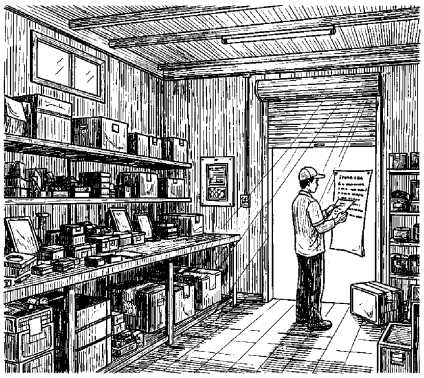
NICHE-SEARCH

WORKSHEET 4 OF 9

Full Value Stream Map: One Product Family

Reserve half a working day. Choose the product or service type handled most frequently. Follow one real order end to end and record every stage from first contact to customer receipt confirmation.



Complementary worksheet for
Lean Operations Principles
by Ibrahim Anwar

SECTION 1

What This Is For

A half-day structured mapping session that produces the single picture no departmental report can replicate: the full flow of one order from entry to customer receipt, with process time and waiting time measured at every stage. Most operators know their departments. Almost none have seen all departments together from the perspective of one order moving through all of them. This worksheet builds that picture.

This is not a daily or weekly tool. It is the foundational diagnostic run once per product family, then updated when a significant process change occurs. The value-added ratio it produces — total process time divided by total lead time — is the number that tells the operator whether lead time is a capacity problem or a waiting problem. Those two problems have different solutions. Measuring the ratio before deciding which solution to pursue is what prevents the error of adding staff to solve a waiting problem that has nothing to do with headcount.

SECTION 2

Benefits

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

- Produces a verified value-added ratio from real observation, not from reports or estimates — this number cannot be faked from a desk.
- Identifies the three stages with the most waiting time, giving the operator a ranked list of intervention candidates rather than a general sense that 'things are slow.'
- Reveals cross-department handoff delays that are invisible from inside any single department.
- Sets a documented baseline that makes future lead time improvements verifiable rather than claimed.
- Provides the foundation for an investor-grade operational narrative: baseline, method, improvement, result.

SECTION 3

Framework To Use

— Current State VSM — Seven Steps

Follow one order from left to right. Record two numbers per stage. The ratio between them is the finding.

1	Step 1 — Choose the product or service type processed most frequently (not most valuable)
▼	
2	Step 2 — Identify all stages from order receipt to customer confirmation. Draw one box per stage, left to right
▼	
3	Step 3 — At each box: record process time (minutes of actual work at this stage)
▼	
4	Step 4 — At each box: record waiting time (minutes order sat idle before anyone started)
▼	
5	Step 5 — Mark each handoff point: who hands to whom, in what format
▼	
6	Step 6 — Sum all process times. Sum all waiting times. Calculate value-added ratio = process ÷ (process + waiting) × 100
▼	
7	Step 7 — Rank stages by waiting time, largest to smallest. Top three = first intervention candidates

SECTION 4

How To Use

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

1. Choose the product family or service type your operation handles most frequently — not the most complex or most profitable, the most common.

2. Identify every stage an order passes through from first contact to customer receipt confirmation. Write each stage as a box on paper, left to right. Do not combine two stages in one box.

3. At each stage, record process time: how many minutes actual work lasts from start to completion at that stage. Measure by direct observation or by asking the person who does that work.

4. At each stage, record waiting time: how many minutes the order sits idle at that stage before anyone begins work on it. This includes time waiting in an inbox, on a desk, in a queue, or for a person to become available.

5. Record the handoff format at each transition between stages: physical document, digital message, or physical goods movement. Handoff format often explains why waiting time accumulates.

6. Sum all process times for total process time. Sum all waiting times for total waiting time. Calculate: value-added ratio = process time ÷ (process time + waiting time) × 100.

7. Rank stages by waiting time from largest to smallest. The top three waiting stages are the first intervention candidates. For each, identify whether the root cause is personnel availability, information availability, or tool and space availability.

8. Set a future state target: what value-added ratio is realistic in six months if the two largest waiting stages are addressed through mechanism changes requiring no capital expenditure?

SECTION 5

Example Use

A consumer goods distributor in a mid-size city has been experiencing consistent late deliveries. The operations manager reserves a Tuesday morning to run the first VSM on the company's highest-volume product family.

The manager follows a single real order from the moment it enters the system to customer receipt confirmation. Seven stages are identified and mapped.

Stage 1 — Order entry: process time 8 min, waiting time 35 min (order sits in inbox until an admin is free).
Stage 2 — Stock confirmation: process time 5 min, waiting time 0 min (done same session as entry).
Stage 3 — Shipping document preparation: process time 12 min, waiting time 0 min.
Stage 4 — Manager approval on shipping document: process time 2 min, waiting time 52 min (manager unavailable until end of meeting).
Stage 5 — Picking and packing: process time 22 min, waiting time 8 min.
Stage 6 — Forklift transfer to loading area: process time 4 min, waiting time 28 min (forklift busy in another area).
Stage 7 — Loading and dispatch: process time 7 min, waiting time 0 min.

Total process time: 60 minutes. Total waiting time: 123 minutes. Total lead time: 183 minutes.
Value-added ratio: 60 ÷ 183 × 100 = 32.8%.

More than 67% of lead time is waiting. The top three waiting stages are Stage 4 (manager approval, 52 min), Stage 1 (order entry queue, 35 min), and Stage 6 (forklift, 28 min).

Mechanism changes proposed: Stage 4 — delegate approval for orders below $500 to the warehouse supervisor (no capital cost). Stage 1 — set a 15-minute maximum inbox clearing rule during business hours (no capital cost). Stage 6 — post a daily forklift area schedule each morning (no capital cost).

Future state target: reduce waiting time from 123 minutes to 60 minutes within 12 weeks. Target value-added ratio: above 50%.

SECTION 6

The Worksheet

Tear this out, copy it onto a fresh sheet, or fill it in directly.

Full Value Stream Map: One Product Family

Reserve half a working day. Choose the product or service type handled most frequently. Follow one real order end to end and record every stage from first contact to customer receipt confirmation.

STAGE NAME	RESPONSIBLE PERSON / TEAM	PROCESS TIME (MIN)	WAITING TIME (MIN)	HANDOFF FORMAT (DOCUMENT / DIGITAL / PHYSICAL)	ROOT CAUSE OF WAITING

SECTION 6 (CONTINUED)

Reflection Prompts

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

1. Calculate value-added ratio: total process time divided by (process time + waiting time) × 100. Write the result. If below 30%, identify the three stages with the most waiting time — these are your first intervention candidates.

2. For each of the top three waiting stages: write one mechanism change achievable within six weeks without capital expenditure. Does the change require delegation, schedule adjustment, or process resequencing? Be specific.

3. Set a future state target: what value-added ratio is realistic in six months if the top two waiting stages are addressed? Write the target and the date you will remeasure.

SECTION 7

Tips and Traps

TIPS

- Follow a real order in real time if possible, rather than reconstructing from memory or reports. Reconstruction almost always underestimates waiting time because nobody remembers waiting as a distinct event.
- When measuring waiting time at a stage where the process runs continuously, ask the person responsible: 'How long does work typically sit here before you start on it?' Then observe for one full order to verify.
- Focus the future state on the two or three largest waiting stages, not on eliminating all waiting. Realistic future states that address the biggest sources get implemented. Ideal future states do not.
- Remeasure the same product family three months after implementing changes. The before-and-after pair is what makes improvement verifiable.

TRAPS

- Drawing the desired future state before completing the current state map. The current state must be honest before the future state is useful.
- Combining two sequential stages into one box to make the map look simpler. If there is a handoff between them, they are two stages — the handoff is where waiting lives.
- Using the VSM to assign blame to one department without recognizing that waiting at stage N is often caused by what happened at stage N-2.

SECTION 8

Appendixes

Appendix A — Value-Added Ratio Interpretation Guide

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Value-added ratio = total process time ÷ (process time + waiting time) × 100

Below 20%  : More than 80% of lead time is waiting. Extremely common in
             first-time VSM results. Do not add capacity before addressing
             the top 3 waiting stages. The capacity to improve already exists.

20% – 30%  : Substantial waiting. Address top 2 stages. Measurable improvement
             achievable without capital expenditure in most cases.

30% – 50%  : Moderate waiting. Identify the root cause type at each waiting stage
             (personnel, information, or tool/space) before choosing the fix.

50% – 70%  : Flow is reasonable. Audit for overprocessing and motion waste.
             Improvements at this level typically require standard updates.

Above 70%  : High flow efficiency. Marginal returns on further lead time reduction.
             Focus on defect rate and takt time alignment instead.
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Appendix B — Root Cause Classification for Waiting Stages

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Personnel availability:
  Cause: person who handles this stage is occupied with other work.
  Fix options: delegation, cross-training, schedule adjustment.
  Do NOT fix by: adding headcount until non-bottleneck work is offloaded first.

Information / document availability:
  Cause: stage cannot start until a document, approval, or confirmation arrives.
  Fix options: delegate approval, change process sequence, pre-stage the document.
  Do NOT fix by: adding staff to produce the document faster (root is upstream).

Tool / space availability:
  Cause: equipment, vehicle, or physical space is in use by another process.
  Fix options: usage schedule, dedicated small-area staging, second low-cost tool.
  Do NOT fix by: purchasing large equipment without first scheduling existing assets.
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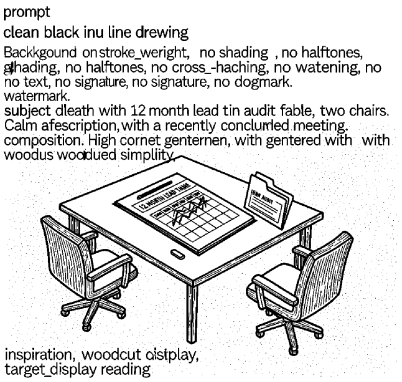

WHERE THIS WORKSHEET COMES FROM

Lean Operations Principles

Eliminate Waste Before Adding Capacity

by Ibrahim Anwar

This worksheet is one of nine in the *Lean Operations Principles* 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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