

## Chapter 1

# Introduction

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### 1 Introduction

Supply Chain Management (SCM) has been a very visible and influential research topic in the field of operations research (OR) over the course of the last decade of the twentieth century. The problems and experiences that have emerged from business practices have stimulated many researchers to contribute to a deeper understanding about underlying phenomena and causal relationships. Supply Chain Management has also served as an application area, where existing OR methods and techniques have been applied to new models for new problems, to new models for old problems that regained attention and to existing models for old problems. In the last case we find that progress has been made to extend existing results, stimulated by the apparent need for such extensions.

One might naturally start a handbook on SCM with a definition of the term Supply Chain Management. We have decided to resist this temptation as there are already too many competing definitions, and we do not see value in attempting to create a new definition or synthesize one from the current contenders. SCM has developed into a notion that covers strategic, tactical and operational management issues. We have made an attempt to structure the area by means of the chapters in this handbook. By no means do we claim to deal with all management issues commonly understood as being part of Supply Chain Management. Nevertheless, we do believe that this handbook covers a broad range of SCM issues that lend themselves to being formulated and analysed with mathematical models.

As appropriate for an OR handbook, this volume focuses primarily on supply chains as a context to apply OR methods and models. As a consequence, we are concerned with the decision-making processes that arise in SCM and are derived from managerial and economic considerations. In particular, we investigate and explore how OR can support decisions in the design, planning and operation of a supply chain. By doing so, we identify the

richness of SCM as an OR application field, which promises another ‘Golden Decade’ of research.

In this introduction we provide an overview of SCM as an OR application area. Since many of the chapters in this handbook carefully position a particular aspect of SCM in a business and economic context, we deliberately restrict the introduction to a high-level of abstraction. This allows us to discuss a number of relevant trends in the business environment that proved to be the main impetus for the prospering of SCM during the last decade of the twentieth century. The added value of such an overview should be to position SCM in its business context and to provide a framework to understand and position the subsequent chapters of this handbook in relation to each other.

## **2 Main business trends that created SCM**

In this section we discuss the main business trends during the late eighties and nineties of the twentieth century that provided the fertile soil from which SCM developed.

### *2.1 Core competencies*

Prahalad and Hamel (1990) argue that a number of companies have achieved significantly better results than their competitors by focussing on only a few competencies, so-called core competencies, and by outsourcing other non-core activities to companies that have a core competence on those activities. This reasoning has gained a lot of attention from large, highly vertically-integrated companies, such as Philips Electronics, Unilever, P&G, General Motors, etc. and has been adopted at a surprisingly fast pace. Whereas implementation of a company-wide information systems, such as an Enterprise Resource Planning (ERP) system, typically has taken three to seven years within these large companies, the implementation of the core-competency strategy has often been accomplished within one or two years.

In our effort to understand the success of the core-competency strategy in terms of its adoption by global companies, we identify a number of circumstances that seem to characterize the late eighties business environment.

#### *2.1.1 Short-term focus*

In the Western economic world the eighties were a decade of relatively low economic growth and high unemployment rates. In that climate a short-term focus prevailed. The core-competency strategy allowed firms to increase their return on investments (ROI) and related business performance indicators almost instantaneously: outsourcing non-core competencies eliminated the associated fixed cost in the denominator of ROI, which typically resulted in increasing the ROI. The economic climate permitted big multinational companies to outsource high-cost operations to companies with lower costs;