CHAPTER 9

EFFECTIVE MEASUREMENT

Introduction

The purpose of an effective measurement system is to provide relevant and timely information to allow the people responsible for a process to:

- Set the process up for success and prevent problems
- Facilitate in-flight tracking and quick and effective course-correction
- Identify ways to continuously improve the process to make it more efficient, robust and resilient
- Provide a basis for meaningful, positive responsibility and accountability in all of the above

Measurement has both a technical and a social aspect:

- **Technical:** First, to identify measures that offer the most useful insight and the greatest leverage to manage and develop the process; second, to promote coherent functioning across the organisation, and through time, by ensuring that these measures are integrated horizontally (end-to-end along the value stream) and vertically (aligned with strategy)
- **Social:** To create a context where measures are used to help the people responsible for the process to understand how they influence performance, and to engage and involve them in its management and improvement

Why this matters

> *'What gets measured gets managed, and what gets managed gets done.' (Peter Drucker)*

From a technical perspective, measurement is crucial to the effectiveness of the PDCA cycles that power performance and improvement throughout the business. Measures are defined at the Plan stage. At the Check stage, we can assess to what extent the action taken has produced the expected results, learn about the nature and size of any gaps, and work out next steps.

From a social perspective, a good measurement system also strongly and positively influences people's behaviour, aligning their thinking and actions with organisational purpose and strategy, fostering engagement with it and creativity in the pursuit of it.

Done well, this constitutes a core organisational capability that affects every process, person and result in the organisation.

Measurement is also central to leadership and management; the capability to foresee, plan and manage, anticipate events, avoid problems by attending to the right measures at the right time, and create opportunities.

For many organisations, taking a more comprehensive, coherent, rigorous, systematic and disciplined approach to measurement can represent a significant evolutionary advance in strategic and operational capability.

While there are costs associated with measurement, the cost of not measuring is significantly greater, due to the operational inefficiencies and missed strategic opportunities that result from the inability to stay fully focused on purpose, prevent problems, and make rapid and effective course-corrections and improvements at all levels of the organisation.

Top tips

In designing measurement systems, it is useful to:

- Use both results (lag) measures and in-process (lead) measures
- Define both the desired outputs and the desired outcomes
- Go beyond the simple vital-signs measures and develop potentially game-changing, transformational measures

- Boil metrics down to the critical few from the trivial many
- Measure what needs to be measured, not just what is easy to measure
- Integrate measures horizontally and vertically
- Translate raw data into actionable wisdom

Let's explore these in turn.

Use both results measures and in-process measures

Results or output measures track process outputs: the 'ends'. They are, typically, the QCD measures (quality, cost and delivery performance). They are of course vital, but by themselves are insufficient to achieve process control, as they have two significant limitations:

- They are **lag measures**. By the time the information is available, it's too late to alter the course of events in that cycle. As the old saying goes, if you can see it, it's too late. Wise we may be, but only after the event, and we have to wait for the start of the next cycle to make changes. It's like a football coach trying to manage by looking at the results in the Sunday paper. It's hit-and-miss, slow, expensive, and lacks the agility necessary to deal adequately with fast-changing situations
- A results measure – for example, profitability – may be an aggregate measure, determined by a range of variables in the preceding process(es), and so **cannot be *directly* managed**
- The key to effective management is to understand and skilfully influence the means: the factors that drive the results

So, in-process or lead measures add a number of invaluable things to management capability. They:

- Identify where, when and how to intervene (what levers to pull)
- Allow problems to be prevented (think of aircraft pre-flight checks)
- Allow problems to be spotted and solved early (often in real time through visual management)
- Ensure that the process is balanced (i.e. each stage is running at the same speed and on time) and flows smoothly so that there are no bottlenecks or delays
- Include input measures that track the quality and availability of the resources the process depends on

Define both the desired outputs and the desired outcomes

It is also important to distinguish between outputs and outcomes. Outputs tend to be narrowly defined and short-term. Outcomes are the wider and longer-term impacts on all stakeholders. For example, one could posit that the output of the oil industry is oil and money, while the outcomes include heat and power for homes, industry and transport, but also negative externalities such as pollution and climate change.

For ethical reasons, organisations committed to Business Excellence generally take both outcomes and outputs into consideration.

Develop transformational measures

In business processes, as with human health, measures of 'vital signs' are fundamentally important, but don't have the scope or detail to help you build toward excellent performance. We must also, therefore, discover what metrics have the greatest potential to transform our thinking, approach and results.

Here are some simple examples of transformational measures at different levels:

- At results level, measuring cash-out to cash-in time can radically change the way that people look at cycle time and inventory
- At a process level, measuring cost of poor quality (COPQ) – the cost of defects, rework, refunds, replacements etc. – can have a transformational effect on a team's approach to quality and continuous improvement
- At a strategic level, transformational measures are typically intangible factors such as talent, leadership, employee relations, culture, agility, resilience, ethics and sustainability. Transformational measures can also come from rethinking traditional measures. For example, measuring and managing customer relationships (how they feel) instead of customer service (your technical response levels)

The critical few

> *'Businesses that do not scrupulously uncover the fundamental drivers of their units' performance face several potential problems. They often end up measuring too many things, trying to fill every perceived gap in the measurement system. The result is a wild profusion of peripheral, trivial or irrelevant measures. Amid this excess, companies can't tell which measures*

> *provide information about progress toward the organisation's ultimate objectives and which are noise. If companies can't prove basic causality, they certainly can't determine the relative importance of the measures they select. And not being able to weigh these measures makes it hard to allocate resources ... for example, does a dollar invested in product development yield a higher return than a dollar spent on customer retention. ... [and] particularly when bonuses are at stake they place greater weight on measures whose targets they know they can hit.' (Christopher D. Ittner and David. F. Larcker)*

There lurks in measurement the potential for the classic error of not knowing exactly what to measure, and so measuring everything and ending up with a confusing muddle of data that we're not entirely sure how to respond to. It is therefore important to whittle measures down to the 'critical few' from the 'trivial many'. This means for:

- **Strategic measures:** Finding those that are pivotal in building organisational capability and competitive advantage
- **Results measures:** Identifying those that are crucial to the operation of the business. These are typically designed around the SQCDE measure (safety, quality, cost, delivery performance and colleague engagement)
- **In-process measures:** Finding the factors that are crucial to control any particular process (which are unique to each process and must be determined by those working with it)

Measure what needs to be measured

Two bits of useful advice here are, first, don't just measure what is easy to measure. Easy but meaningless metrics will only create distraction and unnecessary work. As Seth Godin advised; 'If you're not going to use the data to make a decision, don't waste time on it.' Second, if you need to get it right, you need to find a way to measure, review, manage and improve it. So don't exclude something just because it is difficult to measure. Sometimes there is no quick, simple or objective way to measure something important but, as Deming argued; 'Everything that should be measured can be measured in a way that is superior to not measuring them at all.'

There are two related factors to consider: accuracy and objectivity. Regarding accuracy, Deming helpfully pointed out that 'measures only need to be accurate enough to serve the purposes for which they were intended,' that 'an inexact answer is almost always good enough' and that we should aim for 'appropriate accuracy'. Regarding objectivity, getting a credible numerical measure of, for example, colleague engagement sounds like it could be expensive and almost impossible to track in real time. But a simple check-in with people at the daily meeting provides information with enough accuracy and validity on which to base some immediate constructive intervention.

Integrate vertically and horizontally

Measures should form an integrated and coherent system that reflects the interconnectedness and holistic nature of the business as an entity, and which focuses on the performance of the whole, rather than the individual parts in isolation. Measures therefore should be integrated both horizontally and vertically.

Horizontal integration ensures focus on the end-to-end performance, coordination and improvement of the whole value stream which runs through the business cross-functionally, through various departments, reflecting the interconnectedness and interdependence of multiple elements across the organisation. This helps to identify and address cross-functional performance and coordination issues, and fosters understanding of how the system works, and how it can be managed and improved as a whole. It also actively promotes cross-functional dialogue and collaboration, and reduces the dangers of misalignment such as loss of synergy, conflict and process sub-optimisation.

Vertical integration ensures alignment of vision and strategy with daily operations. The measures of process performance should be aligned with the corresponding departmental measures, which in turn should be aligned with the top-level success measures set out in the strategic plan.

Translate raw data into actionable wisdom

As Deming pointed out; 'Without theory, there is no way to make sense of the information that comes to us in an instant.' In other words, performance information, by itself, no matter how fast, detailed or frequent, tells us little and does not allow us to be confident that the action we take on the system will work. We need therefore to develop the capability to move quickly and accurately from:

- **Data:** Raw and unprocessed, to derive useable...
- **Information:** By extracting the important signals, themes and patterns hidden in the data, to give it meaning and relevance, to derive...

- **Knowledge:** An understanding of what factors drive performance, which then allows us to develop...
- **Wisdom:** Deep, rich insight that allows people to consistently take informed and timely action

The key is to understand how the process that we are trying to measure works. This involves first identifying the main process steps, key variables and interactions. The next step is to experiment by attempting to improve the process through making changes guided by structured problem-solving tools and thinking. Thus a coherent picture is gradually built that allows, as Dean Spitzer put its, an 'increasingly deeper understanding that leads to progressively better actions that drive desired results'.

Getting the psychology right

The success of measurement depends, ultimately, on the degree to which people constructively engage with it, which in turn depends on the psychological relationship with measurement that is created. This includes:

- The issue of control (who controls what and how)
- The purpose: is the measure designed to produce actionable information, or is it a target?
- What happens when a performance issue is identified

Performance control, not people control

In Business Excellence, the aim is to get the process under control – i.e. operating in a way that is stable, predictable and repeatable – and for this control to be achieved through informed and intelligent effort by the people responsible for it. This differs markedly from the historical command and control approach which aims at the control of people by passing down orders, standards, targets, processes, rules and specifications, and checking up to ensure compliance. In the latter, it is assumed that:

- The processes designed by managers and experts are perfect and will not need any significant in-flight adjustment or ongoing improvement, regardless of what conditions they might have to operate under
- Even if they did, the people who work in the process cannot be trusted to do this

These assumptions are generally viewed as incompatible with the realities of mid-21st-century business, where there is a need for a fast and effective response to handle the ongoing rapid and unpredictable change.

In Business Excellence, using measurement to provide insight rather than oversight, to enable and empower people to control the processes that they are responsible for, is not regarded as a nice-to-have but rather as an essential; not only for motivation, but also to foster the engagement necessary to navigate the array of challenges and opportunities, and to optimise the process in the short and longer term in the face of them.

Measure vs target

A measure is of course just an aspect of system performance that we choose to track. And there are two main ways to use any measure:

1. To provide information about the performance of the process so that the people responsible for the process are able to manage effectively through various challenges, and to continuously improve it over time. The big upside of this is a more controlled process and sustainable improvement. A potential downside is that, without the right level of professional discipline, it will drift into complacency and mediocrity. Hence the need for genuine leadership rather than just supervision
2. As a target. This can open up a number of potential dangers:
    a. If a stretch target is set (i.e. one beyond the current capability of the system) and people have the right continuous improvement tools, training and time to incrementally improve process capability to achieve this (working smarter), all may be well. In the absence of a structured and disciplined approach to improvement, however, or where the stretch target is to be hit immediately, it can only be achieved by throwing more time, effort or resource at it (working harder). This of course may be an occasionally necessary last-resort measure, and powerfully effective. But it is also unsustainable, potentially risky and not the right approach for delivering sustained, stable, and continuously improving, world-class performance. Pushing people and the system into overdrive may get increased output, but if the trick is pulled repeatedly, the result is likely to be system degradation (of tools, equipment, resources etc.) and damage to motivation as people get disillusioned, switch off or leave

b. With a target that people perceive to be unrealistic, unfair or exploitative here may be gaming, including passing on faulty work, or sales people promising unmeetable timescales or offering unauthorised discounts
c. Target fixation: with a singular focus on, for example, productivity, people may, deliberately or otherwise, take their eye off performance on other metrics, such as quality, safety or colleague engagement, and consequently tip the process/system out of balance
d. Another risk is that, when they reach the target, people stop, despite many opportunities for improvement remaining – for example, in further reducing error rates or cycle time. It is called continuous improvement for a reason!

Using measures as information allows us to optimise the whole system as a coherent piece and improve it sustainably in the longer term and ongoing. Using measures as targets can narrow the focus down to maximising a restricted range of measures in the short term and inadvertently hobbling the capability for ongoing system-wide improvement.

Measures and values

What gets measured also generally reflects what matters to the business, and there are choices here that have implications for colleagues' engagement and motivation (and for business reputation more widely).

Top-line measures that are narrowly focused on shareholders' short-term interests (for example, profitably) tend not to be especially motivating to colleagues, particularly if it is felt that their own and their customers' interests will be secondary, and will possibly be deliberately undermined in the pursuit of them.

In contrast, where organisations include, in addition to profitability, a wider and more balanced set of aims, then generally, people are more likely to engage. These aims might include to provide a meaningful, valued service to clients and a positive work experience for colleagues, as well as concern for the wider social and environmental impact of the business.

Criteria for an effective measurement system

To summarise the above, an effective measurement system should comprise a suite of measures that work together to give comprehensive insight and provide timely, actionable information without being overwhelming. Individually and collectively, measures should be:

- **Aligned** with the purpose of the process and the Voice of the Customer (VoC)
- **Relevant:** Measuring the factors with the highest leverage and that mean something to the people involved
- **Useable:** Help the people responsible for the process to take informed action
- **Up to date and timely:** Measured and made available at the right time (as close as possible to real time) to allow in-flight adjustments to be made to keep performance on track
- **Visible:** Directly accessible
- **Accurate and reliable**
- **Sufficient:** Measuring all the key factors in the process
- **Vertically aligned:** Part of a cascade from strategic to operational
- **Horizontally aligned**, end-to-end, cross-functionally, along the value stream

In addition, at a strategic level, measures should:

- Track the development of competitive capabilities – the intangible assets that do not appear on your balance sheet, such as agility and ability to innovate
- Reflect changing customer expectations of quality, cost, delivery, experience etc.

How to achieve this

A good place to begin is to define the purpose of the process and the results we want from it – the 'results measures' which collectively comprise the Voice of the Process (VoP). These need to reflect and be aligned with the results the customer wants, the VoC.

Then there's the painstaking task of methodically uncovering the most useful process-measures – the critical few factors that allow us to have the biggest influence on the value-creating process. Following these steps may be useful:

- Look at the process and identify, as well as you can from existing practice, data, experience and intuition, which variables appear to have the greatest impact on the desired results

- Develop a plan for gathering data on these variables (it may be best to use a manual data collection process first, then automate) and figure out how best to make the information available so that it can easily be understood and acted on
- Use this data to facilitate visual management and inform the daily meetings where issues can be identified and plans for addressing them made
- Establish a fuller understanding of causality and the points of greatest leverage by running safe-to-fail experiments aimed at improving the processes
- Once you have identified the key variables, decide on the best way to gather, analyse and present the information to allow clear and effective monitoring and to keep meetings short, relevant and action-focused. One approach is to use the traffic light system and exception reporting. Green denotes 'acceptable performance', amber 'outside acceptable levels, but remedial action in progress', and red 'cause for concern'. This means that there is no need to discuss every measure at every meeting, only the red items, allowing the time to be used more productively on addressing high-leverage issues

This same broad approach can be used at all levels, from strategy to front-line operational processes.

In all of this, remember:

- There is time and cost to measurement systems, so they need to deliver and be lean (deliver right-first-time quality, and deliver exactly and only what is required)
- The benefits of interactivity. The degree to which people understand and buy in is likely to mirror the degree to which they are involved
- The development of measures is emergent: we usually begin with measures that are provisional and based on educated guesses. Greater validity and accuracy comes in time through learning about their use in practice
- Perfection in this is neither possible nor necessary; causality will never be fully understood
- Transforming both the social and technical aspects of the management system is something of an art form. It will take time and much trial-and-error learning to get right. And it is never done. As with everything else, further honing and improvement will be ongoing
- Start small (and localised). Establish good practice and then build out from there. Trying to change multiple parts of a management system at the same time is mind-bogglingly complex and risky.