



Measuring Safety Performance

Introduction

Measurement is key to achieving information about performance improvement and feedback about the effectiveness of current strategies. Measurement is also valuable as a potential means through which safety improvement can be driven through motivating effort. However, in the context of safety, measuring performance is a complex proposition. We have identified three distinct issues that need to be the focus of attention. These relate to the need to:

- **focus on measuring levels of risk and variables that serve to lower risk**
- **measure these variables accurately, reliably and in timely fashion**
- **make the reporting of safety performance results meaningful**

Most organisations now recognise the limitations of restricting the measurement of safety performance to output variables (such as the number of accidents / incidents, reportables etc). Because of these limitations safety measurement is now increasingly including a focus on inputs. The key issue here is to measure the inputs that most directly effect outputs and serve to lower risk, and to measure them in such a way that produces good quality data. For example, counting the number of safety audits / walk rounds / tours may be regarded as an appropriate input measure but such counts presuppose that the audits counted are of good “quality” and that such audits serve to drive improvement. These may not be valid assumptions.

In view of this, input measures need to go beyond the simple measurement of activities and to achieve reliable measures of risk and of those interventions that have been clearly established as having an impact on levels of risk.

Why Measure Safety Performance?

The need to measure safety performance is unquestionable: measurement is an essential component of any management system. There are a number of purposes served by measuring safety performance. These are listed below:

- To meet legal and corporate obligations
- To compare performance against minimum standards
- To compare current performance with past performance
- To compare performance with that of others or with established benchmarks
- To assess the effectiveness of management strategy and specific interventions
- To identify patterns and trends
- To identify priorities
- To provide feedback to reinforce effort applied
- To establish when to apply rewards and recognition

The measurement of safety performance therefore meets different purposes. Whilst the same measures can have wide significance in terms of meeting a range of different purposes, it is also important to recognise that there is a need to establish different measures to meet specific needs. For example, a small work team will be most interested in how they are doing as a unit day by day whereas the performance of the wider organisation may be of less interest to them. Similarly, the Board may be interested only in output data aggregated across the entire organisation for a time period (quarterly, annually) and will have less interest in the detailed inputs. The implication here is to design the measurement system in the context of how it is to be used and to achieve what effect.

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Whilst all of the above purposes may be important, the assessment of the relative effectiveness of management strategy and specific interventions is of particular significance – the need is to know what works and what doesn't is highly important if risk levels are to be kept under control.

In addition, measurement (results) can be a source of motivation and this is important given that it is what people do that will be the biggest factor in determining safety performance. To be effective, performance feedback needs to be rapid and meaningful so that teams and individuals are able to make the link between the efforts they have put in and the outcomes generated.

What this means is that measurement plays a part in providing management intelligence but also that it has an affective aspect in that it has the potential to make people feel good about what they are doing and therefore to sustain their efforts.

Critical Issues In Measurement

To provide “good intelligence” and to motivate effort, measurement needs to conform to a number of important principles.

Fairness – given that measurement is used to reflect upon the activities and efforts of management and employees, it is important that the measures used focus on those variables that are under the control of these people. There is a need for people to feel that they can make a difference to that which is being measured.

Consistency – it is also important that the measures are applied consistently across operations so as to give a representative picture of performance from one area to another. One explanation for differences in performance can be that the measures have been applied differently and this can be driven by political interest given that a certain level of emotion is associated with the reporting of safety performance.

Reliability – the reliability of a measure relates to whether it will produce the same results for the same situations.

Validity – in this case the issue is the extent to which the variable being measured is a true indicator of safety. This is particularly important when the focus is upon “input” or “leading” measures for it is critical that the variables being measured have a direct relationship with or impact on outputs. If this is not the case, then the relevance of the measure needs to be questioned.

Relevance – the measures need to be associated with outcomes that are relevant to people at different levels of the organisation – there needs to be meaning attached to the measures such that people are then inclined to try and influence them. Typically, this will mean that there are consequences of one sort or another associated with the measures and that these consequences should have power so as to be of direct interest to individuals. This provides the motivation to influence results.

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Cost - this relates to cost-benefit. If the data collection for a particular measure requires a very expensive activity then the value contribution needs to be assessed.

Measure What?

The most obvious form of safety measurement involves the reporting of accidents and incidents (*output measures*). As organisations have developed their approaches to safety management, they have recognised the need to introduce various systems directed at controlling or influencing safety and from this has developed the emphasis on measuring inputs (*input measures*). However, whilst an emphasis on outputs and inputs measures is important, there is a third variable, *risk*, that also needs to be measured if an organisation is to achieve a complete picture as to how well it is performing. This is particularly important as organisations gain more control over safety performance and output measures typically become low numbers with little variance between time periods.

The measures adopted need to be assessed against the critical issues outlined above to assess the contribution they are able to offer to the measurement of safety performance.

Output measures

- Small numbers reduce the reliability of measure - variations between small numbers can appear more significant than they actually are - eg does a reduction from 4 LTIs in a year down to 2 really indicate that there has been a 100% improvement in safety?
- Different variables are afforded different weighting, which may not necessarily reflect the degree of safety - eg a low level LTIs given more prominence than a serious Dangerous Occurrence / HiPo when assessing safety performance producing a potentially skewed impression.

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- Improved performance may not necessarily be representative of better management – a lack of incidents may be the result of luck or other intervening variables.
- Considerable value and specific consequences can be associated with a lack of incidents and this may in turn lead to a tendency to under-report.
- Because of the prominence attached to incidents and accidents, there is a tendency for them to trigger a lot of emotional energy that can lead to a resulting lack of focus on real issues - eg knee-jerk reactions and the introduction of poorly evaluated interventions.
- This emotional aspect can encourage inappropriate behaviour and reinforce the wrong messages and values - eg a lot of energy directed at definition of an accident – is it an LTI or a RWI? and, how can we get him back to work to avoid it being an LTI?
- An apparently “poor” year can lead to the rejection of good management strategies in the belief that they are not effective when the reality may be very different. Similarly, good performance elsewhere can lead to a rush to generalise what appears to be good practice without careful evaluation.
- A lack of sense of control in that the performance unit is large and arbitrary in terms of a lack of interdependence – this can lead to a sense of “I cannot influence the outcomes in other parts of the performance unit” which in turn can diminish the relevance and fairness in the eyes of the individual.

Input measures

- Many of these tend to be counts of certain activities (eg Safety Tours) and the danger is that quantity rather than quality is the focus, and the data can be

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mis-representative - eg majority of activity conducted in short period at end of month to achieve target.

- The variable being measured may or may not have a strong dependent relationship with outputs – if the relationship is poor than the measure lacks validity as a measure of safety. (Safety activities although the subject of audit activity typically are not evaluated to determine their effectiveness – the efficacy of the activity is assumed).
- Input measures can lead to the production of a variety of metrics. This presents a problem in that it can be difficult to achieve an overall measure. The need here is to be able to aggregate different metrics to produce a single performance score that is accessible and meaningful to a wide audience.

Measures of risk

- This has as yet to be recognised as an essential component of safety measurement and yet when there are few incidents and accidents, a measure of risk is very important in determining the degree of safety assurance.
- Near miss reporting produces some indication as to risk occurrence but there are problems with reporting and the drive typically is to increase these. As such, near miss reporting is not a reliable measure of the amount of risk (the emphasis is upon descriptive rather than quantifiable data).
- Where the focus is directed at identifying risk, the tendency is towards the reporting of unsafe conditions when the output data indicates that the majority of incidents and accidents derive from risky behaviour.

The above critique serves to provide a starting point in the development of a more effective approach to safety performance measurement. The need to produce a valid

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and reliable measure of risk, and the need to establish a direct relationship between input measures and outputs represent two key issues to be addressed.

Safety Performance & Recognition

Measurement becomes particularly meaningful to individuals if it relates to achieving set goals and other positive outcomes such as awards and rewards of one form or another. This principle is well established in behavioural science. Providing incentives to drive safety performance is however a controversial area although many organisations have introduced into their safety strategy some aspect of recognising individual, team and company performance. The critical issue here is how to set up such systems that maximise performance.

This is far from a straightforward issue and requires an understanding of what motivates people to exert effort and how best to design and manage such systems. The work we have done in this area has led us to identify a number of specific issues that need to be addressed:

- How to avoid the problem of early losses in the measurement cycle leading to a lowering of motivation and effort
- How to avoid lowering of motivation once targets have been achieved
- How to avoid competition leading to a sense in some of always being bottom of the pile whatever effort is applied
- How to balance the apparent disproportionate effect of occasional losses for groups where levels of activity typically are low
- How to reconcile situations where outputs are high but inputs are high too, and where both outputs and inputs are low
- How to avoid J-curve behaviour – a lot of activity at end of period to achieve target
- How to maintain quality whilst driving measures of quantity

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- How to influence a sense of interdependence – how to influence high performers to support low performers

These represent concerns that require careful consideration. However, the key issue when designing and implementing any approach that is focused on recognising safety performance is how this will influence future behaviour. Whilst part of the purpose of providing some form of recognition is to make people feel good about what has been achieved, the main purpose is to influence future behaviour such that the level of performance is at least sustained or even improved.

Unfortunately, too often the systems in place lack sophistication and at best have little effect on people's behaviour and in some situations the overall effect is negative. The problem is often one of poor concept, design and knowledge. The danger in basing any incentive system on output performance is that people may not necessarily know how their efforts have influenced performance. The implication here is to focus on effort and progress as well as achievement and to manage this systematically. To do this requires an appreciation of how recognition works to motivate effort.

Summary

The measurement and recognition of safety performance are two important elements of an organisation's approach to safety management. Whereas organisations tend to focus on putting in place robust structures and procedures directed at controlling safety, systems relating to safety measurement and recognition typically are much less well thought through.

A focus on performance management is an essential part of an integrated approach to behavioural safety. Unfortunately it is an area that is either overlooked or is one in which the required practise is poorly understood. The effect can be to mislead and lower motivation.

PsychaLogica Approach to Behavioural safety



For further information about the PsychaLogica approach to behavioural safety and examples of assignments we have completed in the areas of measurement and recognition please visit our website (www.psychalogica.com) or contact us by phone (+44 1543 432468) or by e-mail (info@psychalogica.com).