

Plan-Do-Check-Act (PDCA)

Continually Improving, in a Methodical Way

Also known as the "Deming Wheel," "Shewhart Cycle" and PDSA

The PDCA cycle encourages a commitment to continuous improvement.

Imagine that your customer satisfaction score on a popular business ratings website has dipped. When you look at recent comments, you see that your customers are complaining about late delivery, and that products are being damaged in transit.

You decide to run a small pilot project for a month, using a new supplier to deliver your products to a small sample of your customers, and you're pleased to see that the feedback from these customers is positive. As a result, you decide to use the new supplier for all your orders.

What you have just done is to go once around a loop called the PDCA Cycle, which helps you to strive for continuous improvements to your business.

In this article, we explore the details of PDCA, and we look at how and when to apply it.

What Is PDCA?

PDCA, sometimes called the "Deming Wheel," "Deming Cycle," or PDSA was developed by renowned management consultant Dr William Edwards Deming in the 1950s. Deming himself called it the "Shewhart Cycle," as his model was based on an idea from his mentor, Walter Shewhart.

Deming wanted to create a way of identifying what caused products to fail to meet customers' expectations. His solution helps businesses to develop hypotheses about what needs to change, and then test these in a continuous feedback loop.

Note:

Deming used the concept of Plan-Do-**Study**-Act (PDSA). He found that the focus on **Check** is more about the implementation of a change.

Deming's focus was on predicting the results of an improvement effort, studying the actual results, and comparing them to possibly revise the theory. He stressed that the need to develop new knowledge, from learning, is always guided by a theory.

PDCA / PDSA is an iterative, four-stage approach for continually improving processes, products or services, and for resolving problems. It involves systematically testing possible solutions, assessing the results, and implementing the ones that are shown to work.

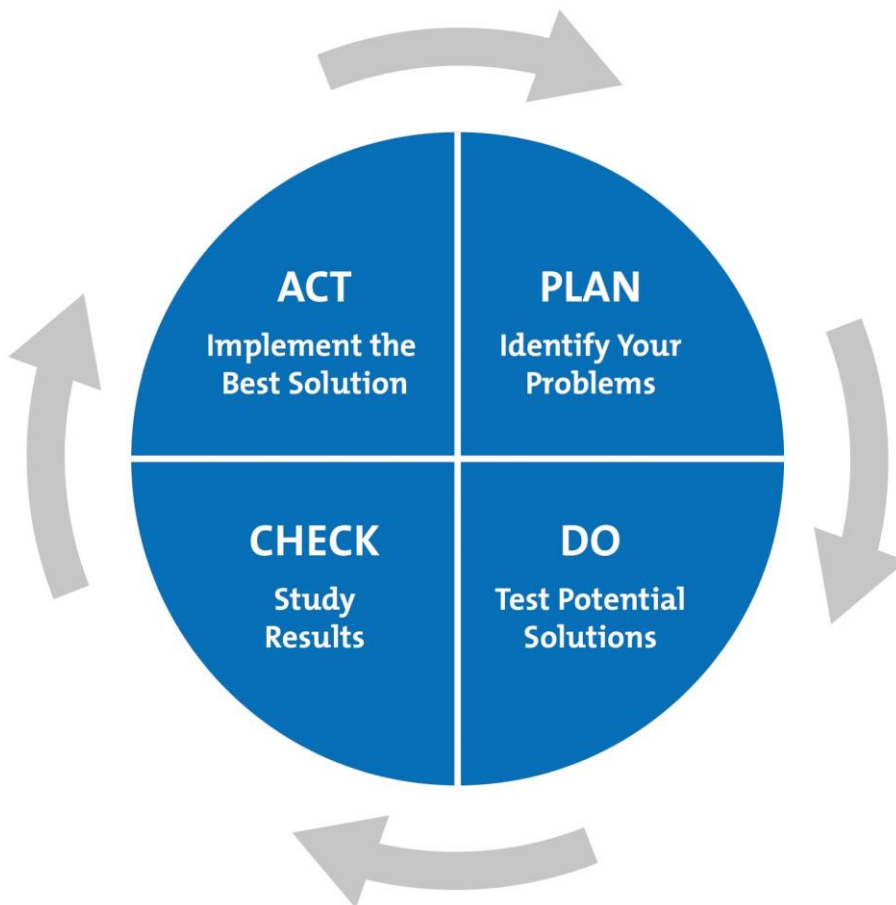
The four phases are:

- **Plan:** identify and analyse the problem or opportunity, develop hypotheses about what the issues may be, and decide which one to test.
- **Do:** test the potential solution, ideally on a small scale, and measure the results.

- **Check/Study:** study the result, measure effectiveness, and decide whether the hypothesis is supported or not.
- **Act:** if the solution was successful, implement it.

These stages are illustrated in Figure 1, below:

Figure 1: The Plan-Do-Check-Act Cycle



PDSA Model courtesy of The W. Edwards Deming Institute®.

Note:

There can be any number of iterations of the **Do** and **Check** phases, as you continue to refine, retest and trial potential solutions.

We'll now look at the four stages in more detail, below.

The PDCA / PDSA Cycle

The PDCA cycle helps you to solve problems and implement solutions in a rigorous, methodical way. Follow these four steps to ensure that you get the highest quality results.

1. Plan

First, you need to identify and understand your problem, or the opportunity that you want to take advantage of. Using the first six steps of **The Simplex Process** can help you to do this, by guiding you through a process of exploring information, defining your problem, generating and screening ideas, and developing an implementation plan.

At the final part of this stage, state quantitatively what your expectations are, if the idea is successful and your problem is resolved. You'll return to this in the **Check** stage.

Tip:

Before you move on to the next stage, consider using **Impact Analysis** or **ORAPAPA** to sense-check your plan. You may spot significant problems with it, and it may be worth going back to the planning phase.

2. Do

Once you've identified a potential solution, test it with a small-scale pilot project. This will allow you to assess whether your proposed changes achieve the desired outcome, with minimal disruption to the rest of your operation if they don't. For example, you could organize a trial within a department, in a limited geographical area, or with a particular demographic.

As you run the pilot project, gather data to show whether the change has worked or not. You'll use this in the next stage.

Note:

Remember that, in this situation, **Do** means "try" or "test." It doesn't mean "implement fully," which happens at the **Act** stage.

3. Check

At this stage, you analyse your pilot project's results against the expectations that you defined in Step 1 to assess whether the idea has worked or not. If it hasn't worked, you return to Step 1. If it has worked, you go on to Step 4.

You may decide to try out more changes, and repeat the **Do** and **Check** phases – don't settle for a less-than-satisfactory solution. Move on to the final phase (**Act**) only when you're genuinely happy with the trial's outcome.

Note:

Deming's model was adapted in the 1980s by quality management pioneer Kaoru Ishikawa. However, Deming **distanced himself** from these changes, and modified his original model in the 1990s. He emphasized the importance of study and learning in the third phase. As we highlighted earlier, this is why the model is sometimes referred to as Plan-Do-Study-Act (PDSA).

4. Act

This is where you implement your solution. But remember that PDCA / PDSA is a loop, not a process with a beginning and an end. This means that your improved process or product becomes the new baseline, and you continue to look for ways to make it even better for your organization or customers.

When to Use PDCA / PDSA

The PDCA / PDSA framework can improve any process or product by breaking it into smaller steps. It is particularly effective for:

- Helping to implement **Total Quality Management** or **Six Sigma** initiatives, and generally helping to improve processes.
- Exploring a range of solutions to problems, and piloting them in a controlled way before selecting one for implementation.
- Avoiding **wastage of resources** by rolling out an ineffective solution on a wide scale.

You can use the model in all sorts of business environments, from new product development, project and change management, to product lifecycle and supply chain management.

Note:

PDCA is often used as a framework for executing **Kaizen** , another strategy for continuously fine tuning your products and processes that also emphasizes the importance of eliminating waste.

The Pros and Cons of PDCA / PDSA

The model is a simple, yet powerful way to resolve new and recurring issues in any industry, department or process. Its iterative approach allows you and your team to test solutions and assess results in a waste-reducing cycle.

It instills a commitment to continuous improvement, however small, and can improve efficiency and productivity in a controlled way, without the risks of making large scale, untested changes to your processes.

However, going through the PDCA / PDSA cycle can be much slower than a straightforward, "gung ho" implementation. So, it might not be the appropriate approach for dealing with an urgent problem or emergency.

It also requires significant "buy-in" from team members, and offers fewer opportunities for radical innovation, if that's what your organization needs.

Note:

There are continuous improvement models that are similar to PDCA / PDSA, such as **Build-Measure-Learn** , the **After Action Review Process** , and **The Hoshin Planning System** .

These incorporate some of the principles of PDCA / PDSA, but they are not substitutes for it.

Key Points

The PDCA / PDSA cycle is a continuous loop of planning, doing, checking (or studying), and acting. It provides a simple and effective approach for solving problems and managing change, and it's useful for testing improvement measures on a small scale before updating procedures and working methods.

You can use it in all sorts of business processes, from developing new products through to managing the supply chain.

The approach begins with a **Planning** phase in which problems are clearly identified and understood, and a quantified hypothesis is developed. Potential solutions are tested on a small scale in the **Do** phase, and the outcome is then evaluated and **Checked**.

You can go through the Do and Check stages as many times as necessary before the full, polished solution is implemented, in the **Act** phase.

Apply This to Your Life:

While PDCA / PDSA is an effective tool for businesses, you can also use it to improve your own performance. Identify what is holding you back in your career, and how you want to progress. Look at the root cause of any issue, and set goals to overcome these obstacles (Plan).

When you've decided on your course of action, test different approaches to getting the results that you want (Do). Review progress regularly, adjust your behaviour accordingly, and consider the consequences of your actions (Check). Finally, implement what's working, and continually refine what isn't (Act).

Application of PDCA to ISO 9001:2015 management system

