



Guest Essays

TAPP into the PDCA Cycle to Make Improvements in Public Health

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One of the basic functions of managing a successful process is first to make sure it is in control and then set realistic performance targets that are monitored on a regular basis through measurement of key quality characteristics (KQCs) related to process parameters. As long as the process stays in control and achieves its targets, we continue to monitor its progress and leave it alone. We take action after we observe and document an established gap between the observed performance of the processes and actual performance.

Why do we measure?

- If we cannot measure something, we cannot understand it.
- If we cannot understand it, we cannot control it.
- If we cannot control it, we cannot improve it.¹

Often, when we detect a deviation in our process, we do not know what we should do to correct it and bring it back into compliance. Too often we make arbitrary adjustments without a real analysis of the root cause of the deviation we are observing. Such arbitrary adjustments are a type of tampering, which usually do not improve performance, and often result in further process perturbation.

As shown in the target, act, process, performance (TAPP) model/plan, do, check, act (PDCA) cycle integration model in Figure 1, this monitoring of a process should be done on a regular basis so that we are able to detect any shifts or a sudden change that may cause a deviation from the process performance target that has been set.

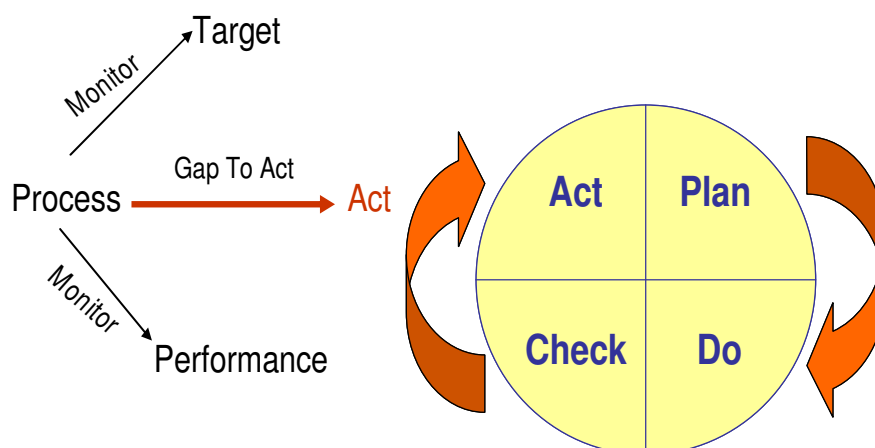


Figure 1: TAPP/PDCA integration

When monitoring a process we want to make sure that we identify KQC measures that relate to our process design parameters. These KQC measures of a

process can be in the form of indicators of capacity, process, outcome or all three depending on the process.

As shown in Figure 2 (below), when we measure a process it is best to measure all three indicators. When we understand a process capacity it should lead us to the critical parameters of how the process produces its output. We then understand how these outputs impact the community and our customers.

Control charts are the foremost method to analyze and monitor KQCs by assessing the process capability and stability. A control chart is a time-series analysis that measures the performance of a process longitudinally. The process stability reflects the presence or absence of special cause variation, while the process capability measures the performance on a specific KQC in a stable process.

There is a constant dynamic between process stability and capability. If a process is not stable, then the special cause variation needs to be identified and corrected. If a process is stable, then it must be determined whether the performance target for the KQC is met. If the process is not performing at the target level, then extensive process re-engineering is necessary.

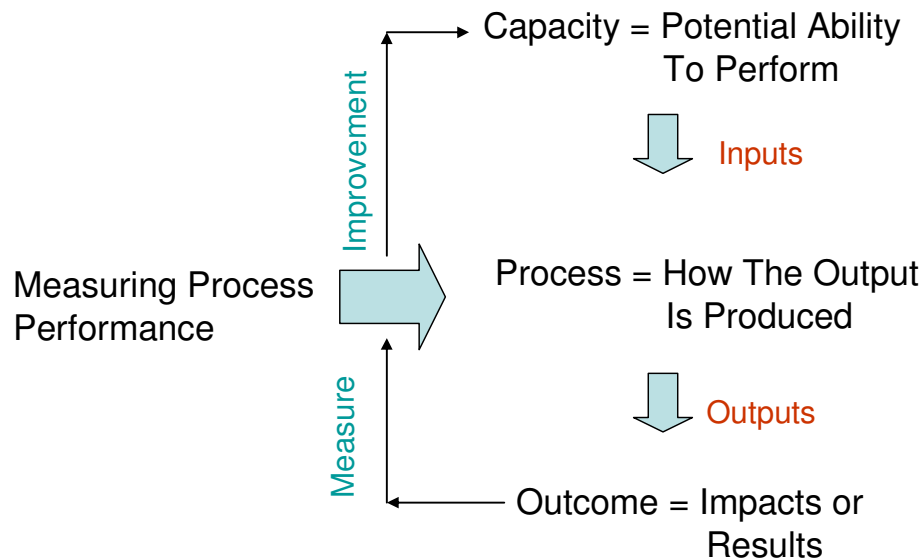


Figure 2

Performance measurement is an important part of ensuring that a process is able to show how it is performing. Performance measurement can be both qualitative and quantitative. It should be focused on the critical aspects of a process that show their effects on the public and our customers.

These three types of performance measures are:

- Capacity measures relate to the potential ability of the process to produce or perform at a certain level, such as health department workforce turnover rate and completion of an annual health profile by every local health department.
- Process measures relate to those parameters that define how the process produces its output, such as number of no-show appointments at the women,

infants and children's clinic and percent of women who receive adequate prenatal care.

- Outcome measures are something that result or follow from an event taking place. Such as number of influenza deaths and multi-drug resistant tuberculosis cases.

It is necessary to use measures that are considered important by customers, easy to compute, related to standards and promote accountability that leads to desired behavior changes.

A gap is when there is a difference between the process performance and the target value it is supposed to achieve. The gap could be a positive one in which the process is performing above the assigned target value. When we consistently have a large positive gap, it may be time to review the target value and adjust it to reflect the ability of the process to deliver results. The target value may have been set too low at the outset and needs to be adjusted. The best situation of a process's performance is when the process is delivering results that are at the target value with minor variation in either direction.

The gap could be one that is a small deviation in either the positive or negative direction. These types of deviations need to be monitored over time to see if minor process adjustments may be needed to correct any consistent negative deviations from the target value. These types of adjustments are just quick fixes without a major problem-solving effort.

When we have major negative gaps between the actual process performance and its target value that cannot be corrected by a quick fix, we need to move to "act." Major negative gaps require a thorough process analysis that can be accomplished through the use of the PDCA cycle as shown in Figure 3.

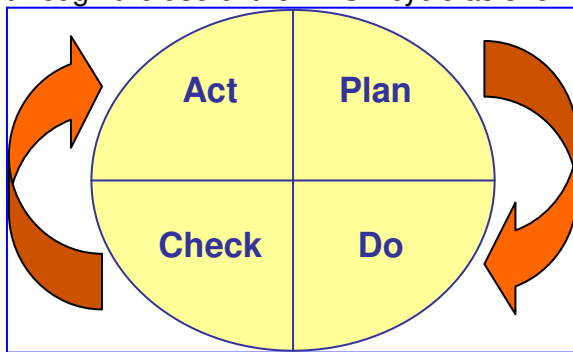


Figure 3 PDCA model

When gaps are uncovered, we need to investigate them thoroughly to decide if what is needed is process improvement (removing special causes) or process reengineering (removing common causes). W. Edwards Deming stated all the problems encountered in a process are caused by common causes about 80-85% of the time and by special causes about 15-20% of the time.

We must remember that every system will have some amount of variation of results, common cause variation occurs naturally in every process. The way to improve common cause variation is to change the existing system.

Many of the gaps we encounter in performance may need process reengineering to reach the level of performance we desire as an organization. We TAPP into the PDCA

cycle to get improvement to close the gap between the desired state (target value) and the current state (process performance).

The PDCA model provides a method to systematically analyze a process's performance to ensure we find the root cause of any observed deviation from a set target value.

The steps in the PDCA model are:

- **Plan:** Changes aimed at improvement; matched to root causes.
- **Do:** Carry out changes; try first on small scale.
- **Check:** See if you get the desired results.
- **Act:** Make changes based on what you learned; spread success.

Once the changes in process steps are made, we begin to monitor the process through our measures. If they show the process to be back in control, we simply continue to monitor it.

References

1. H. James Harrington, *Business Process Improvement*, McGraw Hill, 1991, p. 164.
2. Frank M. Gryna, *Quality Planning & Analysis*, McGraw Hill, 2001, p. 157.

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