THE 50% PROBLEM

Operator's Playbook

Companion to the Novel

A 25-lesson field guide for applying Theory of Constraints to service-industry operations.

This appendix is for the operator.

If you are reading this book to enjoy the story of K-Bar Plumbing, you can stop here. The novel ends with Chapter 23. What follows is the framework underneath the story, written in plain language, so that you can take what Jack and his team learned and apply it to your own company.

The book teaches Theory of Constraints applied to a service trade. The framework is older than the book — it comes from the work of Eliyahu Goldratt, whose novels *The Goal* and *It's Not Luck* remain the foundational texts for anyone interested in this material. What this book attempts to add is a worked example for the service industries: plumbing, HVAC, electrical, garage doors, appliance repair, pest control, and the dozens of other trades that send technicians to customer homes and businesses every day.

The framework is simple in principle and hard in practice. The principle is that every system has a constraint — the one thing that limits how much output the system can produce. If you protect the constraint, the whole system gets better. If you ignore the constraint and try to optimize everything else, you make the system busier without making it better.

What follows is the playbook K-Bar discovered, organized by the lessons that appear in each chapter.

PART ONE: SEEING THE PROBLEM

Chapters 1–4

Lesson 1 — Revenue is not cash. (Chapter 1)

A growing service company can have record revenue and run out of money on the same day. Revenue is what customers agree to pay. Cash is what arrives in your bank account. The gap between them is filled by unfinished jobs, uncollected invoices, parts on trucks, work in progress, and customer add-ons that were promised but never completed. The first job of an owner is to understand which of these gaps is bleeding the worst.

Lesson 2 — "We need more plumbers" is almost never the right answer. (Chapter 2)

When a service business feels overwhelmed, the instinct is to hire. But before hiring, an owner should ask what percentage of the existing technicians' time is actually being spent producing revenue. If your senior techs are spending two to four hours a day off the jobsite, you do not have a capacity problem. You have a system problem. Adding plumbers without fixing the system gives you more people standing in line at the supply house.

Lesson 3 — The customer's experience is the truest measure. (Chapter 2)

The customer does not see your dispatch board, your warehouse, your supplier relationship, or your scheduling software. The customer sees one thing: did the plumber come to my house and fix my problem? Every minute the plumber is absent from a job he started is a minute the customer is losing faith. Most companies lose customers not because of the quality of the work but because of the experience around the work.

Lesson 4 — The constraint is not the obvious thing. (Chapter 3)

Most owners would name "labor" or "skilled technicians" as the constraint. They are partly right and mostly wrong. The constraint is more specific: revenue-producing technician time at the jobsite. A plumber driving to the supply house is not the constraint producing

throughput. A plumber waiting on hold with dispatch is not the constraint producing throughput. The constraint is the plumber, in the customer's house, doing skilled work after the customer has said yes. Everything else in the company exists to either protect that moment or steal from it.

Lesson 5 — Ride along to see the system. (Chapter 4)

You cannot see the real system from your office. You have to ride in a truck with your best plumber for a day, watch what stops him, count the interruptions, listen to the customer conversations. The reports lie by omission. The truck tells the truth. Every owner of a service company should ride along at least once a quarter for the rest of their career.

Lesson 6 — The 50% problem. (Chapter 4)

Across the trades, our experience and the data we have seen suggest that service technicians spend between forty and sixty percent of their working day off the jobsite. That time is spent driving to supply houses, waiting for dispatch, looking for parts, returning wrong material, writing notes, and explaining to customers why they are leaving. If you can recover even half of that time and convert it into completed work, the throughput effect is enormous — far larger than what hiring another technician would produce. This is the lever.

PART TWO: BUILDING THE SOLUTION

Chapters 5–13

Lesson 7 — Stock the truck for normal jobs. (Chapter 5)

Most service companies stock trucks by catalog category or by what purchasing thinks is reasonable. The right way is to stock by job type, based on what the field actually uses for the most common repairs.

Build bins around job categories, not part categories: Toilet, Water Heater, Tubular, Shutoffs, PEX, Press, Stupid Stuff. The Stupid Stuff bin — batteries, blades, gloves, tape, screws, markers — is the one most companies forget and the one that stops the most jobs.

Lesson 8 — The supplier is part of the system. (Chapter 6)

If your plumbers are standing in line at the supply house every day, the supplier is part of your operational system whether you like it or not. The question is whether you have designed that relationship intentionally. Engage your supplier in the conversation. Build standardized bins. Move toward vendor-managed replenishment. Negotiate terms that reflect the value you bring. The supplier wants predictable volume; you want predictable readiness; both of you can get what you want if you stop treating each other as adversaries.

Lesson 9 — Trust is speed. (Chapter 7)

If a plumber does not trust the truck, he goes to the supply house. If a dispatcher does not trust the technician, she pads the schedule. If a customer does not trust the company, they don't call back. Trust is what makes the system fast. The pilot truck only works if Miguel believes that what he needs is on the truck. Building that trust is harder than buying inventory. It is also more valuable.

Lesson 10 — The first day will work. The second week is the test. (Chapter 8)

A pilot will succeed on its first day because everyone is watching. The real test is whether it survives Tuesday. Whether dispatch keeps the new questions. Whether plumbers don't drift back to old habits. Whether drivers protect the new protocols when something urgent comes up. The system you have to manage is not the one you launch. It is the one that survives boredom.

Lesson 11 — A better tool exposes a worse rule. (Chapter 9)

When you fix one part of the system, the other parts will try to consume it. Other plumbers will raid the new truck. Dispatch will get lazy because the system is more forgiving. Returns will get contaminated because the discipline of intake is unclear. This is not a failure of the pilot. It is the pilot doing what pilots do: revealing the next problems. Fix them in order. Do not pretend the pilot is broken when what it actually did was expose how broken the surrounding rules were.

Lesson 12 — The driver becomes the hero. (Chapter 10)

In a traditional service company, drivers are errand boys. In a system organized around the constraint, drivers are the most important supporting role in the operation. They protect the plumber's time. They bring big items. They swap bins. They prevent the plumber from leaving. Reframe the role, pay the role accordingly, and hire for it deliberately. Your best driver is your second-most-valuable field employee after your best plumber.

Lesson 13 — The numbers move once you protect the constraint. (Chapters 11–12)

If you protect the constraint correctly, the financial impact appears in throughput per technician day, in same-day completions, in add-on capture rates, in customer review scores, and eventually in cash. The order of those changes is predictable: completions first, add-ons second, cash last. Cash always lags, because collections always lag. Do not give up on the system because cash is slow to arrive. And watch what a working truck does to the people who are not on it yet: the visible proof that the system works is what creates the pressure to scale it.

Lesson 14 — A glimpse of the next problem. (Chapter 13)

Solving the service constraint does not make the rest of the company healthy. It just lets you finally see the next problem. By the end of the

book, Jack can see that new construction is losing the same company money in a way service never did — crews moving while the work isn't — but the tools that fixed service do not fix it, and that problem is the subject of the next book.

PART THREE: THE FINANCIAL TRUTH

Chapters 14–15

Lesson 15 — Throughput accounting. (Chapter 14)

Cost accounting will lead you to wrong decisions. Throughput accounting — measuring Throughput (sales minus truly variable costs), Inventory (money tied up in stock), and Operating Expense (the cost of converting inventory into throughput) — gives you the right ones. The fourth measure, Throughput per Constraint Hour, is the one that drives decisions about what work to take, what work to refuse, what to invest in, and where to expand. If the constraint generates four hundred dollars of throughput per hour at a jobsite and zero at a supply house, the math on every operational decision becomes obvious.

Lesson 16 — The near-death moment. (Chapter 15)

Almost every operational transformation goes through a financial squeeze in the middle. You have spent the inventory cash. The throughput cash has not yet caught up. The bank gets nervous. Customers get slow. Vendors get loud. This is not a sign that the transformation is failing. It is a sign that the transformation is real. Survive it with three levers: better supplier terms, faster collections, and staggered rollout. Do not panic. Do not borrow to accelerate. Hold the line and let the throughput cash catch the inventory cash.

PART FOUR: THE PEOPLE

Chapters 16–20

Lesson 17 — The constraint can walk out the door. (Chapter 16)

Your best technician is, by definition, valuable. Your competitors know it. Sooner or later, one of them will call. If your compensation structure has not changed in five years and your senior tech has just become twice as valuable to you because of the new system, the offer to leave will be both real and reasonable. The time to address senior compensation is before the offer, not after.

Lesson 18 — Customer trust is rebuilt one job at a time. (Chapter 17)

Customers who left you because the experience was bad will come back if you can prove the experience is now different. The proof is not marketing. The proof is the next job, done cleanly. When they come back, do not apologize at length. Tell them what changed. Let them see it. The customer who saw your worst day six months ago is the most valuable promoter you can earn, because they have a story to tell.

Lesson 19 — Scale the pilot in stages. (Chapter 18)

Do not roll the new system to the whole fleet at once. Roll it to one truck. Then a second. Then two more. Let the throughput cash from each wave fund the inventory cash of the next. The discipline question is more important than the speed question. A second truck that breaks the discipline of the first truck has set you backward, not forward.

Lesson 20 — The Five Focusing Steps. (Chapter 19)

The framework, named: Identify the constraint. Exploit it (make sure the constraint is doing only what the constraint can do, at full capacity). Subordinate everything else to the constraint (the rest of the system serves the constraint, not the other way around). Elevate the constraint (when you have exhausted exploitation, add capacity to the constraint itself). Repeat (the constraint will move; keep going). Most companies never get past step one. K-Bar did all five in nine months.

Lesson 21 — Hire professionals, not stars. (Chapter 20)

Stars need the system to bend around them. Professionals do excellent work inside a system built to support them. If you have built the system correctly, you can hire professionals — people who would have been mediocre at a broken company — and they will produce work that rivals your stars. A star you cannot replace is a liability. A team of professionals is an asset. Hire toward the system you have, not toward the system you wish you had.

PART FIVE: THE COMPANY THAT WORKS

Chapters 21–23

Lesson 22 — A quiet morning is a sign. (Chapter 21)

If you have built the system well, eventually the company will run without you yelling. The dispatch room will get quiet. Your desk will be clear at 9:42 on a Tuesday. You will not know what to do with yourself. This is not a problem to solve. This is the destination you were trying to reach. Learn to be useful at quiet. Stop measuring your value by how loud you are.

Lesson 23 — The constraint always moves. (Chapters 21–22)

Once you have solved the service constraint, another one appears. For K-Bar, the next constraint is waiting in new construction; for your company it may be customer acquisition, hiring, financing, or expansion. Step five is real. The work does not end — it changes shape. The framework that solved this constraint will solve the next one. You do not climb a different mountain. You climb the next ridge of the same one.

Lesson 24 — The cure can fool you. (Chapter 22)

The most dangerous moment in a transformation is right after a win. Jack takes the system that fixed service — stocked trucks, standardized bins, driver delivery — and extends it into new construction, certain he has solved that side too. He has solved the material half. The rest he cannot yet see. When a solution works, the cheapest assumption to make, and the most expensive to be wrong about, is that it transfers whole to the next problem. Earn the next solution the way you earned this one: by going and looking before you decide what the answer is.

Lesson 25 — The system serves the people who serve the customer. (Chapter 23)

This is the rule. It is the answer to everything else in this book. A company is not a machine that processes customers. It is a system of people who serve a customer. The system exists to serve those people — the dispatcher, the technician, the driver, the bookkeeper, the supplier — so that they can serve the customer. When the system is designed to extract from those people, the customer gets worse service and the company gets worse results. When the system is designed to support them, the customer gets better service and the company gets better results. Almost every operational question can be answered by asking: does this decision serve the people who serve the customer, or does it serve some other priority? Make that question the test for everything you do.

A FINAL NOTE

The framework in this book applies to plumbing because plumbing is what K-Bar does. It applies equally to HVAC, electrical, pest control, garage doors, appliance repair, and the dozens of other service trades. It applies to any business where a person goes to a customer's home or place of business to deliver skilled work.

It also applies, with modification, to manufacturing, to professional services, to construction, to healthcare, and to almost any operation that produces value through a sequence of steps with at least one bottleneck. The vocabulary changes. The framework does not.

If you are an owner reading this and you recognize your company in the early chapters, the path forward is the same path Jack took. Identify the constraint. Exploit it. Subordinate to it. Elevate it. Repeat.

And remember the rule.

The system serves the people who serve the customer.

Everything else is detail.