

HSE CULTURE – IF YOU CAN'T MEASURE IT, YOU CAN'T IMPROVE IT

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Introduction:

Poor HSE Culture and inadequate workforce attitudes are the most oft-cited causes of accidents during a typical investigation. However, these are very abstract terms and do not readily lend themselves to direct measurement. According to old management adage, "if you can't measure it, you can't improve it". HSE Culture, behaviors and perceptions must also be subjected to quantitative or semi-quantitative measurements in order to develop and implement effective HSE interventions.

The term Safety Culture is often used rather loosely in popular discussions on safety performance, human behaviors, work environment and incident causes. The safety culture of an organization is more intangible and requires special techniques to identify and measure. Without understanding the true implications of the term and without the ability and techniques to objectively measure safety culture, the term itself becomes meaningless rhetorical expression and does not provide any real intervention strategy to the safety professional.

Safety culture refers to the degree to which employees believe true priority is given to organizational safety performance, and its measurement is thought to provide an early warning of potential safety system failures. Measuring safety culture poses several challenges due to its complexity, intangibility and human factor involvement.

Safety culture cannot be measured directly but has to be measured through its numerous physical manifestations and employee perceptions. There are several tried and tested methodologies and techniques available for doing so. Each has its own strengths and limitations and unique scope of application. However, none of these techniques, by itself, lends to a credible analysis. These must be augmented by other corroborative methods. The reliability and soundness of the analysis made, the inferences drawn and the interventions suggested depends to a very large extent on the competence and judgment of the professional expert conducting the survey.

A TYPICAL SAFETY CULTURE SURVEY would probe employee attitudes, perceptions and behavior and determine what managers typically 'feel, think, understand, know and do' to lead occupational safety & health activities in their organizations. This kind of a survey helps to assess the strengths and weaknesses in existing management systems, including gaps between 'policy' and 'practice'.

Almost all the methods available for culture survey categorize the overall safety culture into several components or factors. Factor analysis is a statistical technique used to

identify a relatively small number of non-observable, underlying factors that characterize underlying constructs (e.g., management attitudes to safety). In safety culture studies, these factors are used to represent relationships among many sets of inter-related perceptual questions about safety.

Conducting a safety culture survey involves the following seven logical steps:

1. Defining the objectives
2. Identifying the population and selecting the sample to be studied
3. Designing survey questionnaires
4. Administering the survey and compiling results
5. Data precipitation and trend analyses
6. Physical verification and authentication of trends (optional)
7. Preparation of report

A very cursory description of each of the above steps is presented here.

1. Defining the objectives.

Following are some of the more common objectives of a typical safety culture survey:

- a) To evaluate the general state of maturity of safety culture in an organization.
- b) To compare the company's safety culture against its own internal or some external industry benchmark.
- c) To obtain a "before and after" picture of a particular safety policy, plan, procedure, intervention, etc.

Once we have clearly and precisely defined the specific objective(s), we can proceed with the next two steps of sample selection and questionnaire designing.

2. Identifying the population and selecting the sample to be studied.

Ideally, a census type survey should be conducted involving the entire population relevant to the survey objectives. However, this may not always be realistically possible or practical. Hence, a representative sample has to be selected. A representative sample would be one that will provide the same results as if the entire population had actually responded. The selection involves determining the size and composition of the sample.

The accuracy of the results relies to a large extent on the size of the sample. Various statistical tables are available which give the size of the sample as a percentage of the total population against various accuracy or confidence levels.

To determine the composition of the sample, the process must be completely random. However, if there are various sub groups present in the total population

and each group has to be given proportional representation than the selection must not only be random but also stratified. Different manual techniques as well as computerized models are available for random and stratified selection of the sample composition.

3. Designing survey questionnaires.

The survey questionnaire must be in line with the survey objectives. The questions or statements must be relevant, concise and clearly worded. The response scales must be simple and easily understood. Commonly used scales include "agree-disagree", "how much", "how often" (always, usually, seldom, never) or simply "yes-no" or "true-false".

4. Administering the survey and compiling results.

Ideally, one would administer the survey to everyone in the sample at the same time, perhaps in one large group meeting. Usually this is impossible. One must then organize several group-administration sessions. If, even this is not possible then the survey may have to be conducted by distributing the questionnaires to individual respondents who complete and return them to the administrator.

Although the last method can increase privacy and anonymity of the respondents, it also usually leads to decreased return rates. Hence, administering the survey in groups is usually more preferable. It is often wise to explain to the respondents that management will see only aggregate data such as averages and percentages, not any person's or work group's data.

The responses may be either manually transferred on a doctored copy of the survey questionnaire or fed into a computer software which automatically collates and tabulates the data.

5. Data Precipitation and Trend Analysis.

The computer software can be used to cross-tabulate responses that have some important relation to one another. Various user-defined filters can be used to precipitate data considered to be statistically significant. Once the huge bulk of raw data from the survey responses has been precipitated into a small set of manageable and statistically significant data, it can be analyzed to draw conclusions and make inferences

6. Physical verification and authentication of trends.

Sometimes the written responses obtained from the survey questionnaire may only echo the official values and not reflect how the person would actually perform in practice. Many people, when questioned, will undoubtedly and without any qualification endorse the value of helping others when they need help, even

though they will not help in many practical situations. Similarly, a welder in his written response to a statement may endorse the need for wearing welding goggles while welding but in practice may not do so – justifying his action on various pretexts.

Thus, there is a need to sample some of the responses and verify their authenticity by physical observations. Such a cross check would act as a manual over ride factor on the trends identified and inferences drawn in the previous stage.

Although this step is optional, but is important if a realistic view of the actual situation on ground is to be obtained rather than merely relying on the written responses.

7. Preparation of report.

Once all the data has been analyzed and various trends identified and conclusions drawn, one can proceed with the final formal report. The exact form of the report will depend on how it will be used.

It should essentially contain the following:

- An overview of the survey objectives and a description of the survey sample population
- An explanation of the questions and the scales used for responding
- Filters used for data precipitation and trend analyses
- Conclusions drawn and inferences made
- Recommendations and action plans

Conclusion:

This paper aims to highlight the importance of measuring behaviours, attitudes and perceptions of groups in relation to health and safety. These determine how the individual will actually react and respond to health and safety management system inputs such as rules, procedures, instructions, etc. Behavioral safety is still a relatively new science and not much data or statistics are available to scientifically correlate the effects of positive behaviour on safety performance. However, there is an increasing mass of evidence to support the view that a good safety behaviour and mature safety culture has a positive influence on an organization's health and safety performance.

Group behavioral trends and safety culture are best measured through employee perception surveys or Safety Culture Surveys. This paper elaborates the seven stages of an effective safety culture survey.

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