

Distribution Network Design and Transport Optimization

Brief description CAS 2.1.

CAS 2.1. deals in depth with the theme of Distribution using the logistics concept as well as the work flows (CAS 1.4) as stepping stones. What actually *is* a distribution network and why do they exist at all, what parties play a role here and what strategic choices are made? In addition, we go into the three flows to be distinguished: goods, information and money flows. What aspects determine the organisation of a goods flow and how is this displayed in a well-organised way? The support of the warehouse processes is dealt with extensively ranging from ICT, KPIs to planning and coordination. Next, economic control demands a thorough knowledge of the money flows and costs incurred in these processes. Finally, some space is reserved to acquaint students with the trends and latest developments within the professional context of Distribution.

CAS 2.1	Topics	Remarks
Distribution, general and strategic	The introduction to the professional context of Distribution.	
	2.1.1 Introduction to Distribution	What aspects are important in a distribution environment and where do we see them back in the logistics concept?
	2.1.2 Goods flow	What choices need to be made with regard to setting up the distribution network?
	2.1.3 Information flow	What information flows are needed to support the processes within the distribution network?
	2.1.4 Money flow	Money flows and costs in a distribution network.
	2.1.5 Trends & Developments	Space to enable the quick integration of new developments into the education.

Lecture material

2.1.1.

Presentations from students and lecturer are made available on the Portal after the lecture material has been dealt with. The following literature is used in the treatment of the topics and is available at the multimedia centre or on the internet:

- Supply Chain Management Strategy, Planning, and Operation, Chopra & Meindl; ISBN 9780273765226; (SCM)
- Logistics: Principles and Practice, Visser & Van Goor; ISBN 9789081649117; (V&G)

2.1.2.

The following literature is used:

- Supply Chain Management, Chopra & Meindl, ISBN 978013609451-7

Presentations are made available on the Portal

2.1.3.

The following literature is used:

- Chopra, S., & Meindl, P. (2012) Supply Chain Management, Pearson, ISBN 978013609451-7
- Goor, A. R., Van Amstel, M. P., & Van Amstel, W. P. (2003). European distribution and supply chain logistics: Stenfert Kroese, ISBN 9789081649124.
- Visser, H. M., & Van Goor, A. R. (2006). Logistics: Principles and Practice, WoltersNoordhoff, ISBN 9789020733044.
- Demir, E., Bektaş, T., & Laporte, G. (2014), A review of recent research on green road freight transportation. European journal of operational research, 237(3), 775-793.
- Piecyk, M. I., & McKinnon, A. C. (2010). Forecasting the carbon footprint of road freight transport in 2020. International Journal of Production Economics, 128(1), 31-42.
- Costs and Benefits of Green Logistics, 4flow Supply Chain Management Study 2013
- Ecotransit: Ecological Transport Information Tool for Worldwide Transports; IFEU Heidelberg, Öko-Institut, IVE, RMCN * <http://www.ecotransit.org/calculation.nl.html>

Presentations are made available on the Portal.

2.1.4

- Sussams, John E., Logistics Modelling, Pitman Publishing, 1992, 9780273034148 (available in pdf)
- • Kaplan, Robert S., and Anderson, Steven R., Time driven Activity Based Costing, HBR Publishing, 2007, 978-1422101711
- • Jacobs, Chase, Aquilano, Operations and Supply Management, 12th ed.
- • Chapter 10: Supply Chain Strategy (Measuring Supply Chain Performance: pp. 359 – 361; Value Density: pp. 37 - 373)

Brief description CAS 2.2.

CAS 2.2. deals in depth with the theme of Transport. We discuss the different transport methods and the required tools in detail so that students can make a well-considered modality choice. Which transport modality and tools are recommended, is an investment justified, what are the resulting costs and into what rates can they be translated? Finally, students have to set up an organisation with the knowledge gained from the M&O part.

CAS 2.2	Topics	Remarks
Transport, tactical and operational	This section deals in detail with layout and implementation issues within transportation (both from an LE and an L&E perspective).	
	2.2.1 Modalities	Modality choice aspects
	2.2.2 Tools	Unit loads/load carriers/load securing, etc.
	2.2.3 Management & Organisation	What do transport organisations look like as regards structure and planning?
	2.2.4 Economic aspects	Costs in a transport environment

Lecture material

Presentations by the lecturers, the case studies, the guest lectures, the workshops and the required reading are made available on the Portal.

- Reader “Continental and Intercontinental Transport”, B.v.d. Steen, B. Vogel, April 2017
- The Geography of Transport systems, Jean-Paul Rodrigue, ISBN 978-1-138-66957- 4, Ch6, International Trade and freight Distribution;
- The Handbook of logistics and distribution Management, A.Rushton;6th Edition, ISBN 9780749476779;Ch26, Maritime Transport and Ch25, International Logistics, modal choice. FHTandL CAS manual – CAS 2.2 11
- The Future of intermodal freight transport, R.Konings; ISBN 978-1-84542-238-7 Ch5, Bundling of freight flows and Hinterland network development;
- Freight Forwarders Intermediary Role in Multimodal Transport Chains, H.J.Schramm ; ISBN 978-3-7908-2774-3;Ch2, Legal and Functional Perspective of Freight Forwarding in Multimodal Transport Chains
- Reader

The following required reading is used in the treatment of the topics and is available at the multimedia centre or on the internet:

- Bhimani, A., Horngren C.T., Datar, S.M. & Rajan, M.V. (2012). Management and Cost Accounting. 5th Edition. FT/Prentice Hall. Chapter 13, pp. 409-450

- Van Goor, A.R. & Ploos van Amstel, R. (2003). European distribution and supply chain logistics, Groningen: Stenfert Kroese., Ch 2-3.5-3.6
- Vogel, B. (n.d.), Transport Costs I: Theme 4 Transport, 2014/2015.

Brief description CAS 2.3.

In CAS 2.3., students learn what aspects are important in setting up a distribution network, both from a marketing perspective and from the required information flows. This, in turn, is the starting point to further shape the organisation with regard to structure and planning, using the knowledge gained from the M&O part.

CAS 2.3	Topics	Remarks
Distribution, tactical and operational	This section deals in detail with layout and implementation issues with regard to distribution networks, both from an LE and an L&E perspective.	
	2.3.1 Distribution support	What information flows are there between the different parties within an international distribution network?
	2.3.2 Distribution from a marketing perspective	What factors play a part in organising/redesigning a distribution network?
	2.3.3 Management & Organisation	What do distribution networks look like as regards structure and planning?

Lecture material

It consists of a reader, Introduction into Customs, and slides. Both can be found on the Portal.

Required reading used per lecture is available at the multimedia centre:

- Principles of Marketing, Kotler P. , Armstrong G. (20XX) ISBN X, Chapters 1, 2, 3, 5, 6, 7, 8, 10, 12, 13, 14 The sections required per chapter are explained during the contact periods.
- Business Administration, Peter Thuis and Rienk Stuive, 1e edition, 2012 ISBN: 9789001809768 (e-book available at the multimedia centre as one-day loan).

Brief description CAS 2.4.

This CAS studies the project-based approach in more depth. In addition to discussing the methods and techniques that are relevant in different distribution environments, the different data gathering methods for these aspects are explicitly dealt with here as well. After that, a few topics having a clearly quantitative component are dealt with that are specifically applicable in a distribution environment, trip and route planning, as well as topics that are broadly applicable, location models and lead times.

CAS 2.4	Topics	Remarks
Tools	This section deals with methods/techniques that belong to a logistician's basic tools and that are usually independent of the professional context.	
	2.4.1 Project-based approach	Techniques/methodologies
	2.4.2 Location models	
	2.4.3 Trip and route planning	
	2.4.4 Lead times	Techniques to determine/reduce lead times in a distribution network.

Lecture material

- Case Location models
- Supply Chain Management, Chopra & Meindl, ISBN 978-0-13-609451-7;CH5
- Operations and supply chain management, Jacobs, Chase & Aquilano. ISBN 9780071220903; CH12
- •Richards, G., Grinsted, S. (2014). The logistics and supply chain tool kit: over 90 tools for transport, warehousing and inventory management, ISBN 978-0-7494-6808-8.
- Rushton, A., Croucher, P., & Baker, P. (2014), The handbook of logistics and distribution management: Understanding the supply chain, Kogan Page Publishers.
- Taha, Operations research : an introduction, ISBN 978-0-13-444401-7
- <https://www.informs.org/ORMS-Today/Public-Articles/February-Volume-43-Number1/Vehicle-Routing-Software-Survey-Higher-expectations-drive-transformation>
- <https://deming.org/management-system/pdsacycle>
- Introductory Statistics, Wiley, 978-0-470-50583
- European Distribution and Supply Chain Logistics, Stenfert Kroese, 978-9020732535 (available at the multimedia centre)
- Additional lecture material is made available through SharePoint