

Critical to Quality (CTQ) Trees

Translating Broad Needs to Requirements

Identify how your customers evaluate quality in your products or services.

When you're developing new products and services, quality is important – not only to satisfy your clients, but also to help you stand out from your competitors.

However, defining quality can be a challenge, and it's easy to overlook factors that customers care about.

This is when Critical to Quality (CTQ) Trees are useful. They help you understand what drives quality in the eyes of your customers, so that you can deliver a product or service that they are genuinely pleased with.

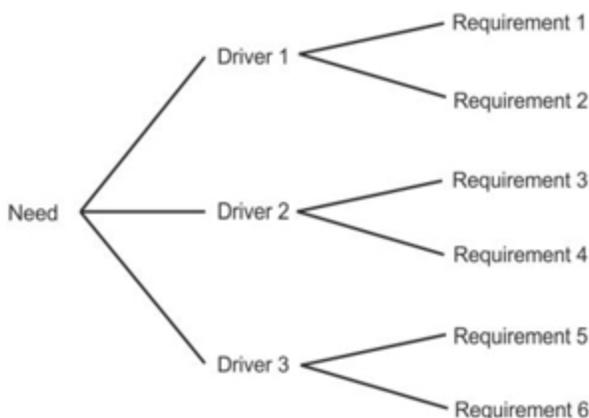
About CTQ Trees

Critical to Quality (CTQ) Trees, as shown in figure 1, below, are diagram-based tools that help you develop and deliver high quality products and services. You use them to translate broad customer needs into specific, actionable, measurable performance requirements.

For example, an instruction such as "improve customer service" is too broad to do much with. However, by using a CTQ Tree, you can drill-down from this broad goal to identify specific, measurable requirements that you can use to improve performance.

CTQ Trees were originally developed as part of [Six Sigma](#). You can use them in a variety of situations, including when you're developing products and services for your "internal customers."

Figure 1 – A Critical to Quality Tree



You use CTQ Trees by first identifying the critical needs of your customers. This is what your product or service must deliver for customers to be happy. For example, if you're launching a new website, a need might be: "Must be accessible on a smartphone."

Then, for each need, you identify its quality drivers, or major requirements. These are the factors that customers will use to evaluate the quality of your product. For example, for the need "Must be accessible on a smartphone," a quality driver might be "Must display properly on smartphone web browsers."

Finally, you identify measurable performance requirements that each driver must satisfy if you're to actually provide a high quality product to your customers. Without these requirements, you have no way to actually measure the performance and quality of your product. For example, the measurable requirement for the driver, "Must display properly on smartphone web browsers," might be for the website to "display as required on the five most popular smartphone web browsers."

It is best to do a CTQ Tree for each individual critical need that you identify. You'll then have a comprehensive list of requirements that you can use to deliver a product that delights your customers.

How to Use the Tool

We'll now look at a step-by-step process for developing a CTQ Tree.

Step 1: Identify Critical Needs

You first need to identify the critical needs that your product has to meet. Do a CTQ Tree for every need that you identify.

During this first step, you're essentially asking, "What is critical for this product or service?"

It's best to define these needs in broad terms; this will help ensure that you don't miss anything important in the next steps.

If you can't ask customers directly about their needs, [brainstorm](#) their needs with people who deal with customers directly – sales people and customer service representatives – as well as with your team.

Step 2: Identify Quality Requirements

Next, you need to identify the specific quality drivers, or requirements, that have to be in place to meet the needs that you identified in the previous step. Remember, these are the factors that must be present for customers to think that you are delivering a high quality product.

Don't rush this – it's important that you identify all of the requirements that are important to your customers.

Again, speak to people with customer contact, and ask your customers what factors are important to them.

Step 3: Identify Performance Requirements

Finally, you need to identify the measurable performance requirements that you must satisfy for each quality driver, in order to actually provide a quality product.

Here it's important to remember that there are many things that will affect your ability to deliver these. For example, do you have enough resources or the right technology in place? And, what will you need to do in other parts of your organization to meet these requirements?

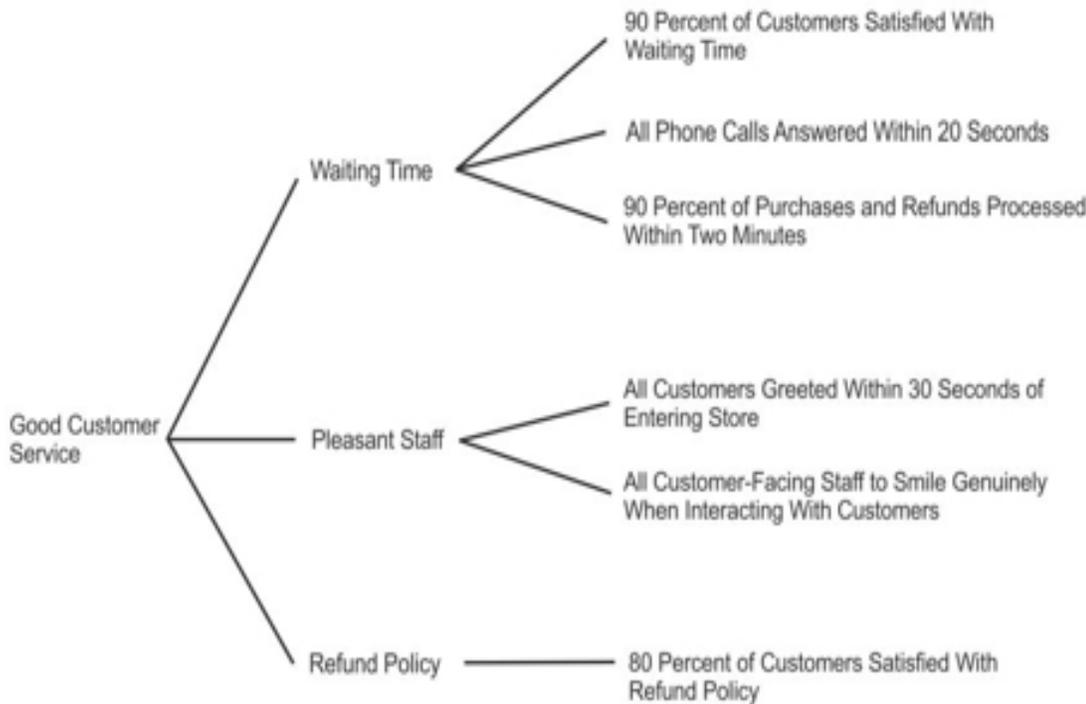
Once you've completed a CTQ Tree for each critical need, you'll have a list of measurable requirements that you must meet to deliver a high quality product.

CTQ Tree Example

Jesse is launching a store that sells baby clothing. After speaking with potential customers, one of the critical needs she identifies is "Good Customer Service." So she uses a CTQ Tree to create a list of measurable performance requirements that will help her achieve this.

Jesse's CTQ Tree is shown below, in figure 2.

Figure 2 – Jesse's Example CTQ Tree



Key Points

Critical to Quality (CTQ) Trees help you translate broad customer needs into specific, actionable, measurable performance requirements. You can then use these requirements to deliver high quality products and services. CTQ Trees were originally developed as part of the Six Sigma methodology.

You use the tool by first identifying the critical needs of your customers. Then, for each need, you identify the quality requirements that have to be in place to meet those needs. Finally, you identify measurable performance requirements that each driver must satisfy, if you're going to provide a quality product to your customers.

Do a CTQ Tree for every need that you identify. You'll then have a comprehensive list of performance requirements that will help you deliver a high quality product.

Source: MindTools, <http://www.mindtools.com/pages/article/ctq-trees.htm>