

DMAIC – a method for structuring improvement projects

It's important to recognise the need for a proper understanding of the real situation before starting to improve things.

In Six Sigma a lot of emphasis is put on DMAIC – Define, Measure, Analyse, Improve, Control - as the correct method for structuring improvement projects.

In fact, although the terminology stems from Six Sigma theory, the practice closely matches the application of Lean techniques which have been around for a lot longer. Even the most foundational Lean tools follow the same principle.

The workplace [organisational tool 5S](#) for example, which was in use decades before the business application of Six Sigma and is as far from complex statistics as improvement techniques can get, still follows the DMAIC path.

- **Define** the event boundaries with a [Quad of Aims](#) or similar charter document
- **Measure** the current performance by getting the team to complete a 5S checklist on the workplace in question
- **Analyse** their results by combining their scores and identifying which areas need particular focus if the score is to increase
- **Improve** through the Sort, Straighten and Sweep phases
- **Control** covers the measures put in place during Standardise and Sustain to ensure the improvements are maintained

So DMAIC is not just for Six Sigma, it is a catch-all good practice structure for any improvement; and anyone leading an improvement activity, whether its duration is two days or six months, should always have in mind which phase they are in.



There is something important to recognise about DMAIC when training others in it though, which is although it's logical and relatively easy to understand, it is also to some extent counterintuitive.

The Measure phase can initially seem cumbersome and unnecessary.

The instinct of those in Management, when faced with a business problem, is rarely to begin a time-consuming data collection exercise, it is more likely to be to get on and solve it. That does make some sense – for all the time you are measuring the scale of a problem, the problem itself continues.

Would it not be better to throw a solution at it and see if that works? If it doesn't, we could just try another.

The issue with this scattergun approach to problem-solving is that a business will find itself committing time and resources to solutions that don't improve anything, they may even make the problem worse.

Even then, organisations still sometimes carry on applying solutions according to instinct, because that way at least it feels like they are doing something.

That is not DMAIC though, and if they do chance on a solution that resolves the original issue it will be more by luck than good judgement, and there is also a significant chance it could have caused them more problems elsewhere.

Properly conducting the Measure phase

Understanding the scale of the issue and what exactly the impact is, as well as current process performance, is the only way to reach a point where, in the Analyse phase, you can judge and test potential solutions. These will include solutions that some people may have thought of before the project even began, but now, with the confidence gained by good data, we can be sure whether they will work before committing any resources.

Another problem with persuading people of the importance of conducting Measure properly is that it will take time. Projects, where the exact data set required to complete the Analyse phase are already available at the push of a button, are very rare. And, even when that does happen some investigation into the quality of the data collection is required.

Bourton Group once worked with the Executive Team of a [large, industry-leading organisation](#) which was poised to make some significant decisions regarding reducing procurement expenditure. When we investigated the collection method for the data that brought them to the conclusion changes were needed, we found ourselves working with a team of five Accounts Payable clerks, part of whose role was to classify spend from incoming invoices into categories.

They were faced in their system with a drop-down menu with 26 options.

Using Measurement System Analysis we managed to prove:

1. That they all classified them differently as there was no standardised method of determining which option to go for.
2. That even individuals were not classifying invoices consistently themselves
3. That they were statistically far more likely to choose options near the top of the list, as using the scroll bar at the side of the list slowed them down.

You have to commit to actually doing the Measure phase properly

Explaining to the Executive Team that they should not have confidence in the data upon which they were basing significant business decisions and that it would take a while to get good data, was a challenging conversation. The alternative though, to go with their initial instinct that no Measure phase was necessary, would have seen them making changes with little understanding of what the consequences would be. Calling these changes Improvements would be optimistic, and this demonstrates how DMAIC puts you on the right side of either having statistical confidence or crossing your fingers and hoping for the best.



Conclusion

While Lean Six Sigma coaches and trainers will quite rightly tell you that DMAIC is simple to understand and good practice, asking people to go against your instincts is not easy. Managers who have got into the position they have, partly through building up a great deal of knowledge of their industry, will have huge faith in their own instinct, and rightly so. The Measure phase of DMAIC will always force them into a position where they check whether what they think they already know is correct, and this is right too.

Remember, no one is infallible, and the teamwork involved in conducting the measure phase properly will give everyone confidence that the eventual improvements which are implemented are moving the project in the right direction.

If you're looking for support with another situation, feel free to get in touch on 01926 633333 alternatively you can email us at info@bourton.co.uk.