

# Theory of Constraints

The Theory of Constraints is a methodology for identifying the most important limiting factor (i.e., constraint) that stands in the way of achieving a goal and then systematically improving that constraint until it is no longer the limiting factor. In manufacturing, the constraint is often referred to as a bottleneck.

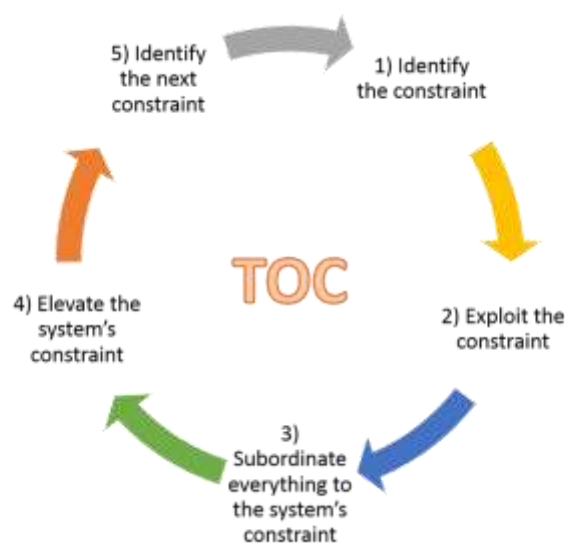
The Theory of Constraints takes a scientific approach to improvement. It hypothesizes that every complex system, including manufacturing processes, consists of multiple linked activities, one of which acts as a constraint upon the entire system (i.e., the constraint activity is the “weakest link in the chain”).

Dr. Eliyahu Goldratt conceived the Theory of Constraints (TOC), and introduced it to a wide audience through his bestselling 1984 novel, “The Goal”. Since then, TOC has continued to evolve and develop, and today it is a significant factor within the world of management best practices.

A successful Theory of Constraints implementation will have the following benefits:

- Increased profit (the primary goal of TOC for most companies)
- Fast improvement (a result of focusing all attention on one critical area – the system constraint)
- Improved capacity (optimizing the constraint enables more products to be manufactured)
- Reduced lead times (optimizing the constraint results in smoother and faster product flow)
- Reduced inventory (eliminating bottlenecks means there will be less work-in-process)

To apply TOC successfully, Dr. Goldratt developed five steps.



1. **Identify the system constraint.** This can be looked at in a department or your entire organization. We started by looking at our production

- department and searched for the bottleneck in our production (or, order fulfillment) department.
2. **Decide how to exploit the constraint.** The constraint controls your organization's entire throughput. An improvement to the constraint is an improvement to the entire system. An improvement to other areas is not a real improvement to throughput.
  3. **Subordinate everything to the constraint.** Since the constraint controls your throughput, everything must be subordinated to this decision.
  4. **If necessary or possible, elevate the constraint.** In this step, a company must evaluate the flow and performance of the constraint and consider what investments are possible.
  5. **If in the previous steps the constraint has been broken, go back to step one but don't allow inertia to cause a system constraint.** This step I consider as the loop step that makes this a continuous improvement methodology. Once a constraint is broken or conditions change, you must continuously search using the focusing steps for ways to attain better performance for the entire organization.

## Combining Theory of Constraints and Lean Manufacturing

The Theory of Constraints' laser-like emphasis on enhancing the constraint is one of its most powerful features. While Lean Manufacturing can be targeted, it is more commonly employed as a broad-spectrum tool.

Because all businesses have finite resources, there is always a need to compromise in the real world. Not every part of a process is worth optimising, and not every waste is worth getting rid of. In this light, the Theory of Constraints can be a powerful tool for prioritising improvement initiatives, while Lean Manufacturing can give a diverse set of strategies for improvement. As a result of decreasing waste from the portions of the system that are the most constraining to opportunity and profitability, production effectiveness has grown dramatically.

While Lean Manufacturing tools and techniques are primarily applied to the constraint, they can also be applied to equipment that is subordinated to the constraint (e.g. to equipment that starves or blocks the constraint; to post-constraint equipment that causes quality losses).

Man2succeed Center for Business Excellence offers the Theory Of Constraints Course in congruence to the TOCICO norms.

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