

INTRODUCTION

Modern companies face a number of challenges in performing their activities. The business environment in which they operate is characterized by dynamics, intense competition and a high degree of uncertainty and risk. Fluctuations in market demand are becoming larger and more unpredictable, and competition between goods and services offered in these markets is intensifying. All these factors require companies to take the necessary action to adapt to new conditions. The production of goods and the provision of services that customers want requires companies to pay increasing attention to their resource availability – in terms of design, production and transportation of products of suppliers, as well as their own production and distribution to customers. At the same time, they must constantly answer the question of what their end customers are really looking for. Therefore, in order to be able to run a successful business, companies need to be more and more closely connected with their business partners – suppliers and customers.

There is something in addition. In recent decades, many companies have realized that creating and maintaining lasting competitive advantage requires them to focus primarily on doing those business activities in which they have the best experience and which are closely related to their core competencies. That is why these companies are starting to get rid of most of their other business activities by outsourcing them to specialized external local and foreign companies and building various forms of collaboration with them. The outsourcing of individual parts of the process of creating a company's products and marketing them is at the heart of the concept of supply chains. The supply chain of a product covers all activities from the extraction of raw materials to the treatment of the product after the end of its use. It consists of individual participants, each of whom carries out one or more of the activities in the chain. The participants collaborate with each other and coordinate their efforts in order to increase the value for the end customers in the chain.

Today, almost every company is part of at least one supply chain. Many companies outsource activities to business partners or collaborate with other companies. In this sense, supply chain management is becoming a major source of competitive advantage for companies looking for opportunities to grow nationally and globally, increase profits and achieve sustainable goals.

This textbook is an introductory course on supply chain management without claiming to deal exhaustively with individual topics. It aims to introduce the reader to the various aspects of supply chain management, with a focus on strategic and tactical aspects. The textbook is an updated and adapted for the purpose of teaching undergraduate students version of the author's previously published works: the textbook „*Global Supply Chains – Modeling and Management*“ (2016) and the monograph in two editions „*Global Supply Chains – Concepts and Strategies*“ (2017). In these publications, the reader can learn more about the essence of supply chains and their management, as well as the global aspects of the chains.

The content of the textbook is systematized in eight chapters. The first chapter introduces and presents the essence and characteristics of supply chains and their management. The second chapter is devoted to the elements of the supply chain strategy, as well as the different types of strategies that companies can follow when building their supply chains. The third chapter presents the essence of the collaboration between supply chain partners and comments on the issues related to the management of the relations with suppliers and customers. The next three chapters deal with the management of the main business processes in the chains: procurement (chapter four), production (chapter five), and distribution and logistics activities (chapter six). Chapter seven is devoted to tactical management activities related to matching supply and demand in chains. The last eighth chapter discusses the latest trends in supply chain management related to the implementation of Industry 4.0 technologies.

The textbook is designed for undergraduate students in International Economic Relations. It can also be used by students from other bachelor's and master's programs, as well as by practitioners and a wide range of readers who are interested in the problems of supply chains and their management.

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CHAPTER ONE.

ESSENCE OF SUPPLY CHAINS AND THEIR MANAGEMENT

In this chapter you will learn:

- what is the essence and structure of supply chains and who are the participants in them;
- what is supply chain management and what are the types of management decisions;
- what are the challenges for managing global supply chains;
- what are the main business processes and macro processes in the supply chains;
- what are the main sources of competitive advantage in supply chains;
- what is the essence of supply chain outsourcing and what are its advantages and challenges.

1.1. Essence of the supply chain

The term „supply chain“ appeared in the 1980s and became more widespread in the 1990s¹. The Council of Logistics Management (CLM), which in 2005 changed its name to the Council of Supply Chain Management Professionals (CSCMP)², contributed to its establishment in academia and in practice. Based on the definition of CSCMP (CSCMP, 2013) and the definition of Chopra & Meindl (2015) we can define the supply chain as follows:

*The **supply chain** consists of all participants, directly or indirectly related to the fulfillment of a customer's request. It includes raw material suppliers, intermediate and final product manufacturers, warehouses and distribution centers, wholesalers and retailers, service companies and end customers. It*

¹ Keith Oliver, consultant at the company Booz Allen Hamilton is said to be the author of the term „supply chain management“ after using it in an interview with the Financial Times in 1982. Previously, however, the term „supply chain“ was used by Alizamir et al. (1981).

² The Council of Supply Chain Management Professionals (CSCMP) is a prominent professional worldwide association dedicated to the development and dissemination of research and knowledge on supply chain management. It currently has more than 8,500 members from almost all industrial sectors, governments and academia in 67 countries. CSCMP members are leading specialists in the field of logistics and supply chain management. The Council holds an annual conference that brings together professionals from around the world to exchange ideas and share knowledge.

covers all stages from the extraction of raw materials to the delivery of the final product to customers and its treatment after consumption.

Based on the presented and other definitions we can summarize the following *main characteristics of the supply chain*:

- It is a group of three or more participants (the company producing the final product, its suppliers and customers, service companies) which collaborate with each other;
- The collaboration covers all activities from the extraction of raw materials to the treatment of the final product after the end of its use;
- It can be considered as a form of conversion of incoming resources into intermediate and final (finished) products, which are sold on the markets in the form of goods and services delivered to end customers;
- It is a set of flows of relationships between participants (product flow, financial flow, information flow, value flow and risk flow);
- At the heart of every supply chain are the end (final) customers with their needs and desires;
- The interconnection between the individual companies is realized by linking their business processes through information and communication technologies;
- The participation of companies in supply chains is a prerequisite for increasing their competitiveness on the national and international market.

In addition to the above characteristics, the supply chain can be considered as consisting of two subsystems – on the one hand, the companies, their decision-makers and the interaction between these companies, and on the other hand, the activities, the resources used in them, and the interrelationships between these activities (Rakovska, 2009).

It should be noted that supply chains are based on Michael Porter's value chain concept³. I.e. the supply chain from the end customer's point of view

³ According to the concept of Michael Porter (1985), one of the most popular authors in the field of strategic management and competitiveness, value is created as a result of the implementation of value-added activities and the links between them. Porter (1985) divides these activities into two groups: primary and support. The primary activities (inbound logistics, operations, outbound logistics, marketing & sales, service) are those that directly contribute to the creation of a product and its delivery to the customer, i.e. they directly add value to the customer. Support activities (firm infrastructure, human resources management, technology, procurement) themselves do not add value directly, but indirectly by supporting the primary activities. Porter calls this model a value chain.

can also be considered as a value chain, as the individual stages in the supply chain add value to the end customers in the chain⁴.

Almost every modern supply chain has a global dimension. Nowadays, many large international companies are outsourcing, or selling globally, or collaborating, or competing with a similar company. At the same time, many small and medium-sized companies oriented towards international markets follow the strategy of entering the international market by integrating into the supply chains of large, mostly international companies (Boeva & Vasileva, 2010). Hence the concept of *global supply chain*. The main difference between traditional and global supply chains is that the latter involves companies from all over the world.

Boeva (2018) points out that the business model of global supply chains covers different types of international business operations: overseas production cooperation, service associations, outsourcing, franchising, licensing agreements, management contracts, contract agriculture. This, in turn, determines one of the often noted characteristics of global supply chains, namely their quality as non-capital forms of foreign activity – they can be considered as an alternative to foreign investment (Boeva, 2018). That is why the role of global supply chains is essential for modern international business. A number of authors argue that it is not individual companies that compete in the global economy, but supply chains. Therefore, global supply chains can be seen as a major source of competitive advantage in the global market.

1.2. Supply chain structure and participants

Each particular supply chain has a unique structure, which is determined by:

- The complexity and specificity of the final product – tangible goods, intangible goods or services, including the quantity and type of raw materials, intermediates and other inputs involved in its creation;
- The number of participants in the chain and the corresponding role played by each of them within that chain;
- The nature of the connections and relationships between the individual participants in the chain;
- The number of countries in which the supply chain extends.

Despite their uniqueness, several main types of participants in supply chains can be identified.

⁴ The concept of the value chain and its relationship with the supply chain is discussed in more detail in: Mollov D., „*Global supply chains – concepts and strategies*”, *Second revised and supplemented edition*, Publishing House – UNWE, Sofia, 2017.