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PREFACE

The textbook “Supply Chain Management” is offered for higher education seekers studying in the in the fields of study 05 “Social and Behavioural Sciences”, 07 “Management and Administration”, 27 “Transport”, 28 “Public Management and Administration” and 29 “International Relations”.

The subject “Supply Chain Management” is a holistic business concept combining modern organisational principles and the capabilities of advanced information technologies in the formation and optimisation of logistics activities. Effective supply chain management is one of the key factors in maintaining and increasing the competitiveness of enterprises and products in existing and future markets. The purpose of the discipline is to develop special competencies in the formation, management and evaluation of the effectiveness of the supply chain.

The tasks of the discipline include the following: mastering the conceptual apparatus and theoretical foundations of supply chain management; familiarisation with the supply chain management methodology; acquiring skills in supply chain design and planning; familiarisation with the main business processes in supply chains; studying the basics of creating a single information space for supply chain participants; getting acquainted with the criteria for the quality and efficiency of supply chain functioning; acquiring the ability to coordinate relationships between supply chain participants and make decisions in the supply chain management.

As a result of studying under the programme, the higher education seekers should know: models and characteristics of types of networks and supply chains; principles of supply chain functioning, including business process models, basic management elements, features of solutions in the areas of supply, production, marketing and design of new products; methods and tools for assessing the effectiveness of the supply chain; features of production capacity management in supply chains; role of logistics in the strategic development of the supply chain; fea-

tures of supply chain design and achievement of competitive advantages. Higher education seekers should be able strategically and tactically plan the functioning of the supply chain, assess the impact of logistics on the performance of both the supply chain and its individual participants, and identify reserves for improving the economic efficiency of the designed and existing supply chains.

As a result of studying the discipline, the student should acquire the following competences: ability to solve complex tasks and problems in the field of supply chain management; ability to determine the effective structure of a competitive supply chain that generates value; skills of using information and communication technologies for searching, processing, analysing information from various sources and making decisions to build supply chains; ability to think abstractly and pragmatically identifying cause-effect relationships between phenomena and processes in supply chains; ability to identify risks of local and global supply chains, develop measures to prevent risk situations, and implement international supply chain security standards; ability to make informed strategic decisions on the formation of optimal supply chains.

The textbook contains 14 sections. Also, textbook contains tests, case studies and discussion questions, which should facilitate the practical mastering of the material and the ability to solve specific practical problems.

Contribution of the authors is as follows: A. Koldovskiy personally developed sections 11 and 12; V. Kolosok personally developed sections 3 and 4; A. Mostova personally developed sections 9 and 10; V. Drozdova personally developed sections 5 and 6; S. Lytvynenko personally developed preface, sections 1 and 13; N. Vitka personally developed sections 7 and 8; Y. Popova personally developed sections 2 and 14.

The authors express their sincere gratitude for the assistance in preparing the textbook for publication to collectives of the Air Transportation Management Department National Aviation University, as well as to professors A. Novikova and V. Yanovska. Authors of the textbook will be grateful for critical comments, recommendations and suggestions.

1. UNDERSTANDING THE SUPPLY CHAIN

1.1. MODELS AND KEY STEPS IN THE SUPPLY CHAIN

A supply chain is a network of individuals and companies involved in creating a product or service and delivering it to the consumer. The chain links start with the manufacturers of raw materials and end when the finished product is delivered to the final user [1].

Elements of the supply chain include producers, vendors, warehouses, transportation companies, distribution centres, and retailers. The supply chain functions cover product development, marketing, manufacturing operations, distribution, finance, and customer support. Effective supply chain management leads to reduced costs and an improved production cycle [1].

There are many types of supply chain models. The model that a company selects may depend on the way it is structured and its individual needs, as shown in Fig. 1.1 [1].

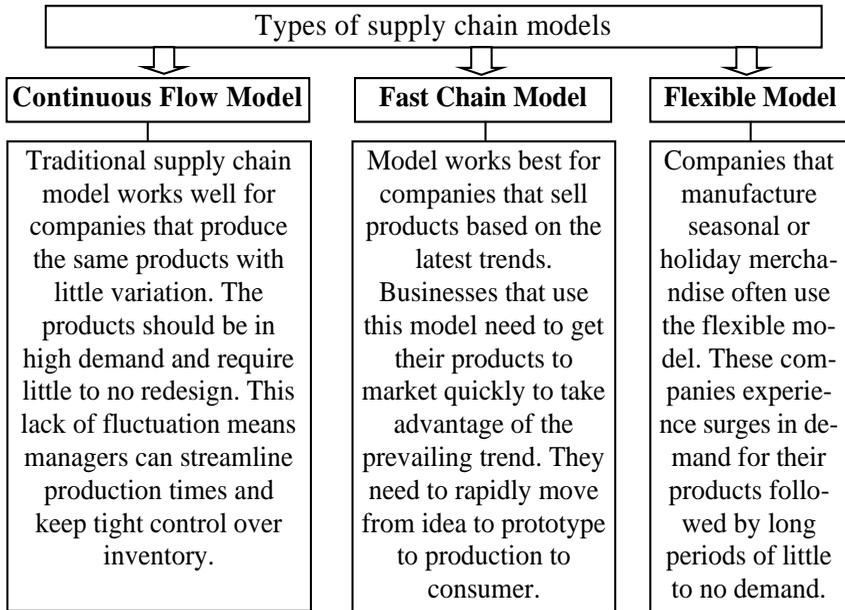


Fig. 1.1. Types of supply chain models [1]

The supply chain covers all the stages related to the delivery of a finished product or service to the consumer. Effective supply chain management can reduce a company's overall costs and increase its profitability. Failure of one link can disrupt the rest of the chain and become costly [1].

The supply chain is composed of interrelated components, each of which forms the finished product that customers purchase. Some types of supply chain stakeholders are shown in Fig. 1.2 [2].

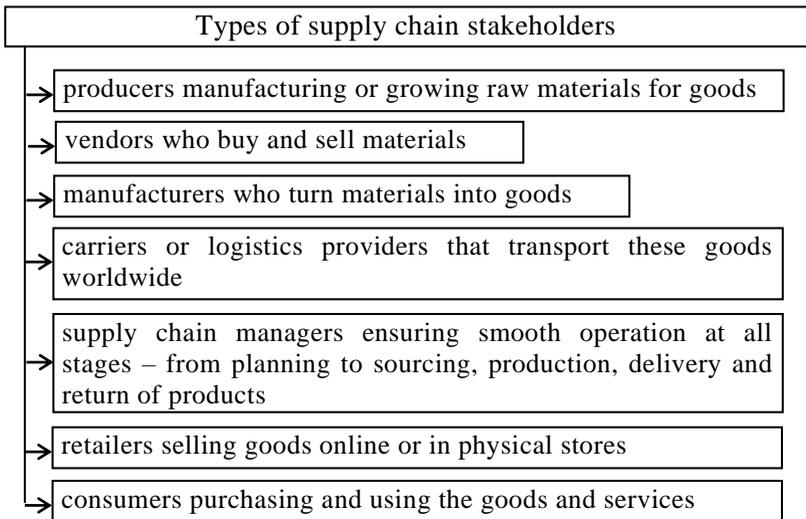


Fig. 1.2. Types of supply chain stakeholders [2]

Supply chain management (SCM) is the supervision and control of an organisation's operations to transform raw materials into finished products for sale to end customers. SCM ensures centralised control over the planning, design, production, inventory and distribution activities needed to manufacture and sell the company's products [1].

Five main spheres of supply chain vulnerability can be identified [2] as follows: planning and supplier networks; transport and logistics systems; financial resilience; product complexity; and organisational maturity. The key stages in the supply chain are given in Fig. 1.3 [1].

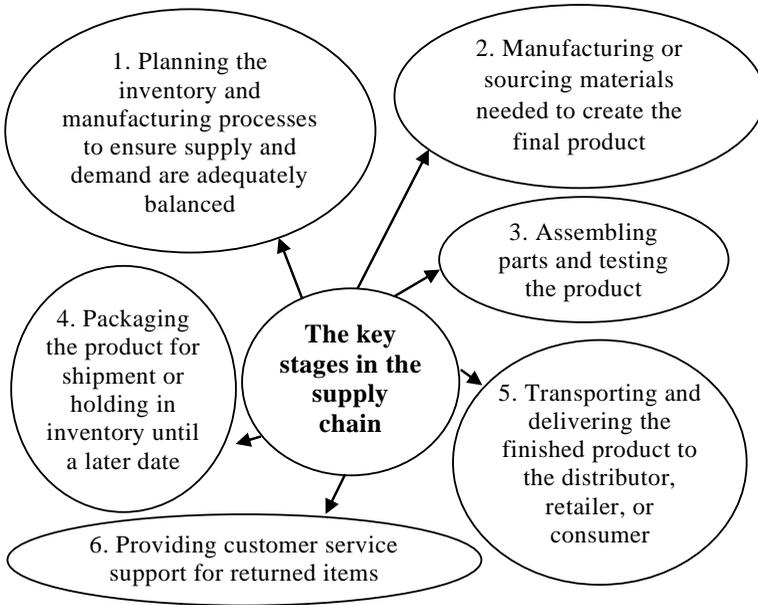


Fig. 1.3. Key stages in the supply chain [1]

McKinsey has grouped *supply chain shocks into four distinct types* based on their influence, timing and frequency of occurrence [2]:

Unanticipated catastrophes. Such events represent history-making occasions that cannot be predicted and result in trillion-dollar losses. Some examples included extreme terrorism and a massive cyber-attack.

Foreseeable catastrophes. Shocks in this group are related in scale to an unforeseen disaster, but they differ in that greater regularities and probabilities can determine overall readiness. Financial crises and global military conflicts are examples.

Unanticipated disruptions. Such events are severe and high-cost, but on a smaller scale as compared to catastrophes. Data breaches, product failures and workplace accidents can be considered examples.

Foreseeable disruptions. It is possible to spot some disruptions in advance, even before they happen. For example, trade disputes between China and the United States and the UK's exit from the European Union.