Economic Order Quantity-basics

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Item card

Planning   Show more

Reordering Policy	Fixed Reorder Qty.
Order Tracking Policy	None
Stockkeeping Unit Exists	No
Critical	⬤
Safety Lead Time	
Safety Stock Quantity	0

Lot-for-Lot Parameters

Include Inventory	⬤

Reorder-Point Parameters

Reorder Point	30
Reorder Quantity	90
Maximum Inventory	0

Order Modifiers

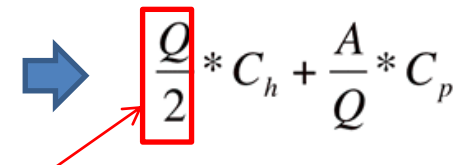|	
Minimum Order Quantity	0
Maximum Order Quantity	0
Order Multiple	0
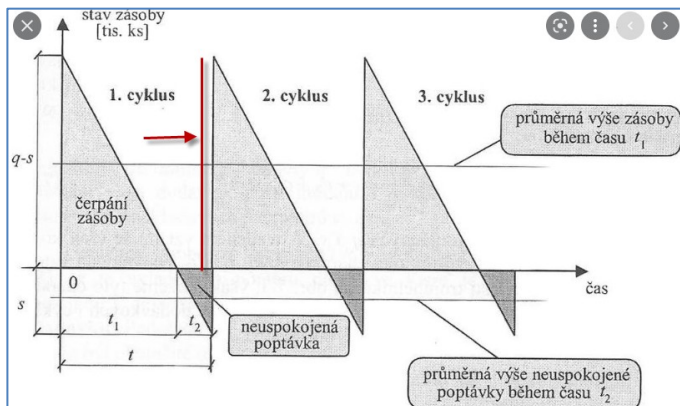
- Production forecast
- Blanket orders
- Safety stock quantity
- Reorder point
- Maximum inventory
- Reorder quantity
- Maximum order quantity
- Minimum order quantity
- Order multiple
- Dampener (% of lot size)

EOQ 1 (ENG-CZ)

- **EOQ** = Economic Order Quantity and limitation of this model (omezení)
- **EQO** = Deterministic model – jde o deterministický model
- **Variables used to derive EOQ basic formula (see slide EOQ5)**
  - **Ch** = Cost to hold one unit inventory for a year – náklad na skladování položky za jeden rok
  - **Cp** = Cost to place a single order – náklad spojený s vyřízení jedné objednávky
  - **A** = Demand for the year – požadavky za celý rok
  - **Q** = Quantity of orders – počet objednávek

- The economic order quantity (EOQ) is the **order quantity** that minimizes total holding and ordering costs for the year. Even if all the assumptions don't hold exactly, the **EOQ** gives us a good indication of whether or not current order quantities are reasonable – má to vazbu na využívání sešitu požadavků v NAV

- **Total Relevant Cost (TRC)**
  - **why relevant ? ->because they are affected by order quantity**
- **TRC**= Yearly Holding Cost + Yearly Ordering Cost

$$\Rightarrow \boxed{\frac{Q}{2}} * C_h + \frac{A}{Q} * C_p$$

Average inventory carrying cost –>see EOQ4 slide

EOQ 2

- **What is the EOQ Model?**
- Cost Minimizing Order Quantity (Q)
- **Assumptions=prerequisites (předpoklady):**
  - Single item only- hodnotí se vždy jedna skladová položka
  - Relatively uniform (continuous) & known demand rate – relativně stálá poptávka
  - Fixed item cost - fixní náklad spojený s pořízením zboží
  - Fixed ordering and holding cost -fixní náklady na objednávání a skladování
  - No stock shortage and Instantaneous shipment - nepočítá se s podtečením zásob pod nastavenou hodnotu a v případě požadavku se realizuje okamžitě dodávka

- Constant Lead Time =LT (see slide EOQ3) - průběžná doba

EOQ 3
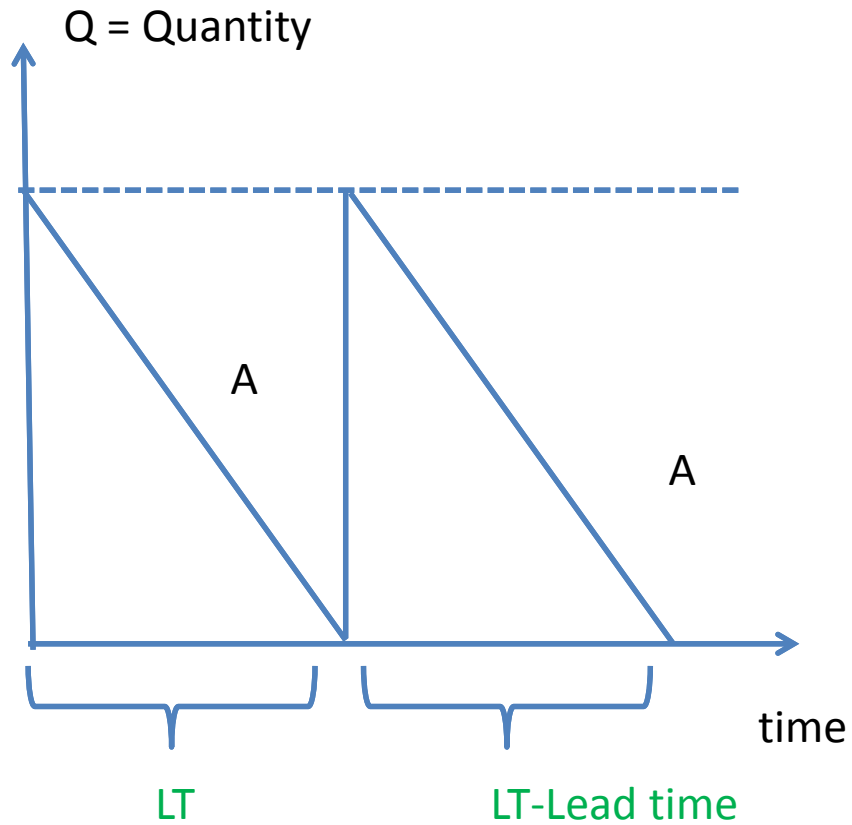
Notice, that inventory never goes below zero; shortages do not exist !!

EOQ4 - Carrying cost (náklady na skladování)
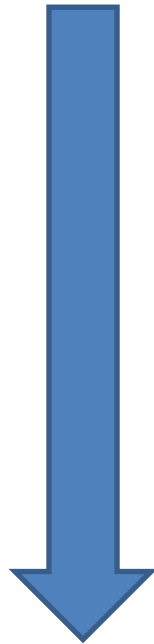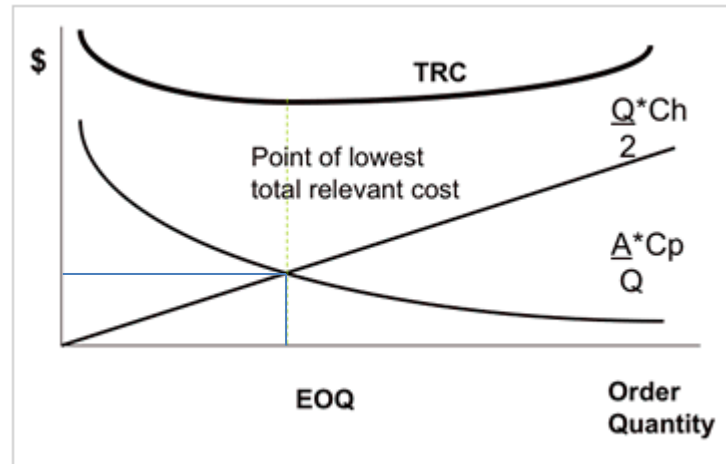
Average inventory (carrying) cost = $\dfrac{Q}{2}$

To verify this relationship, we can specify any number of points values of Q over the entire time period, t , and divide by the number of points. For example, if Q = 5,000, the six points designated from 5,000 to 0, as shown in shown figure, are summed and divided by 6:

$$\text{average inventory} = \frac{5{,}000 + 4{,}000 + 3{,}000 + 2{,}000 + 1{,}000 + 0}{6}$$
$$= 2{,}500$$
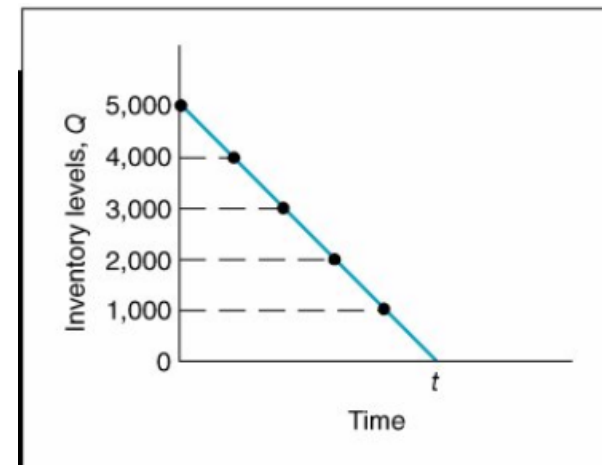
EOQ 5

TRC= $\dfrac{Q}{2} * C_h + \dfrac{A}{Q} * C_p$

To calculate derivative of TRC and put it to 0

d**TRC**/dQ=0=Ch/2+(A*Cp)/(Q*Q)-> Q= $\sqrt{\dfrac{2*A*Cp}{Ch}}$

Deriving the equation and fin extem
TRC=Total Relevant Cost

EOQ 6 – simpe example

○ Pam runs a mail-order business for gym equipment. Annual demand for the TricoFlexers is 16,000 =A. The annual holding cost per unit is $2.50=Ch and the cost to place an order is $50=Cp. What is the economic order quantity?

$$\sqrt{\frac{2*16,000*\$50}{\$2.50}} = 800 \text{ units per order}$$

$$\sqrt{\frac{2*A*Cp}{Ch}}$$

Ch = Cost to hold one unit inventory for a year
Cp = Cost to place a single order
A = Demand for the year
Q = Quantity of orders

Thanks for your attention