

NICHE-SEARCH

WORKSHEET 5 OF 9

# EOQ Recalibration After Vendor MOQ Change

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*Run when a vendor announces a new minimum order quantity that differs from your current EOQ result by more than 20%.*



Complementary worksheet for  
*Inventory Optimization Techniques*  
by Ibrahim Anwar

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## What This Is For

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A vendor's minimum order quantity is not your optimal order quantity. When a vendor raises their MOQ, they are shifting a portion of their holding cost onto your balance sheet, and the question is how much that shift costs annually in real dollar terms. Without a calculation, the operator either accepts the MOQ because the vendor is the only realistic source, or resists without being able to say what the resistance is worth.

This worksheet turns the MOQ change from a vendor conversation into a cost analysis. The output is three possible decisions — accept the MOQ, negotiate with a calculated penalty as the anchor, or find an alternate vendor — each backed by the dollar cost difference rather than a gut feeling about what seems fair. The procurement conversation changes character when the operator walks in with a specific annual cost penalty rather than a general complaint about terms.

## Benefits

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What you get when you actually run this worksheet on a real situation:

- Converts the vendor's MOQ change from a compliance decision into a quantified cost impact that can be compared against the cost of negotiation or vendor switching.
- Gives the procurement team a concrete anchor for the negotiation conversation — not 'your terms are inconvenient' but 'accepting this MOQ costs us \$X per year on this SKU.'
- Identifies which SKUs are most affected by the MOQ change in dollar terms, so negotiation effort is concentrated where it has the highest return.
- Documents the analysis in a format that supports the procurement decision record when an auditor or senior manager reviews the purchasing file.
- Establishes a comparison between total cost at old EOQ and total cost at the new MOQ, which is the only honest basis for evaluating whether the MOQ is worth accepting.

# Framework To Use

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## — Total Annual Cost Comparison

Calculate total annual inventory cost at old EOQ versus at new MOQ. The difference is the annual penalty of accepting the MOQ — this is the negotiation anchor.

### — Does the new vendor MOQ differ from your current EOQ by more than 20%?

— No (within 20%): Accept MOQ. Cost difference is small. Document and move on.

— Yes (more than 20%): **Calculate annual cost penalty at new MOQ vs EOQ. Is penalty > negotiation overhead?**

— No (penalty < \$200/yr for this SKU): ACCEPT MOQ. Not worth negotiation time. Document.

— Yes (penalty is material): **Is there a credible alternate vendor at a comparable price and shorter lead time?**

— Yes: FIND ALTERNATE VENDOR. Calculate switching cost vs annual penalty. Choose lower.

— No: NEGOTIATE. Use calculated annual penalty as anchor. Request volume discount or lower MOQ.

# How To Use

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Follow these steps in order. Each one builds on the previous.

- 1 Step 1: Identify all SKUs affected by the vendor's MOQ change. List each on one row of the worksheet.
- 2 Step 2: Fill in annual demand  $D$  (units per year). If annual data is unavailable, use the past three months multiplied by four.
- 3 Step 3: Fill in ordering cost  $S$  per order — staff time for the full order-to-receipt cycle plus direct costs such as bank transfer fees.
- 4 Step 4: Fill in holding cost per unit per year  $H$ . Calculated as purchase price per unit multiplied by your carrying cost rate.
- 5 Step 5: Fill in the old EOQ. If EOQ has already been calculated for this SKU, use that figure. If not, calculate:  $EOQ = \text{square root of } (2 \times D \times S \text{ divided by } H)$ .
- 6 Step 6: Fill in the new vendor MOQ announced.
- 7 Step 7: Calculate total annual inventory cost at the new MOQ: ordering cost at MOQ = ( $D$  divided by MOQ) multiplied by  $S$ ; holding cost at MOQ = (MOQ divided by 2) multiplied by  $H$ ; total = sum of both.
- 8 Step 8: Calculate total annual cost at old EOQ for comparison: ordering cost = ( $D$  divided by EOQ) multiplied by  $S$ ; holding cost = (EOQ divided by 2) multiplied by  $H$ ; total = sum.
- 9 Step 9: The annual cost penalty = total cost at MOQ minus total cost at EOQ. This is the negotiation anchor.
- 10 Step 10: Fill in the Decision column: ACCEPT MOQ if penalty is below your negotiation threshold, NEGOTIATE if penalty is material and there is no alternate vendor, FIND ALTERNATE VENDOR if penalty exceeds estimated switching cost.

## Example Use

*A food service distributor sources three Category A SKUs from a packaging supplier who has just raised their MOQ from 500 units to 1,500 units per order, citing a change in their production run minimums.*

The distributor pulls the EOQ calculation cards for all three affected SKUs. The first is a plastic food container (500ml, stackable).

Annual demand D: 6,000 units. Ordering cost S: \$12 per order (15 minutes staff time at \$40/hour plus \$2 bank transfer). Purchase price: \$1.80 per unit. Carrying cost rate: 25%. Holding cost H:  $\$1.80 \times 25\% = \$0.45$  per unit per year. Old EOQ: square root of  $(2 \times 6,000 \times 12 \div 0.45) = \text{square root of } 320,000 = 566$  units.

Old EOQ total annual cost: ordering cost =  $(6,000 \div 566) \times \$12 = \$127.20$ ; holding cost =  $(566 \div 2) \times \$0.45 = \$127.35$ . Total at EOQ: \$254.55.

New MOQ total annual cost: ordering cost =  $(6,000 \div 1,500) \times \$12 = \$48$ ; holding cost =  $(1,500 \div 2) \times \$0.45 = \$337.50$ . Total at MOQ: \$385.50.

Annual cost penalty for this SKU:  $\$385.50$  minus  $\$254.55 = \$130.95$  per year. Decision column: NEGOTIATE. The penalty is material relative to the time for a single conversation with the supplier.

The negotiation position is written at the bottom of the worksheet: "Accepting MOQ of 1,500 units costs us \$130.95 per year in additional holding cost on this SKU versus our current optimal order quantity. Our annual purchase volume is 6,000 units at \$1.80, totaling \$10,800. We are requesting either a revised MOQ of 700 units or a 1.5% price reduction at the 1,500-unit MOQ to offset the holding cost penalty."

The procurement manager walks into the vendor call with a specific dollar figure and a specific ask — not a general complaint about the new terms.



## Reflection Prompts

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*After filling in the worksheet on the previous page, work through these.*

1. Annual cost at MOQ: ordering cost =  $(D \text{ divided by } \text{MOQ}) \times S$ ; holding cost =  $(\text{MOQ divided by } 2) \times H$ ; sum both. Compare against total annual cost at old EOQ — ordering cost =  $(D \div \text{EOQ}) \times S$ ; holding cost =  $(\text{EOQ} \div 2) \times H$ . The difference is the annual penalty.
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2. Decision column options: ACCEPT MOQ (penalty below your negotiation threshold), NEGOTIATE (penalty is material — use the dollar penalty as the negotiation anchor), FIND ALTERNATE VENDOR (penalty exceeds switching cost). A calculated penalty figure converts a procurement conversation from a complaint into a cost analysis.
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# Tips and Traps

## TIPS

- Run this worksheet before responding to the vendor's MOQ change notice, not during the conversation when the vendor is on the phone. The calculation takes 20 minutes; the conversation benefits from having the numbers ready.
- If multiple SKUs from the same vendor are affected, sum the annual penalties across all of them. The aggregate figure may justify a more significant negotiation effort than any single SKU suggests.
- For the NEGOTIATE path, bring the total annual purchase value in addition to the penalty figure. Vendors respond better to 'we spend \$X with you annually and this MOQ change costs us \$Y' than to the penalty figure alone.
- When evaluating an alternate vendor, calculate switching cost accurately: include the time to qualify the vendor, the risk of quality variation on first orders, and any minimum purchase required to establish the relationship.
- If the vendor's MOQ is driven by their production run minimum, ask whether a longer-term supply agreement with a committed annual volume could restore the lower MOQ. Some vendors accept this trade.

## TRAPS

- Accepting an MOQ change without calculating the annual cost penalty and storing that calculation in the procurement file. If no record exists, the decision cannot be reviewed later.
- Treating the holding cost increase as a 'warehouse problem' rather than a procurement decision outcome. The carrying cost increase is a direct consequence of the MOQ change.
- Ignoring small annual penalties per SKU when multiple SKUs are affected. Five SKUs each with a \$130 annual penalty is \$650 per year — enough to justify a supplier conversation.
- Negotiating purely on unit price without mentioning the holding cost penalty. Vendors who understand inventory know the MOQ affects holding, not just order frequency — naming the carrying cost makes the conversation more credible.
- Applying the FIND ALTERNATE VENDOR decision without calculating total switching cost first. A new vendor with a lower MOQ may have a longer lead time that requires more safety stock — which adds holding cost that partially or fully offsets the MOQ benefit.

# Appendixes

## Appendix A – Total Annual Inventory Cost Formula Card

Total annual cost at any order quantity Q:

$$TC(Q) = (D \div Q) \times S + (Q \div 2) \times H$$

Where:

- D = annual demand (units)
- Q = order quantity (units) – use EOQ or MOQ
- S = ordering cost per order (\$)
- H = holding cost per unit per year (\$)
  - = purchase price per unit × carrying cost rate

At EOQ, ordering cost and holding cost are approximately equal.  
 Above EOQ (i.e. at a forced MOQ > EOQ), holding cost > ordering cost.  
 The difference between TC(MOQ) and TC(EOQ) is the annual penalty.

$$\begin{aligned} \text{Annual penalty in \$} &= TC(MOQ) - TC(EOQ) \\ \text{Annual penalty as \% of EOQ cost} &= \text{penalty} \div TC(EOQ) \times 100 \end{aligned}$$

## Appendix B – Negotiation Anchor Script Template

Use this script as the opening position in a vendor MOQ negotiation:

"Our current order quantity for [SKU name] is [EOQ units], which reflects the balance point between our ordering cost of \$[S] per order and our holding cost of \$[H] per unit per year.

The new MOQ of [MOQ units] shifts approximately \$[annual penalty] per year in additional holding cost to our side on this SKU alone. Our annual purchase volume with your company is \$[total value].

We are requesting: [Option A: revised MOQ of [lower quantity]]  
 OR [Option B: price reduction of [%] at the [MOQ] quantity to offset the holding cost penalty].

We would like to resolve this before the next order cycle on [date]."

Fill in the brackets. Bring the completed worksheet as supporting data if the vendor asks for the basis.

### Appendix C – SKU Priority Matrix (Which to Negotiate First)

Rank SKUs by annual penalty (highest first). Negotiate in that order.

SKU Name	Annual Penalty (\$)	Annual Purchase Value (\$)	Priority
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_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

High priority = penalty > \$200/yr OR penalty > 1% of annual purchase value

Medium priority = penalty \$50-\$200/yr

Low priority = penalty < \$50/yr (accept MOQ, document, move on)



WHERE THIS WORKSHEET COMES FROM

# Inventory Optimization Techniques

*Stock That Sleeps Is Capital That Is Locked*

by Ibrahim Anwar

This worksheet is one of nine in the *Inventory Optimization Techniques* companion worksheet pack. The full pack is grouped into three categories: high-volume worksheets you can run weekly, niche-search worksheets for rare but high-value situations, and specific-case worksheets that walk you through a single concrete scenario.

Every framework, decision filter, and figure used in these worksheets is drawn from the chapters of the source book. The book sets the diagnosis, the worksheets give you the form to act on it.

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Read the source book on Google Play Books:

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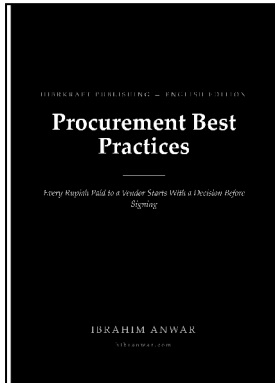
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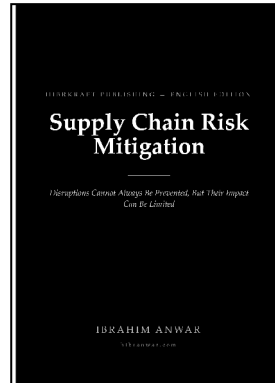


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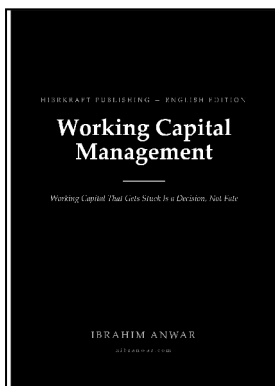


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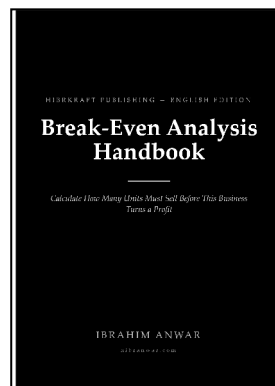


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