#### Supply Chain Management

# Introduction to Logistics & Distribution Structures

Exercise:

What is Supply Chain Management and what is Logistic?



#### **Definitions**

- Logistics: the science of the efficient flow of materials.
  - That is; all the activities, which together ensure that materials and products are at the right place at the right time, thus creating financial gain for the company
- To create efficient logistics it is necessary to have both efficient end effective internal material flows between companies



#### Definitions

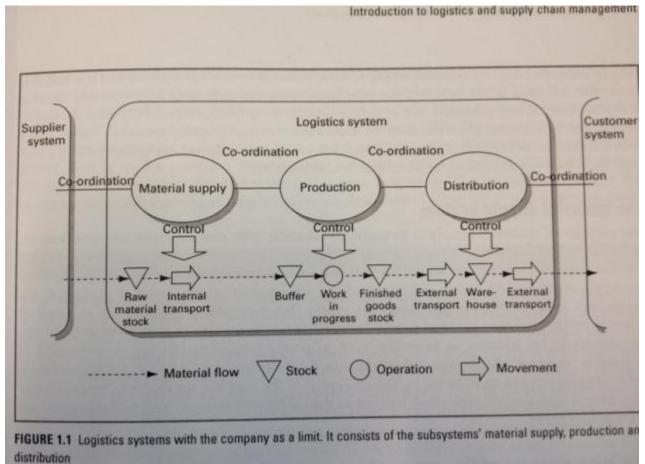
- Supply Chain Management: is used as a similar concept, but emphasize the significance of integrating flows within the individual company with other companies in the supply chain...
- Supply Chain Management also encompasses the planning and management of all activities involved in logistics management, such as coordination and collaboration with suppliers, intermediaries, third-party service providers, and customers
  - Also, it involves more processes than just the logistics, such as product development, marketing and so on

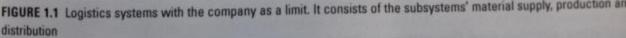
## Logistics as a system

- Logistics is an open system that has en exchange with its surroundings – the aim is to supply customers efficiently with their required products through different subsystems;
  - o the material supply system; purpose is to supply production with raw materials and components
  - o the production system; co-ordinates machines, personnel and materials to achieve an efficient production process
  - o the distribution system; has a close relationship with the company's overall market strategy, which originates in the market's and customer's needs, and determines what delivery service distribution must achieve

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## The logistics systems







## Goals of logistics

The goal is to create competitiveness and improve efficiency that positively affect profits by:

- Creating good customer service; flexible delivery service and information on material flows
- 2. Focusing on **cost**; avoid high warehouse costs, shortage costs, delay costs
- 3. Minimizing **tied-up capital**; capital (currents assets) involved in the flow of materials, such as raw materials, stocks in production and so forth

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## Goals of logistics

The goal is to create competitiveness and improve efficiency that positively affect profits by:

- 4. **Flexibility** of the logistics system; has an impact on customer service, cost and tied-up capital
- 5. Focusing on TIME!

TTC: Time-to-customer

**TTM:** Time-to-market; from product concept to product launch, affects competitiveness

6. Minimizing **environmental impact**; through use of alternative vehicles, engines and fuels, flexible road transportation

## Exercise: Conflicting goals

- Goal conflicts are not uncommon between the marketing and production functions of a company. Identify some of these conflicts and give examples of how they could be eliminated. (Table 1.1, p. 16-17)
- Groups of 4-5 students
- Prepare to present to the rest of the class
- Time: 45 min.



#### Distribution structures

#### Chapter 10

Distribution structure design and the role of distribution for supply chain value adding



## Distribution utility values

Activities in a supply chain are aimed at satisfying customers' needs by supplying different types of products. To achieve this, 4 types of utility must be performed in the supply chain:

- Form utility value refinement of input goods to end products
- Place utility available at the right place
- Time utility available at the right time
- Ownership utility transfer of ownership to customer
- Marketing/sales ownership
- Production form
- Distribution place and time



#### Division of utilities

- Division of utility-performing activities divided between functions in a company\*
- But it can also be divided between companies in the supply chain



#### \*Example: IKEA

- Place: customers fetch their goods themselves
- Form: divided between IKEA and customers as customers assemble the goods themselves
- Time: goods in stock and available at the warehouse
- Ownership: transferred through cashier function in the warehouse



## The distribution gaps

- The division of activities in the supply chain to create utility is one of the fundamental problems in the planning of distribution structures
- Important to bridge the gap between the producing company and the consuming customers by using intermediaries, such as retailers, agents, distributors and so on



## Five gaps

#### Manufacturer vs. customer

- Pace gap different intervals
- Distance gap few locations vs. widespread market
- Quantity gap produce more than consumption
- Range gap wide product range is demanded might be financially difficult
- Variant gap access to more variants



## The intermediary roles

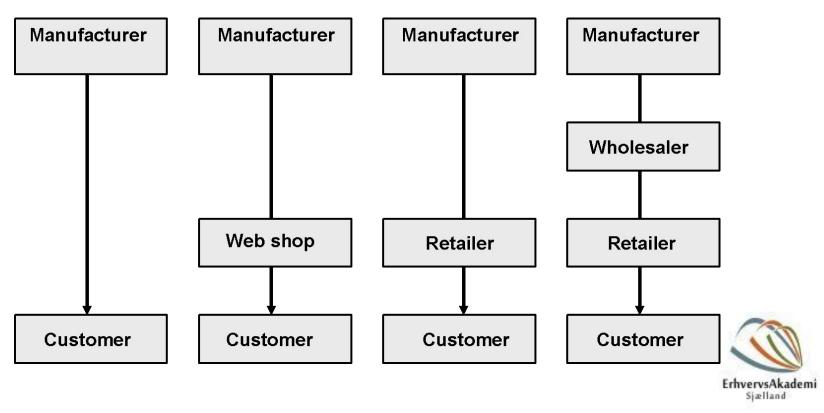
**Intermediaries** are players that carry out distribution functions between producers and consumers.

They are used to achieve cost-efficient bridging of gaps. It is possible to identify 5 roles for intermediaries:

- Aggregation role; delivers quantity according to each customer's needs = place utility
- **Spreading role**; stock-keeping intermediary, short delivery time = time utility
- Contact & Service-providing role; direct customer support & order-specific configuration intermediary = ownership utility
- Consolidation role; represents several companies and distribute their products = time & place utility

#### Distribution channels

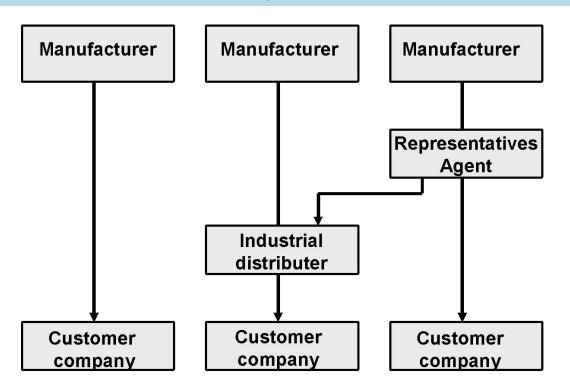
#### Transaction channels for consumer goods



#### Distribution channels

#### Transaction channels for industrial goods

## Fewer customers and higher order values, direct delivery more common

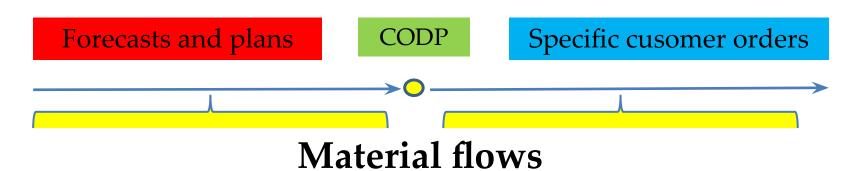




#### Customer Order

## Decoupling Point (CODP)

 The point in the supply chain from which a product is destined to a certain customer





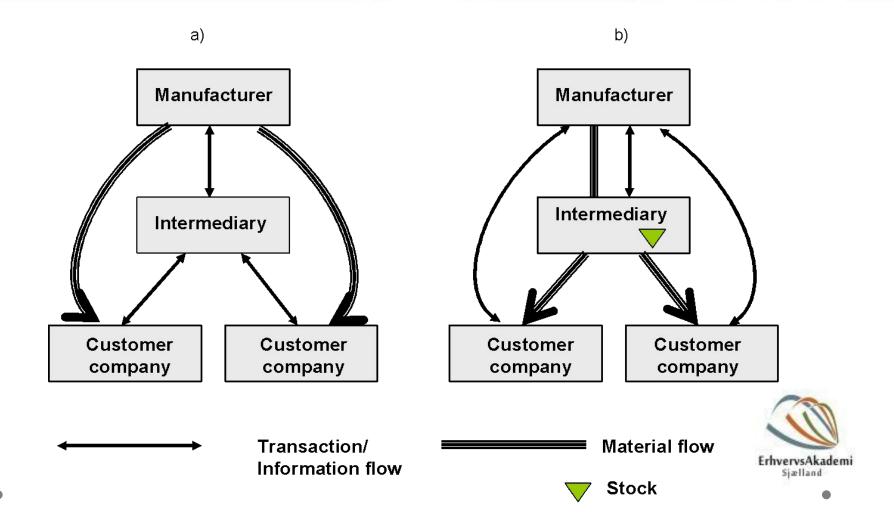
## Material flows in distribution channels

When the transaction channel and the material flow channel are separated, there are 2 general alternatives:

- a) Direct material flow channel: the intermediary may represent different suppliers at the same time of sale and ordering, and as such provide a type of one-stop shopping
- b) Direct transaction channel: transaction channels initially going to the product-supplying company while the material flow channel goes from intermediary company to the customer

#### Transaction and material

#### flow channels



#### Warehouse structures

- When transaction channels and material flow channels is handled by the company itself it is often necessary in a distribution system to have a warehouse or a hierarchy of warehouses (central vs. regional)
- There are pro's and con's of a centralized warehouse structure:
  - + Economy of scale
  - + Reduced bullwhip-effect
  - + Reduces non-value activities
  - + Reduced risk of incomplete

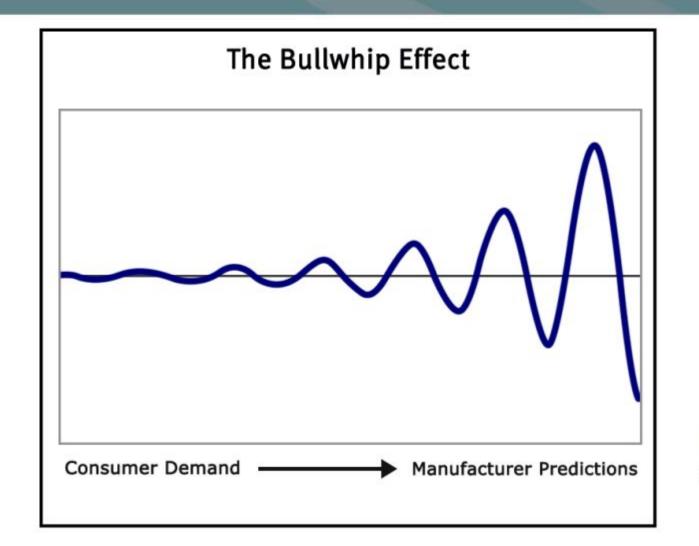
- Increased transportation costs
- Longer delivery times
- No local existence
- Longer proximity to customers



## eThe Bullwhip Effect

- Demand variability increases as one moves up the supply chain away from the retail customer, and small changes in consumer demand can result in large variations in orders placed upstream.
- Eventually, the network can oscillate in very large swings as each organization in the supply chain seeks to solve the problem from its own perspective. This phenomenon is known as the **bullwhip effect** and has been observed across most industries, resulting in increased cost and poorer service.

## The Bullwhip Effect





## The Bullwhip Effect

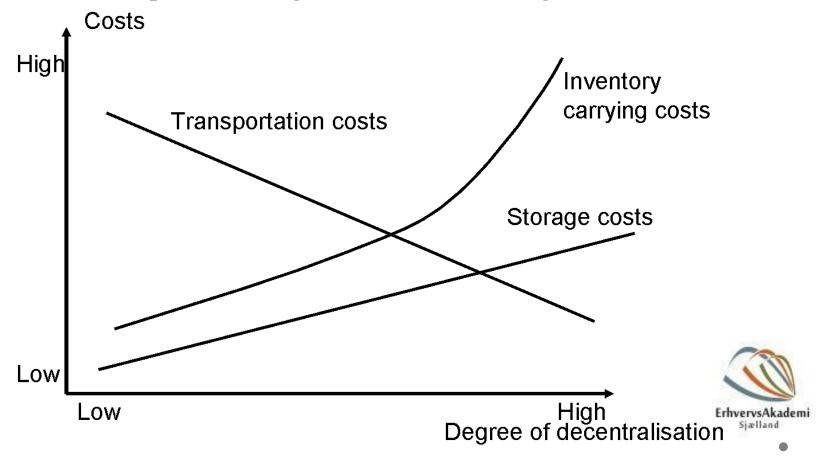
http://www.youtube.com/watch?v=wLNdDSYqhNw



#### How should companies decide

#### on the degree of centralization?

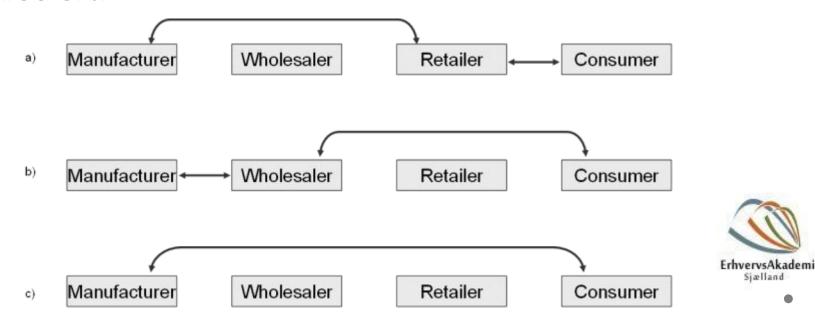
The relationship between logistics costs and the degree of centralization



#### Changing conditions for

#### intermediaries

- During the past decade the existence and value of intermediaries has been questioned
- Different forms of intermediaries have been eliminated as distribution systems have become more efficient (disintermediation), mainly because of developments in the area of IT



### Group exercise

- Discuss and answer question 4 and 5 page 239
- Be prepared to present your answer to the rest of the class
- Time: 45 min.
- In groups.

