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The Theory of Constraints

Strengthening Your "Weakest Link"

No matter what you do, there is often scope for boosting overall performance. A great way of doing this is to identify and eliminate "bottlenecks," or things that are holding you back. So how do you identify these bottlenecks?

One approach is to use the Theory of Constraints (TOC). This helps you identify the most important bottleneck in your processes and systems, so that you can deal with it and improve performance. In this article, we'll explore the Theory of Constraints, and we'll look at how you can apply it to your own situation.

Understanding the Theory

You've likely heard the adage, "A chain is only as strong as its weakest link," and this is what the Theory of Constraints reflects. It was created by Dr. Eli Goldratt and was published in his 1984 book "**The Goal**."

According to Goldratt, organizational performance is dictated by constraints. These are where bottlenecks occur that prevent an organization from maximizing its performance and reaching its goals. Constraints can involve people, supplies, information, equipment, or even policies, and they can be internal or external to an organization.

The theory says that every system, no matter how well it performs, has at least one constraint that limits its performance – this is the system's "weakest link." The theory also says that a system can have only one constraint at a time, and that other areas of weakness are "non-constraints" until they become the weakest link.

You use the theory by identifying your constraint and changing the way that you work so that you can overcome it.

The theory was originally used successfully in manufacturing, but you can use it in a variety of situations. It's most useful with important or frequently-used processes within your organization.

Note: Goldratt originally identified a five-step process for applying the theory, as follows:

1. Identify the constraint.
2. Exploit the constraint.
3. Subordinate everything else to the constraint.
4. Elevate the constraint.

5. Go back to step 1.

To make it easier to apply the theory in a typical working environment, we've condensed these five steps into a four-step process below.

Applying the Theory

Let's look at a step-by-step process for using the theory:

Step 1: Identify the Constraint

The first step is to identify your weakest link – this is the factor that's holding you back the most. Start by looking at the processes that you use regularly. Are you working as efficiently as you could be, or are there **bottlenecks** – for example, because your people lack skills or training, or because you lack capacity in a key area?

Here, it can help to use tools like **Flow Charts**, **Swim Lane Diagrams**, **Storyboarding**, and **Failure Modes and Effects Analysis** to map out your processes and identify what's causing issues. You can also **brainstorm** constraints with team members, and use tools like the **5 Whys Technique** and **Root Cause Analysis** to identify possible issues.

Remember that constraints may not just be physical. They can also include intangible factors such as ineffective communication, restrictive company policies, or even poor team morale.

Also bear in mind that, according to the theory, a system can only have one constraint at a time. So, you need to decide which factor is your weakest link, and focus on that. If this isn't obvious, use tools like **Pareto Analysis** or **Queuing Models** to identify the constraint.

Step 2: Manage the Constraint

Once you've identified the constraint, you need to figure out how to manage it. What small changes can you make to increase efficiency in this area and cure the problem, without committing to potentially expensive changes? (Goldratt calls this "exploiting the constraint.")

Your solutions will vary depending on your team, your goals, and the constraint you're trying to overcome. For example, it might involve modifying lunch breaks or vacation time to make workflow more efficient, or **cross-training** team members to give you extra capacity in the constraining area.

Note: At this stage, Goldratt says that you should "subordinate everything to the constraint." This means that all other organizational processes should also focus on eliminating the constraint. For example, can you move some types of work out of the constrained area and into other processes, thereby eliminating the constraint?

Step 3: Evaluate Performance

Now review how your system is performing with the simple fixes you've put into place. Is the constraint still causing a bottleneck? If it is, you need to do whatever you can to solve the issue. (Goldratt calls this "elevating the constraint.") For instance, do you need to invest in new equipment, outsource certain tasks, or take on more staff?

Here, it's useful to review approaches used in **Lean Manufacturing**, **Kanban**, **Kaizen**, and the **5S**

System to see if these uncover any solutions that can help you eliminate your constraint.

Again, you'll also find it useful to **brainstorm** possible solutions with people in your team, and to use problem-solving tools such as the **Five Whys** and **Cause and Effect Analysis** to identify the real issues behind the problems you're having, so that you can come up with good solutions.

Once you've identified possible solutions, use decision-making tools such as **Grid Analysis** and **Cost/Benefit Analysis** to help you choose the best solution.

Step 4: Start Over

Once you've eliminated the constraint, you can move back to step 1 and identify another constraint.

Note: Remember that the theory says that every process has at least one constraint. While this may be true, be sensible in how you apply the theory – sometimes removing this constraint will have a minimal impact on performance.

Key Points

Dr. Eli Goldratt developed his Theory of Constraints in his 1984 book "The Goal."

The theory says that every system, no matter how well it performs, has at least one constraint that limits its performance. You use the theory by identifying your constraint and restructuring the way that you work so that you can overcome it.

You can minimize constraints and work more efficiently toward accomplishing your goals by working through these steps:

1. Identify the constraint.
2. Manage the constraint.
3. Evaluate performance.
4. Start over.

Be sensible in how you apply the theory – sometimes the effort required to fix a constraint might not be worth the improvement in performance.