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Kandidatnr. : 6547
Dato : 18.12.12
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SECTION A)

The development in logistics and SCM has been immense, and it increased extremely from the 1950's up untill the financial recession began in 2008. The greatest reason for the development has been globalization, which has fascilitated increased information flows, technology, deregulation, intensity of fright, and organizational structure. I know these six key developments are not quite equal to the ones in the book, but I will try to approach the same key points as the book does. ok :-)

First of all, a supply chain is the network of organizations that is involved through the upstream and downstream linkages, in the different activities and processes that produces value in the form of products and services in the hands of the ultimate consumer.

← materials →

Suppliers – Manufactorers – Distributors – Retailers – Customers

← Information and resources →

← upstream   downstream →

Supply chain management is the coordination of activities, information and processes and includes integration of key business processes from supplier to end customer with the goal of achieving sustainable competitive advantage. Integration means alignment and interlinking of business processes, and is product and process based.

Logistics is a part in SCM (acording to the book which has a unionist-wiew) and is about getting the right product, in the right way, in the right quantity and quality (not only when sent, but also defect-free at delivery) at the right time and place, to the right customer and finally, - at the right cost and price. From this we can say that SCM is more comprehensive than logistics.

As mentioned globalization is one of the key ~~enablers~~ drives of SCM. Globalization has made the world smaller through making distances shorter because of transportation and technology, and we doesn't even have to be in other countries to be able to communicate with them because of information technology. Deregulations have opened bounderies and made it cheaper and possible to use comparative advantages.

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Finally, globalization has made it possible to outsource and offshore processes, making it cheaper and more efficient to run businesses. A lot is possible to say about everything here, so I appologize if I mix topics.

There are still problems in getting global SC though, as government intervention still creates barrers to trade. (Local autonomy) Local standars are also a problem to truly global SC, as language can be an obsticle, and we can have ambiguity in different countries. (The standards at McDonalds food quality in Norway are a lot higher and more strict than in the US.) Finally, local operating procedures can cause havoc in many SC. culture, rules and regulations are different, and it is a problem for firms such as polish ones in Norway, having different procedures for work hours and employment policiees.

✓ + ICT system

The evolution of the internet has played a large role in the development of SCM. It has increased visibility in different phases of the supply chain, and making it easier to track and monitor patterns ~~[illegible]~~ and maybe find problems before they cause harm!

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Information is the key that unlocks SC responsiveness to demand. Demand can be volatile, and information can reduce variety and increase reliability!

Information has been enabled by increased techonoly and knowledge, and I would say that the development in technology is the biggest driver today for SCM in the future.
Technology has emerged from craft production, to mass production (Henry Ford!) and then continuing to lean production, and today we can see that mass customization is the largest trend. We have four types of mass customization:
<u>collaborative</u>, when customer and supplier works togenter on making the product ex. a house.
<u>Adaptive</u> is when the customer is able to customize the product or service "on their" own, ex. online photography sites or "build a bear" where you can choose type of teddybear and how soft it should be.
<u>Transparent</u> is when unique products are presented as homogenic. Ex. when you order a "classic massage", it will be unique from how your body is and the massuse, but the "label" is equal for all.

Cosmetic is when a product is differentiated to different segments. ex. helmets, it is the same type of product, but for young snowboarders it is "cooler" than for old ~~[illegible]~~ bicycle helmets.

Deregulations have made it cheaper and easier to access other markets and countries. It has made the flow of products larger, and facilitaded outsourcing, offshoring and the emerge of MNC's!

Especially the intensity of freight has ~~in~~decreased with deregulation.
Transportation methods used are air, rail, road (trucks), sea (ships), pipeline and the internet! Which method best to use of course depends on the product delivered, but also the speed needed and the distance.
Intensity is increased because of the promotion of scale (sending larger loads) and the enhanced efficiency (sending more per load) IKEA has used this as a competitive advantage, fitting more than twice as much in each shipment because of the flat packages.

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Finally, organizational structure has really been one of the key developments in the evolution of SCM!
For a company to outsource, it can get many advantages: lower costs because the outsourcee is better at making (learning curves) More flexibility because of fewer areas to focus on and more resources. The ability to focus on core competences or strategies is better because of again more free resources (people, space, finance) and fewer focus areas. The access to better techonlogy is also a reason to outsource, and access to knowledge and information. To share or spread risk is also a reason for outsourcing.

While outsourcing is the transfer to a third-party of management and processes previously performed by the company itself, offshoring does not have to mean transfering ownership. Offshoring is simply transfering a process (or more) to a lower cost location in other countries. Either of the production process (often offshored to typically china or India) or a service (call-centers in India).

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The structure of contracts has also evolved, from market based negotiations to collaborating:

Market based negotiations → Coordination → Cooperation → Collaboration

Market based negotiations	Coordination	Cooperation	Collaboration
typically one-time market based contracts	fewer suppliers long-term contracts	Information linkages, strategic alliances	

Collaboration is a relationship between SC partners developed over a period of time. It often includes joint planning, technology sharing, and may be integration such as joint ventures or parent/subsidiaries.

In the later years, we have seen an ~~the~~ ~~of~~ increasing number of natural hazards and disruptions in various supply chain. It is of no doubt that increased globalization has resulted in supply chains being more vulnerable, because a minor event in one part of the word can have consequences in other parts of the word! Several strategier has evolved because of this, in order to try to keep the competitiveness high.

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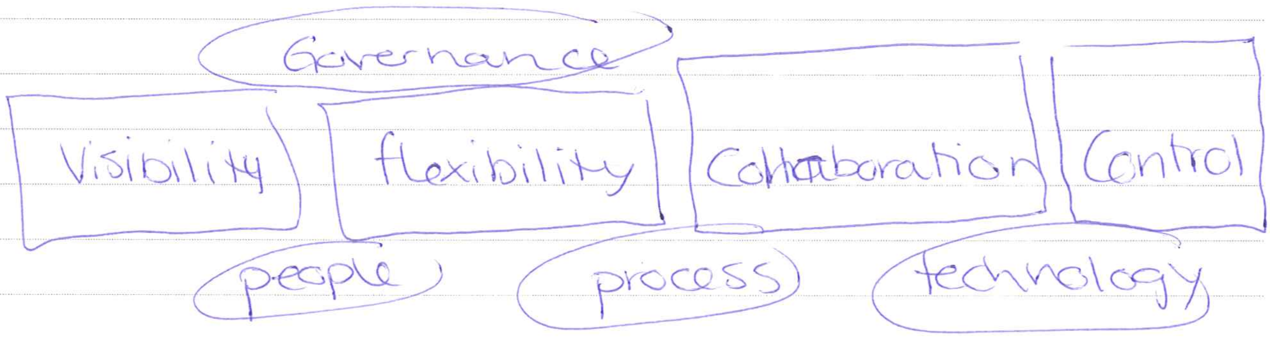
I will explain a lean strategy in the last exercize, and the other strategy is agile. Being agile is important for supply chains with uncertainty in demand. Agility is the ability to respond rapidly to changes in supply or demand, the ability to handle unexpected external disruptions smoothly and cost-effective, and the ability to recover promtly from disruptions such as a natural hazard. Lean & Agile strategies are not mutually exclusive.

It has also become important for SC to be resilient, to be able to return to the original or desired state after being disturbed. According to ~~Accenture~~ Deloitte, resilience is buildt by 4 pillars; Visibility, Flexibility, Collaboration and control. Resilient SC are also known to have clearly defined governance, and are supported by key factors people, processes and techlogy.



Visibility is being able to track and moniter various stages in the supply chain, and try to identify patters to find possible threats before they happen or as soon as possible.
Flexibility is the ability to handle disturbances without occuring to much extra costs (Financial or reputation)
Collaboration is working closely with partners to identify problems and to make the SC as efficient as possible
Control is being robust and having control mechanisms and other measures to handle things correctly and as planned.

Is also to align the goals of all participating members of the SC with their own, to ensure that when individuals follow their own interests, it gains the entire SC.

I know this was a little more than the six key developments, but I feel that all things mentioned is an important part of the development of logistics and SCM up untill the place we are at today.

→ not all topics were covered, such as growing complexity and uncertainty; still your discussion clearly showed that you have a good understanding and are able to reason about the developments, so: full points :)

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Def.? (-2)

III. a) A reduction in load time can help a SC reduce its inventory buffer without hurting customer service because shorter lead time reduces the transitory inventory, the inventory "in transit", waiting to be manufactured. Being able to assemble products closer to sales also reduces variability because time increases uncertainty. One can also use the postphonement strategy where a base product can be made and assembled first when more accurate information comes.
A reduction in lead time also reduces the chance of exagerrated variability in demand when information moves upstream and away from point of use, also called the bullwhip effect. The bullwhip effect can be harmful as demand amplification can lead to exess inventory which takes up place, is expensive and may never be sold.

~~[illegible]~~

b) a) First of all, the economic order quantity model is a simple framework that assumes a few things:

- Only purchasing costs and carrying costs (holding costs) are considered relevant.
- The same quantity is ordered each time.
- There is a constant decline in inventory.
- No stockouts occur
- Purchase cost, order costs, carrying costs and purchase-order lead time is known with certainty.
- Quality and shrinkage costs are only considered in the way that they are "included" in carrying costs.

The ordering costs are the quantity of times ordered × the ordering costs. 1200 / 100 = 12 orders × $30 for each order placed = <u>$ 360 ordering costs</u>

The holding costs are average inventory * carrying costs. We assume that the average inventory varies from 0 to 100 (the quantity ordered each month) so the average inventory is 100/2 = 50.
50 * $ 40 = $2000 × 0.3 = $600.
The average inventory / holding costs are <u>$ 600</u>.

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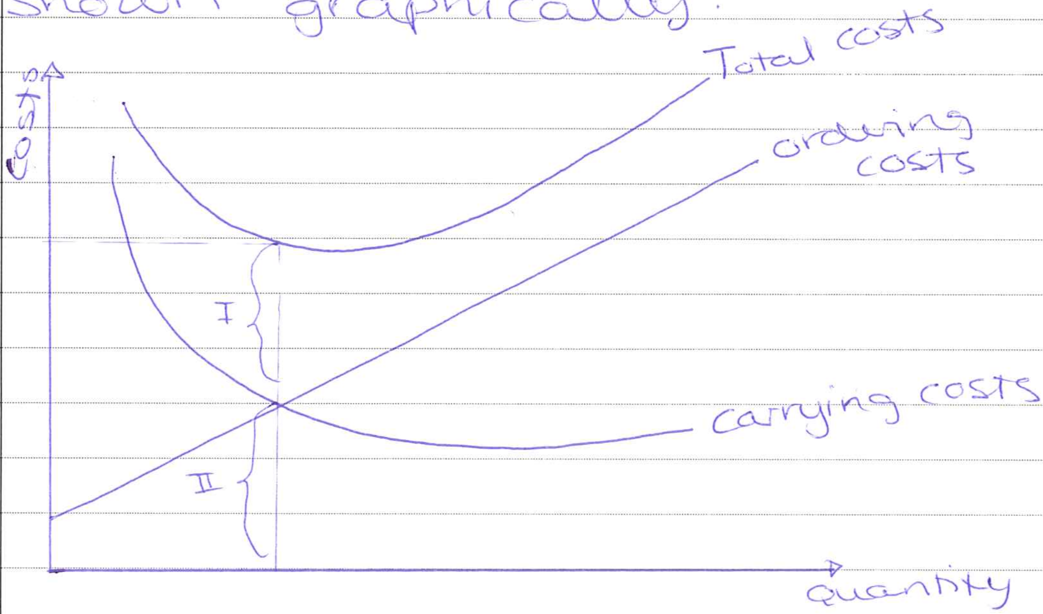
The total inventory costs for the current order quantity is \$360 + \$600 = \$960

b) The economic order quantity is the quantity where the total costs are lowest. In a figure, this can be shown graphically:



I = II, and the total costs graph is supposed to be on its lowest point.

So, ordering and holding costs should be equal:

$$\frac{Q}{2} \cdot H = \frac{D \text{ (Annual demand)}}{Q} \cdot P \text{ (costs pr. order or placement of order)}$$

if we multiply by 2QH, we get that

$$Q^2 = \frac{2DP}{H} = Q = \sqrt{\frac{2DP}{H}}$$

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b)

$$Q = \sqrt{\frac{2 \cdot 1200 \cdot 30}{40 \cdot 0.3}} = \sqrt{\frac{72000}{12}} = \sqrt{6000}$$

Q = 77,45 HDD's pr. order ≈ 78

77 (-1)

c) order costs = $\frac{1200}{78}$ ≈ 15 times pr year

15 · \$ 30 = \$ 450 in order costs

Holding costs = $\frac{78}{2} \cdot (\$40 \cdot 0{,}3)$ = \$ 468 in holding costs

The difference between order and holding costs (18 dollars) is because we can not order half a HDD, they should have been the same! V

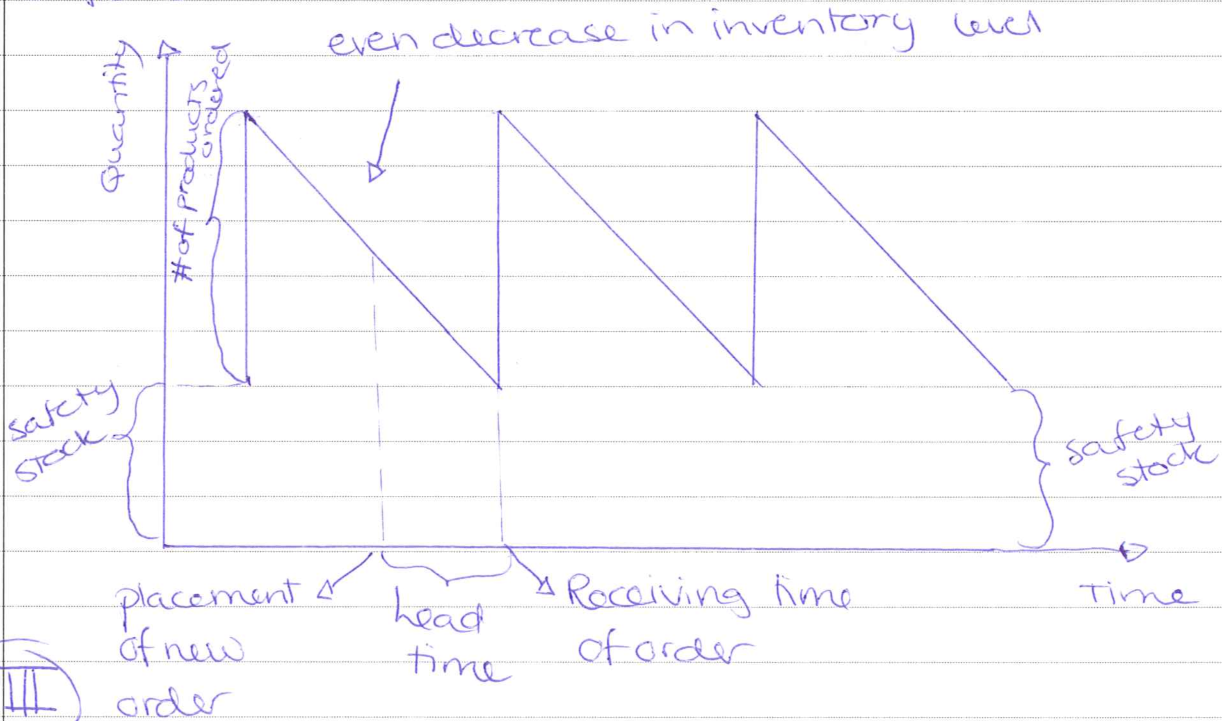
Total inventory costs = \$ 918

930 (FP)

Total inventory cost before = \$ 960

savings by using EOQ = \$ 42

c) Because we are now ordering fewer HDD's per order, but more times during the year, our total costs are lower. This is more optimal than before. ✓



III

c) A safety stock is the extra amount of products we have in our inventory, as a "buffer." Several reasons can be named for having the safety stock, ex. volatile demand, uncertainty around supplier, scarce material and so on. ✓

Amazon.com sells online, and does not need many smaller inventoryes, but can instead have one large one.
To be able to pool the inventory is great, because many uncertainties put

together results in lower uncertainty, and uncertainty is one of the biggest reasons for a safety stock!

Because Amazon.com sells online, the customers does not expect to get the product right away as opposed to a book store. This gives greater flexibility for Amazon, as they can have popular products close to the markets, and other products "on hold" from their suppliers. Because of this, I would believe that Amazon can try to use as much of a "Lean strategy" as possible, trying to eliminate waste in a pulled-based value stream of activities with ~~level~~ level production (no idle time or surge in demand) and JIT-production.

- Centralisation, no need for retail stores
  ↳ portfolio strategy
- very good SCM

REMARK: I enjoyed reading your exams, as it showed that you have a very good understanding and are able to reflect upon various issues — so, feel encouraged to pursue this style of work ☺

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