procurement. This is one reason why international companies, which have set up special professional procurement improvement programmes in the indirect area (such as IBM, Shell and Philips), have reported high savings. Table 1.1 summarizes the most important differences between buying for primary and for support activities.

Table 1.1 Main differences between buying for primary activities and buying for support activities

| Aspects | Buying for primary activities | Buying for support activities |
|-----------------------------------|---|---|
| Product assortment | Limited to large | Very large |
| Number of suppliers | Limited, transparent | Very large, not transparent |
| Procurement turnover per supplier | Very large, considerable | Limited |
| Number of purchase orders | Considerable | Very large |
| Average order size | High | Small |
| Control | Depends on type of production planning | Limited, forecast-related or project-related buying |
| Decision-making unit | Engineering, manufacturing specialists dominant | Fragmented, varies with product or service |

Definition of concepts

The procurement function traditionally encompasses the process of buying. It involves determining the procurement needs, selecting the supplier, arriving at a proper price, specifying terms and conditions, issuing the contract or order, and following up to ensure proper delivery and payment. In the old days it was argued that the procurement function should obtain the proper equipment, material, supplies and services of the right quality, in the right quantity, at the right place and time, at the right price and from

¹Also referred to as CAPEX (capital expenditure).

the right source (Aljian 1984, p. 3). In this description, the procurement function was regarded predominantly as an operational activity, i.e. limited to ordering.

In practice, as well as in the literature, many terms and concepts nowadays are used in the area of procurement. However, little agreement exists about the definition of these terms (Ellram et al. 2020). Terms such as purchasing, procurement, sourcing and supply management seem to be used as synonyms, notwithstanding their differences.

Throughout this book the definition of *procurement* is:

The management of the company's external resources in such a way that the supply of all goods, services, capabilities and knowledge which are necessary for running, maintaining and managing the company's primary and support activities is secured at the most favourable conditions covering the materials, information and money flows up to the point of consumption.

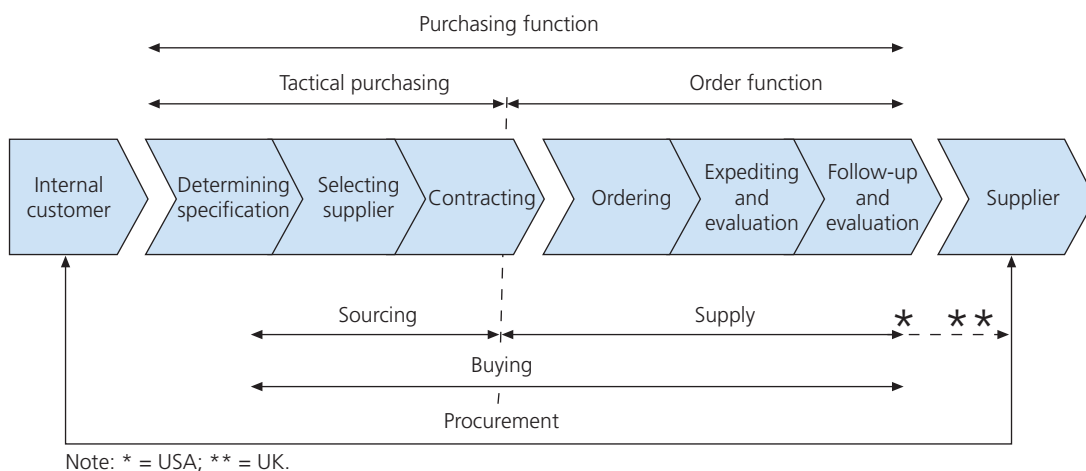
The *procurement function* in this definition covers activities aimed at assessing whether the company should consider make or buy, i.e. secure the incumbent need from its own resources versus external resources.

- determining the procurement needs, i.e. specifications (in terms of required quality and quantities) of the goods, services and solutions that need to be bought
- selecting the best possible supplier and developing procedures and routines to be able to do this
- deciding what contract to put in place, and preparing and conducting negotiations with the supplier in order to establish an agreement and to write up the legal contract
- placing the order with the selected supplier using efficient purchase order and order follow-up routines
- monitoring and control of the order to secure supply (**expediting**) while checking the suppliers' invoices against agreed terms and conditions
- follow-up and evaluation (settling claims and disputes, keeping product and supplier files up-to-date, reviewing supplier rating and supplier ranking).

Figure 1.1 schematically illustrates the main activities within the procurement function. It shows that these activities are closely interrelated. This figure is referred to as the (linear) procurement process model.

Expediting Following up on a purchase order to make sure that the supplier is going to perform as it has confirmed through the purchase order confirmation. There are three types of expediting, i.e. routine status check, advanced status check and field expediting.

Figure 1.1 The linear procurement process model and some related concepts



Quality Quality refers to the total of features and characteristics of a product or service that have a bearing on its ability to satisfy a given need (American National Standards Institute). Quality is meeting (internal or external) customer requirements that have been formally agreed between a customer and a supplier.

Procurement department The department of a company or public organization responsible for executing and managing procurement processes.

Procurement function Covers activities aimed at determining the procurement specifications based upon 'fitness for use'; selecting the best possible suppliers and developing procedures and routines (e.g. setting up supplier selection criteria) to be able to do so; preparing and conducting negotiations with suppliers in order to establish an agreement and to write up the legal contract; placing the orders with the selected suppliers or developing efficient purchase order and handling routines; monitoring and control of the orders to secure supply (expediting); following up and evaluating (settling claims, keeping product and supplier files up-to-date, reviewing supplier rating and supplier ranking).

The procurement function does not include the responsibility for MRP, materials scheduling, inventory management, incoming inspection and **quality** control. However, in order to be effective, procurement operations should be closely linked and interrelated to these materials management activities. In the authors' opinion, a procurement manager should support each of the six activities mentioned earlier. However, this does not necessarily imply that all these activities should be conducted by the **procurement department**, as illustrated in the following example.

A buyer who is responsible for MRO supplies is often confronted with the 'small-order problem'. Many requisitions which they receive from internal departments concern the need for one (or a few) simple product(s) of low expense. Handling these requisitions and translating these into a purchase order, however, is often a laborious task if that buyer is to issue a purchase order for every requisition. An alternative may be to arrange for a so-called 'catalogue' agreement with a specific supplier, for example for the delivery of mechanical tools. In this agreement, they may establish the product range which will be bought from that supplier including the list prices per product. They may agree with the supplier that the latter will provide a web-based catalogue to their company, enabling employees and technical staff to order electronically directly from the supplier without involving the procurement department. Furthermore, they may negotiate a bonus from that supplier tied to the total procurement turnover for 12 months.

In this example, it is the task of the buyer to develop an overall commercial agreement with the supplier and establish an online catalogue and an efficient (electronic) order routine that works for both the supplier and the buyer's internal customers. In fact, what happens is that the ordering function is delegated, in a rather controlled way, to the internal customer. In this manner, it is possible to combine the buying power of the organization with optimal flexibility and efficiency for the internal user.

From the definition of procurement, it may be derived that its scope covers everything for which the company receives an invoice. Hence, the arena of procurement includes inter-company business, counter-trade arrangements, hiring of temporary personnel from outside agencies and contracting advertising agencies. However, many of the products and/or services for which the company may receive invoices from suppliers may be arranged without interference from the procurement department (this will be discussed later). Therefore, the scope of the **procurement function** is usually much broader than that of the procurement department.

The term *ordering* refers to the placing of purchase orders with a supplier against previously arranged conditions. Furthermore, this term will be used when purchase orders are placed directly with the supplier, without questioning the supplier's conditions and without sufficient supplier market testing. Call-off orders fall into this category, as well as telephone orders for products bought from a supplier catalogue. Ordering is considered to be part of the procurement process.

It is difficult to find a description of *buying* in management literature. It differs from procurement in the sense that it does not encompass the first step of the procurement process (i.e. determining specifications). This is in line with the practice of trading and retail companies (e.g. department stores), where the term 'buying' is most often applied. Here, discussions about the specifications of products to be purchased are less complex than for industrial companies, since in many cases the supplier decides these. Buying therefore relates to the commercial activity of soliciting competitive bids from a limited number of suppliers and negotiating a final contract with the lowest bidder. Several negotiation rounds may be required before closing a final deal.

Purchasing differs from buying and ordering in one important aspect: while specifications may be given in the situation of ordering and buying, these are challenged when it comes to purchasing. Purchasing relates to situations where buyers engage in discussions with internal users about the degree to which the specifications for products to be purchased are really fit for purpose. Features that are not necessary for meeting the function which the product needs to fulfil are challenged by the buyer and benchmarked against what is available on the supply market. This often leads to a situation where an (expensive) supplier branded product is replaced by an identical product from a lesser-known supplier. However, challenging specifications will not always lead to changes, since internal users might react emotionally when they are challenged and decide to push through to get what they want, even if this is more expensive. Also, many buyers are not even in the position to challenge the specifications, because they are not involved early enough in the process by the internal users.

As can be seen from Figure 1.1, *procurement* is a somewhat broader term. It includes all the activities required to get the product from the supplier to its final destination. It encompasses purchasing stores, traffic and transportation, incoming inspection, and quality control and assurance. Many firms also consider recycling (as they are related to materials) to be a part of this (refer also to Memo 1.1) because of its growing importance in recent years, with the increasing impact of environmental issues. Procurement is based on **total cost of ownership**-thinking and considers all direct and indirect costs involved in acquiring goods and services. When buying a copier, it may be more important to look at the price per copy (based upon all costs associated), rather than the purchase price of the copier itself.

Total cost of ownership (TCO)

Relates to the total costs that the company will incur over the lifetime of the product that is purchased.

Memo 1.1

Purchasing versus procurement: what is the right term to use?

As purchasing has evolved as a business function, the terminology to denote this activity in business has changed. Over time, procurement seems to have gained in popularity, at the expense of purchasing. What is the right term to use? This is not clear. Some companies avoid the discussion by defining purchasing as 'third-party spend management'. Clearly, in the public sector, procurement is the preferred term. However, in many industrial and service companies, purchasing is preferred over procurement. However, during the 2010s, more and more private companies rebranded

their purchasing functions into procurement (e.g. Unilever, Philips, Apple, Pfizer). Both terms relate to the entire purchasing process, ranging from how to arrive at specifications up to securing delivery and supplier evaluation. Academically there are slight differences (as shown in the table below).

Whether to use the term purchasing or procurement seems to be a matter of personal preference. Given the sliding scales between the two concepts, we will use both terms as synonyms in this book.



| | Purchasing | Procurement |
|-------------|--|--|
| Focus | Price versus functionality | Total cost of ownership |
| Scope | Purchasing process | Purchasing process + supply chain optimization (first-tier suppliers) |
| Orientation | Commercial | Commercial + supply chain |
| Sector | Manufacturing companies (manufacturing, services sector) | Project and process-based activities (construction industry, engineering contractors, chemical industry) |