Management White Paper

How to Design Key Performance Indicators

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How to Design Key Performance Indicators

By
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Abstract:
This management white paper explains the role of metrics (or Key Performance Indicators – KPIs) within managing and improving performance. It makes clear that KPIs should be meaningful and relevant, which is oftentimes not the case in organizations. The paper also outlines that KPIs should be used for learning and improvement and extracting meaningful insights to inform evidence-based decision making. A 20-step indicator design template is provided that will assist anyone in the selection and best-practice design of KPIs.

Version: 06 June 2010

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How to reference this management white paper study:
How to design Key Performance Indicators

Introduction

Key Performance Indicators (KPIs) help organizations understand how well they are performing in relation to their strategic goals and objectives. In the broadest sense, a KPI provides the most important performance information that enables organizations or their stakeholders to understand whether the organization is on track or not. KPIs serve to reduce the complex nature of organisational performance to a small number of key indicators in order to make it more digestible for us. This is the same approach we use in our daily lives. For example, when you go to your doctor he might measure blood pressure, cholesterol levels, heart rate and your body mass index as key indicators of your health. With KPIs we are trying to do the same in our organisations.

The problems with KPIs

In practice, the term KPI is overused and often describes any form of measurement data and performance metrics used to measure business performance. Instead of clearly identifying the information needs and then carefully designing the most appropriate indicators to assess performance, we often observe what we have termed the ‘ICE’ approach:

- Identify everything that is easy to measure and count
- Collect and report the data on everything that is easy to measure and count
- End up scratching your head thinking ‘What the heck are we going to do with all this performance data stuff?’

Start with strategic objectives

KPIs should be clearly linked to the strategy, i.e. the things that matter the most. Once you have agreed, defined and mapped your strategic objectives you can design KPIs to track progress and gain relevant insights to help manage and improve performance. KPIs have to provide you with answers to your most important questions.

The Advanced Performance Management (API) white paper ‘How to Design a Strategy Map’ (which can be found on the API Website: www.ap-institute.com) explained that creating a Strategy Map that describes, on a single piece of paper, the cause and effect linkages between strategic objectives is the most important component of a Performance Management System. Only when the senior management team has agreed on the content of the Strategy Map should they progress to the design of metrics. The purpose of metrics and related targets is to monitor progress toward the achievement of strategic goals, and ultimately the delivery of the organizational strategy. Metrics are not an end in themselves.

Although metrics should be derived from strategic goals, API research finds that this is rarely the case. For example, a recent global API survey of more than 1100 organizations across the uncovered the
worrying statistic that only 15% of respondents believed that all of their performance indicators were linked to the strategy of the enterprise. As worrying, although the research found that ‘collect meaningful and relevant performance indicators’ was one of the 10 principles of good performance management as exhibited by those organizations that demonstrated superior performance, a staggering 92% of respondents felt that many of their indicators were neither meaningful nor relevant.

**Key Performance Questions**

To heighten the likelihood that metrics (or Key Performance Indicators – KPIs) are both meaningful and relevant, API recommends that clients insert a useful step between the creation of the Strategy Map and the selection of KPI: this step being the articulating of Key Performance Questions (KPQs).

An API innovation, a KPQ captures precisely what managers need to know for the delivery of strategic objectives. KPQs steers the KPI designers into asking: ‘what is the best data and management information that we need to collect in order to help us answer our most important and unanswered questions?’ Starting with KPQs ensures that all subsequently designed performance indicators are relevant.

Moreover, KPQs put performance data into context and therefore facilitate communication, guide discussion and direct decision making. KPQs should be open questions and not closed and should look forwards and not backwards. For example simple, ask ‘how well are we managing our budget’ rather than ‘have we met our budget.’ The former stimulates a discussion, the latter a yes/no answer. Diane McGiffen, Director, Corporate Services at the API client Audit Scotland describes how KPQs work alongside KPIs: “People in most organizations, and we are no exception, have quite rightly developed strong disciplines in KPIs as a way to monitor and improve performance,” she says. “KPQs do not replace KPIs but are an enhancement. KPQs help us to capture a much richer set of information than can be gained solely from performance data.” An in-depth explanation of KPQs can be found in the API management white paper: ‘What are Key Performance Questions?’

API has created a performance indicator design template (see below) that, amongst other things, ensures that the KPQ link is in place and therefore the information needs are clearly articulated before choosing KPIs. Note too that the template ensures that metrics are aligned to the strategic objectives.

**Strategic versus Operational Metrics**

It is also important to stress that strategic measures are different from those required to monitor operational performance. Too many performance frameworks and scorecards confuse the two. While with operational measures, it is desirable to get closer and closer to ‘real time’ measurement, this is not required for strategic measurement. Strategic measures are rarely monitored day-by-day, and certainly not hour-by-hour. Strategic measures are more about monitoring progress toward achieving a new and different envisioned destination (as opposed to just doing things better), and they don’t change that often.
The Main Reasons for Measuring Performance

But if it’s important to separate out strategic and operational KPIs, it’s equally vital that organizational leaders understand the broader purpose of collecting metrics – be they strategic or not. The three main reasons for measuring performance are:

- To lean and improve
- To report externally and demonstrate compliance
- To control and monitor people

Measuring to learn and improve performance

In this application, KPIs are used to equip employees with the information they need to make better and more informed decisions, with the goal of triggering performance improvement. In this context, KPIs are used internally as the evidence to inform management decisions, to challenge strategic assumptions and for continuous learning and improvement.

Measuring to report externally and demonstrate compliance

In this application, KPIs are used to inform external stakeholders and to comply with external reporting regulations and information requests. When measuring for external reporting and compliance purposes, any reports and associated indicators can either be produced on a compulsory basis such as annual financial statements, accounts, or performance reports for regulators; or can be on a voluntary basis such as environmental impact reports, for example.

Measuring to control and monitor people

In the final application, KPIs are used in a top-down command-and-control fashion to guide and control people’s behaviors and actions. Here, measures are used to set goals or rules, to objectively assess the achievement of these goals and to provide feedback on any unwanted variance between achievements and goals. The aim is to eliminate variance and improve conformity. In this context, measures are often tightly linked to reward and recognition structures.

Of these three applications, the first (measuring to learn and improve performance) is the most useful, the second is something organizations just have to do and the third one can cause major problems and often leads to a culture in which people focus on delivering the measures but not the performance (i.e. hitting the target but missing the point).

Best practice organizations (a) Clearly understand what KPIs are required for learning and improvement and focus on those (b) Separate out the external reporting indicators if they are not relevant internally to avoid confusion and data overload (c) Avoid using indicators for controlling people.

Extracting Relevant Insights

Those organizations that use KPIs to learn and improve routinely ‘use indicators to extract relevant insights’, which is another of the 10 principles of good performance management identified by API research.

The fact is that once organizations have collected meaningful data, they must analyze it before they can work out what it means – e.g., how they may
need to change things to improve success against key strategic goals. Too often organizations simply collect and distribute performance data without conducting any meaningful analysis – or any analysis at all. ‘Performance management analytics’ provide tools and techniques enabling organizations to convert their performance data into relevant information and knowledge. Without it, the whole performance management exercise is of little or no value to the organization. Those readers wishing to learn more on the topic are directed to the API management white paper ‘The Basics of Performance Analytics,’ which can be found on the API website.

**Qualitative and Quantitative Metrics**

Analytics is most powerful when the analyst (or whoever is conducting the analysis) has both qualitative and quantitative metrics to work with. Most organizations have a preference for choosing quantitative metrics (those collected in numbers). This is not surprising as quantitative data is easier to collect and to translate into meaningful metrics. However, it is important to balance numeric data with ‘qualitative’ (non numeric) assessment of performance, as this can be a powerful way to highlight issues that are important to customers and stakeholders.

**Common definitions**

To be useful for aggregation, comparison and best-practice sharing, measures should be commonly defined organization-wide. Typically this is an early and difficult challenge as it is not unusual to find that performance is measured in many different ways across the enterprise. Using the indicator template discussed below and storing the definitions in a central repository should help create common definitions.

**The danger of repackaging**

It is also important that organizations choose strategic metrics that truly do support strategic objectives and are not a simple repackaging of measures that are already in existence. Also, just using indicators because everyone else is using them is also not a good idea. What we found in our research is that about half of the required strategic indicators are commonly not available in existing systems within the company and have to be uniquely designed for the purposes of a specific organization. Those unique indicators also tend to be the most insightful and relevant metrics (many examples are discussed in the book *The Intelligent Company*).

**Actionable**

Metrics should be actionable. Measures that are nice to know but do not trigger step-change performance improvement typically have no place on in strategic performance management systems. For instance if an organization has an objective to retain talent and has clearly defined what constitutes talent and has an agreed common enterprise-wide metric, and the measures shows that strategically critical employees are walking out the door, then this should trigger an intervention. Simply put, we have a strategic objective, the measure indicates we are failing to meet that goal and so we do something about it. This represents
the most basic, and oldest, premise of performance management– turning strategy into action.

**Indicator Design Template**

To help organizations select appropriate KPIs, API has created a 20-point Indicator Design Template which has been used successfully in many of its clients.

The first four elements of the performance indicator design template address the purpose of the indicator.

1. **Strategic objective** – the Strategy Map has identified the different strategic objectives and priorities. Here we identify which of those the measure relates to. As I constantly stress, any KPI has to be linked to our organizational priorities and strategic objectives.

2. **Key Performance Question** – here we identify the KPQ this indicator is helping to answer. This provides the context of why this indicator is being introduced and what the specific issue is that requires further information and evidence.

3. **Who is asking** – identifies the person(s) or function(s) that is the information customer. By clarifying who is asking the questions indicators can be designed for the right level. For example, when the objective is ‘to develop the corporate brand’ then the potential indicators provided to the board tend to differ from those delivered to the marketing team. The former are more strategic while the latter would be more operational.

4. **What will they do with the information** – here we identify how the information will be used or which decision(s) it could improve. This provides further context and ensures we are clear about how we are planning to use the information once we are starting to report it.

**The Indicator Basics**

Then we look at some basics:

5. **KPI ID** – every indicator should have a unique identification number. This makes it easier to keep track of indicators and makes life easier once the Balanced Scorecard system is being automated.

6. **Indicator Name** – any performance indicator needs a name which should clearly explain what the indicator is about.

7. **KPI owner** – identifies the person who is responsible and accountable for the performance against this indicator. This is usually the same person who is the objective owner.

**How will the data be collected?**

In this part of indicator design template we look at the more technical aspects of the data collection. Instead of just selecting any existing measurement method it is important to consider the strengths, weaknesses, and appropriateness of different data collection methods. Here, the designer of an indicator should include a brief description of the data collection method, specify the source of the data, what scale will be used to measure it, how
### Strategic Objective
Which strategic objective is this indicator relating to?

### Key Performance Question (KPQ):
What Question do you want to have an answer to?
What are our information needs?

### Who is asking this question? Who is the information customer?

### What will they do with the information? Why are they asking?

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### Performance indicator basics:

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<td>5</td>
<td>KPI ID</td>
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<td>6</td>
<td>KPI Name</td>
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<td>7</td>
<td>KPI Owner</td>
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How will the data be collected

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<tbody>
<tr>
<td>8</td>
<td>What is the data collection method?</td>
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<tr>
<td>9</td>
<td>What is the source of the data?</td>
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<tr>
<td>10</td>
<td>What is the formula / scale / assessment method?</td>
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<tr>
<td>11</td>
<td>How often, when and for how long do we collect the data?</td>
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<tr>
<td>12</td>
<td>Who collects the data?</td>
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### Target

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<td>13</td>
<td>What is the target or performance threshold(s)?</td>
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### Good measures tests

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<td>14</td>
<td>How well is the indicator measuring performance?</td>
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<td>15</td>
<td>What are the costs for collecting the data? Justified?</td>
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<tr>
<td>16</td>
<td>What dysfunctional behavior could this indicator trigger?</td>
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### Reporting

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<td>17</td>
<td>Who is the primary and secondary audience for this indicator</td>
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<td>18</td>
<td>Reporting frequency (when and for how long will this indicator be reported?)</td>
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<tr>
<td>19</td>
<td>Reporting channel (which channels will be used to report this indicator?)</td>
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<tr>
<td>20</td>
<td>Reporting formats (in which formats will the information be reported?)</td>
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</tbody>
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*Figure 1: The API Key Performance Indicator Template*
often and when the data is collected, and who is in charge of collecting and updating the data:

8. **What is the Data Collection Method** – Here you identify and describe the method by which the data is being collected. Examples of data collection methods or measurement instruments include surveys, questionnaires, interviews, focus groups, collection of archival data, etc.

9. **What is the source of the Data** – Here you identify where the data comes from. Think about the access to data and answer questions such as: Is the data readily available? Is it feasible to collect the data? Will the data collection method, for example interviews with senior managers, provide honest information? If not, maybe different data collection methods could be combined?

10. **What is the Formula / Scale / Assessment Method** – here the designer of the indicators identifies how the data will be captured. Is it possible to create a formula? Is it an aggregated indicator or index that is composed of other indicators? Here the designer also specifies if, for example, one of the following scales is used: nominal (numbering of categories, e.g. football players or simple membership definitions, e.g. male or female); ordinal (determination of greater or less, e.g. star rating for restaurants or movies); interval (determination of intervals, e.g. temperature in Fahrenheit or Celsius); and ratio (determination of equality and ratio in a continuum with a real zero, e.g. length, time, temperature in Kelvin); or whether the indicator is not expressed in any numerical form. The scale we pick will have implications on how we can use the data. For example, a nominal scale does not reveal any order or relative size; it just tells us whether something is one or the other. An Ordinal scale allows us to understand that one is bigger or better than another, but doesn’t tell us by how much. In addition to these classic scales there is the Likert scale which was designed to measure the extent to which respondents agree or disagree with statements (and is the most popular measurement technique used by organizations. Each respondent is asked to rate a question or survey item on some response scale. The format of a typical five-level Likert scale is:

- 1 = Strongly disagree
- 2 = Disagree
- 3 = Neither agree nor disagree
- 4 = Agree
- 5 = Strongly agree

There are different options to extend the classic 5-point scale and to change between odd-numbered and even-numbered scales. Odd-numbered scales have a middle value which a neutral response, labeled as ‘neutral’, ‘undecided’ or ‘neither agree nor disagree’. Even scales on the other hand don’t provide a neutral answer option and are so-called forced-choice response scales. Here, the respondents are forced to choose whether they lean more towards the ‘agree’ or ‘disagree’ end of the scale. Forced choice questions are useful tools if
there is reluctance among respondents to state their preferences.

11. How often, when and for how long do we collect the data – here the designer of an indicator thinks about when and how often the data for that indicator should be collected. Some indicators are collected continuously, others hourly, daily, monthly, or even annually. It is important to think about what frequency provides sufficient data to answer the KPQs and helps to support the decisions outlined in element five of this template. Organizations might want to continuously track indicators for website usage or website downtime, while external indicators for e.g. brand ranking might only be available once or twice a year.

One of the biggest pitfalls of performance assessments in organizations is that data is not collected frequently enough. For example, many organizations conduct employee survey once a year or even every eighteen months. This is not very useful at all as the gaps between the assessments are too big and impacts of e.g. corrective actions cannot be tracked. Therefore, instead of surveying all employees once a year, think about surveying a representative sample (lets say 10%) of employees ten times a year (perhaps missing out the August holiday season and December) so that individuals still only complete their survey once a year but the organization receives monthly information which allows them to answer their KPQs and act on the data much quicker.

It also makes sense to coordinate the dates when data is collected. Too much data collection is done on an ad-hoc and un-coordinated manner so that bits of data are collected at different times. As a consequence of this people in the organization might get too many and too fragmented requests for performance data. Furthermore, if different parts of an organization collect their data at different times and if different indicators are collected at different intervals, this makes it difficult or impossible to get valid snapshots of performance across different areas of the organization. If they are all collecting data at different times it is impossible to create. Here, it is also sensible to understand the reporting requirements for this indicator. If, for example, the data has to be reported at the end of the months it then makes sense to collect the data in time to be able to analyze it, aggregate it, chase people who have not provided the data in time, solve any data issues or discrepancies, and prepare the report.

Also, indicators are sometimes introduced for a specific period of time only (e.g. for the duration of major projects or to keep an eye on restructuring efforts). The common practice is that a significant number of indicators are introduced once and collected for ever because no one ever goes back and identifies the indicators that are not needed any more. Other obviously temporary indicators are introduced without giving them an expiration date; however, for those indicators a revision date should be set that allows the designers to review the template and check whether it is still valid. Even if
indicators don’t seem time specific, it makes sense to give all indicators a revision date (e.g. in line with the annual planning cycle) to ensure they get reviewed and an assessment takes place to see whether they are still needed.

12. **Who collects the data** – Identifies the person, function, or external agency responsible for the data collection and data updates. The person responsible for measuring could be an internal person or function within your organization. Increasingly it can be external agencies, since many organizations outsource the collection of specific indicators. This is especially common for indicators such as customer satisfaction, reputation, brand awareness, and employee satisfaction. Here we could also identify any review or sign-off cycles. It is common, for example, for one person to input the data and for another person to cross-check or sign-off the data before it is released.

**What are the Targets?**

Every performance indicator needs a target or benchmark in order to put performance levels into context. In many government organizations the target setting process is quite arbitrary and not enough thought is going into the setting of targets. Organizations often simply base it on previous performance figures and just suggest a target that looks ‘a bit better’ while others might simply calculate targets as mathematical ‘steps’, making fixed increases (e.g. 5% improvement), often with little thought as to how they will be achieved. I have seen so many performance reviews where people have discussed the fact that customer satisfaction, for example, has dropped from 87% to 84%. However, nobody knows whether this is good or bad, whether this is in line with expectations, or how this compares to any targets or to the sector benchmarks. Target setting should not be viewed as an administrative process, but an integrated and important part of designing meaningful performance indicators.

13. **Targets and Performance Thresholds** identify the desired level of performance in a specified timeframe and put expected performance levels into context. Targets should be (1) specific and time bound, (2) stretching and aspirational but achievable, (3) based on good information. Targets can be set as absolute targets (increase by 5), proportional or percentage targets (increase by 5%), relative to benchmarks (within the top three hospitals in our area or top quartile), or relative to costs or budgets (increase or reduce by 5% same level of budget). Here are a few tips for setting better targets.

- Use existing information and review trends and history.
- Consider variations in performance, e.g. peaks, troughs and seasonal factors.
- Take account of national targets, best practice benchmarks, etc.
- Take into account the cause-and-effect relationships, e.g. don’t set top level outcome targets before you have set appropriate targets for the enablers and inputs.
How to design Key Performance Indicators

- Take into account time lags (consider the Balanced Scorecard and the time lags between the objectives).
- Take account any dependence on others such as partner bodies.

Here are some examples of good and poor targets:

**Good:**
- ‘We will reduce the number of missed household bin collections by 5% by next year.’
- ‘We will cut the number of unfilled places in primary schools by 10% by 31 December 2010’
- ‘We will increase the number of visits to local libraries by 20 per cent before the end of 2001.’

**Poor:**
- ‘We aim to have the best bus service in the region.’
- ‘We will improve the way we handle complaints.’
- ‘We will answer 75 per cent of all letters within 5 days’ (a poor target if the remaining 25 per cent take 3 months to answer).

Many organizations use ‘traffic lighting’ to illustrate the levels of performance (already described above in our analysis of a heat map). Here, the designer of an indicator would therefore specify the thresholds for e.g. red/underperformance, amber/medium performance, green/good performance, and sometimes blue/over performance. Here, it is also worth thinking about internal or external benchmarks; these can be derived from past performance, from other organizations or departments, or from forecasts.

**How good is the indicator?**

In this part of the indicator design template we check how good the KPI we have designed so far really is. Here we look at how well the indicator is actually measuring what it is supposed to measure, the costs versus benefits, and explore any undesirable consequences or cheating behavior this indicator might encourage.

14. **How well is this indicator measuring performance** – once the above aspects of an indicator have been addressed, it is time to think about the validity of the indicators. To what extent does the indicator enable us to answer the key performance question and support our decisions? For financial performance, the confidence level would normally be high, since established tools are available to measure it. However, when we try to measure our intangibles, such as organizational culture, the confidence level would necessarily go down a peg or two. The assessment of the confidence level is subjective but forces anyone who designs an indicator to think about how well an indicator is actually ‘measuring’ what it was that it set out to ‘measure’. Organizations have different preferences of how to express confidence levels; some use percentages (0–100%), others use grades (1–5; or low, medium, high), color codes (e.g. red, amber, green), or symbols (such as smiley faces). In addition, I suggested that a brief written comment is
included to clarify the level of confidence and explain the limitations of an indicator.

15. How much will it cost to collect the data and are the costs justified? – another aspect that should be considered is the costs and efforts required to introduce and maintaining a performance indicator. There is often an implicit assumption by many managers and measurement experts that creating and maintaining measurement systems does not incur significant costs. But measurement can be expensive, especially if the indicators are supposed to be relevant and meaningful to aid decision-making and learning. Costs can include the administrative and/or outsourcing costs for collecting the data, as well as the efforts needed to analyze and report on the performance. It is important to ensure that the costs and efforts are justified.

16. What Dysfunctional behavior could this indicator trigger– here the designer of an indicator notes down any potential ways this indicator could encourage the wrong behavior or cheating. Reflecting on possible dysfunctions caused by indicators allows people to reflect on possible better ways of collecting and assessing performance. In addition, it helps to raise the awareness of possible cheating behaviors which in turn enables everyone to monitor them much closer.

**Reporting of the performance information**

In this final section of the indicator design template the designer of an indicator identifies the way the performance indicator is reported. It identifies the audience, access restrictions, the reporting frequency, the reporting channels and reporting formats:

17. **Audience and Access** – the designer of the indicator identifies who will receive the information on this performance indicator, as well as possible access restrictions. Indicators can have different audiences. It might therefore be a good idea to identify primary, secondary, and tertiary audiences. The primary audience will be the people directly involved in the management and decision-making related to the strategic element/objective that is being assessed. The secondary audience could be other parts of the organization which would benefit from seeing the data. A possible tertiary audience could be external stakeholders. Also, audience groups have different functions and requirements. For example, some data will be provided to analysts who analyze the data further while a management audience tends to needs data to support their decision making.

18. **Reporting Frequency** – Identify how often this indicator is reported. If the indicator is to serve a decision-making purpose within the organization, then the indicator needs to provide timely information. The reporting frequency can be different from the measurement frequency. An indicator might be collected hourly, but then
reported as part of a quarterly performance meeting. However, it is important to cross-check the reporting and measurement frequency to ensure they are aligned and that data is available.

19. **Reporting Channels** – here the possible outlets or reports are identified which are used to communicate the data. An indicators can for example, be included in the monthly performance report to directors, could be presented in the bi-monthly performance review meeting, or included in the quarterly performance report to the board, in the weekly performance reports to heads of service, or could be reported on the organizational Intranet or made available to external stakeholders through external reports or the website. It is again a good idea to cross-check the identified reporting channels with the reporting and measurement frequency to ensure they are aligned and that data is available in time.

20. **Reporting formats** – Identify how the data is best presented. The indicator designer should clarify whether the indicator is reported as, for example, a number, a narrative, a table, a graph or a chart. The best results are usually achieved if performance is reported in a mix of numerical, graphical and narrative formats. Considerations should also include the presentation of a data series and past performance. A graph containing past performance might be very useful in order to analyze trends over time. This could also include targets and benchmarks. Many organizations use traffic lights or speedometer dials to present performance data.

**Conclusion**

KPIs are one of the most powerful tools available to enable organizations to achieve step-change performance improvement – which should be a core goal of any performance management system. But using KPIs appropriately comes replete with challenges, as this management white paper has shown. KPIs should be primarily deployed for learning and improvement and not for command control. When KPIs are used inappropriately they also become the most ‘resisted’ of management tools.
Endnotes, References & Further Reading


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