



The relationship between safety culture, advice and performance

Summary report 2009

IOSH, the Chartered body for safety and health professionals, is committed to evidence-based practice in workplace safety and health. We maintain a Research for Public Benefit Fund to support research and inspire innovation as part of our work as a thought leader in safety and health.

All recipients of funding from our Research for Public Benefit Fund are asked to compile a comprehensive research report of their findings, which is subject to peer review.

For more information, visit our [research page](#).

In this document, you'll find a summary of the independent study we commissioned from Cardiff University: 'Safety culture, advice and performance: the associations between safety culture and safety performance, health and wellbeing at an individual level, and safety culture, competent occupational safety and health advice, and safety performance at a corporate level'. This report forms part of a research series looking at the impact of expert safety and health advice.



What's the problem?

Preventing work-related injury and illness is crucially important to us all – employees, industry and wider society. Corporate safety culture describes shared values in an organisation which influence its members' attitudes and beliefs towards safety.¹ Put another way, it's 'the way we do things round here'.

Many industrial accident investigations have found that safety culture is a contributory factor in accident causation.² It's now generally accepted that organisations with a strong safety culture are more effective at preventing workplace accidents and injuries.

Health and safety practitioners have a significant role to play in improving health and safety at work by giving competent advice. But we know little about the relative contributions of safety culture and advice to safety performance.

If we could assess the relationships between corporate safety culture, competent advice and safety performance, it would advance our understanding of what makes a safe workplace. We commissioned Professor Andy Smith and Dr Emma Wadsworth at Cardiff University to research this complex issue. Building on previous work in the area, we asked them to look at a range of organisations and find out about the relative contributions of culture and advice to safety performance, bearing in mind that there may be other influences on safety performance besides the ones we're interested in.

The research had four key goals:

- to describe the corporate safety cultures of the participating organisations
- to collect those organisations' health and safety performance measures
- to describe their health and safety practitioners' experiences and competence
- to assess and compare the relative contributions of corporate safety culture and advice to performance.

What did our researchers do?

The team carried out the research in three stages:

- development – selecting and piloting measuring tools and methods
- recruitment – getting organisations to take part in the project

¹ Cooper M D. Towards a model of safety culture. *Safety Science* 2000; 36: 111–136.

² Examples of these investigations include: Columbia Accident Investigation Board. Columbia Accident Investigation Board report. Washington, DC: NASA, 2003; Cullen W D. The Ladbroke Grove rail inquiry part 2 report. London: HMSO, 2001; International Nuclear Safety Advisory Group. Safety culture (Safety Series no. 75-INSAG-4). Vienna: International Atomic Energy Agency, 1991; Hidden A. Investigation into the Clapham Junction railway accident. London: HMSO, 1989.

- surveys – data gathering and analysis.

Development

After looking at the options available, the research team chose three questionnaire-based tools.

The researchers used the Health and Safety Executive's (HSE) Health and Safety Performance Indicator (HSPI)³ to measure organisational health and safety performance. This provides overall and individual scores (where 1 is poor and 10 is good) based on 10 areas of hazard management. Scores can also be compared against benchmark data for similar organisations, which allows performance to be graded into one of five bands. The team also asked organisations to tell it about their experience of different types of incident. Information on individual safety performance was gathered about accidents, instances of forgetfulness, concentration lapses and doing the wrong thing in the previous 12 months.

The researchers used the HSE's Climate Survey Tool⁴ to gauge corporate safety culture. This measures 10 areas of health and safety climate, giving a snapshot of the underlying safety culture.

Finally, the Cardiff team used the Competency in Health and Safety Advice Questionnaire⁵ as the basis for measuring health and safety practitioners' competence and experiences. This looks at the key responsibilities of the personnel involved in health and safety management, their competence and the information and training available to help them perform their tasks effectively.

Recruitment

Twenty-eight organisations participated in the research. As some organisations had multiple business units, the group represented 33 business units in total and were drawn from a range of industry sectors from across the UK, as shown in Table 1.

Surveys

All participating organisations' business units took part in all three questionnaire surveys. Employees at each business unit completed the climate questionnaire, while the units' health and safety practitioner completed the advice and performance questionnaires.

The team analysed the information from the three surveys individually to measure and describe performance, culture and advice for the participating organisations. To

³ Health and Safety Executive. Health and Safety Performance Indicator. www.hse.gov.uk/corporateresponsibility/smes.htm.

⁴ The Keil Centre. Evaluating the effectiveness of the Health and Safety Executive's Health and Safety Climate Survey Tool (RR042). London: HSE, 2002.

⁵ Hinde A and Ager R. Benchmarking the competent person in manufacturing and engineering sectors (RR121). Sudbury: HSE Books, 2003

find out whether there were links between culture and performance and advice and performance, the researchers compared the information from the surveys.

Sector	Nature of organisations	Number of business units
Manufacturing	1 transport assembly organisation 4 transport design and assembly organisations 1 defence equipment manufacturer 2 industrial parts design and manufacturing departments	8
Health	1 healthcare trust 1 patient care department of a healthcare trust 1 service department of a healthcare trust 1 local health board 1 nursing home operator	5
Education	2 higher education teaching and research departments 2 further education teaching departments	4
Science	3 scientific research departments 1 forensic science organisation	4
Retail	2 retail organisations 1 warehouse distribution organisation	3
Construction	1 housing contractor 1 civil engineering and construction organisation	2
Transport	1 passenger transport operator 1 public transport and road tunnel operator	2
Communications	2 telecommunications departments	2
Finance	1 commercial finance organisation	1
Utilities	1 utilities service	1
Health and safety	1 health and safety consultancy	1
Total		33

Table 1
Industrial sectors of the business units that completed the study

What did our researchers find out?

Corporate health and safety performance

The business units had fairly high levels of corporate health and safety performance, indicated by their relatively high (> 6) hazard management scores, incident scores and mean individual scores, excluding those never exposed to certain hazards. Their benchmark overall hazard management and incident scores were also in the 'average' band, so their performance compared reasonably well with similar organisations. However, there was some variation across and between industrial sectors and according to size of business unit (by number of employees).

Organisations operating in the more hazardous sectors (construction, transport, manufacturing, health and utilities) had poorer overall hazard management and incident scores. Those operating in less hazardous sectors (education, science, communication, health and safety, finance and retail) had generally poorer benchmark scores – meaning they compared less favourably with other similar organisations in their sector.

Larger organisations (> 250 employees) had generally higher benchmark performance scores, while smaller organisations (< 250 employees) had better overall hazard management scores. But we mustn't overlook the influence of industrial sector – more of the small organisations operated in less hazardous sectors.

Health and safety practitioners' roles, experiences and competence

Most of the 33 respondents had other roles, such as environment or security, in addition to health and safety, but spent most of their working time – over 20 hours per week – on health and safety matters. Around half had worked as health and safety advisers for over eight years and most had been in their current industry for eight years. Most felt they had a good understanding of the health and safety risks in their organisation but were also aware of when they needed to look for additional support.

They had a range of training and qualifications in health and safety, from awareness level training through to postgraduate qualifications, but three had no health and safety training (see Table 2). Most felt they had adequate training and education for their role but five felt this was not the case.⁶ Two thirds of respondents were members of IOSH, including 15 Chartered Members, two Graduates and one Technician. Most advisers said they worked in organisations that supported their Continuing Professional Development needs.

Most respondents described their organisations as having safety systems and policies in place, though in some cases they felt there was room for improvement in the effectiveness of some aspects.

⁶ The level of qualification, experience and skills necessary to provide competent advice will vary according to the complexity of the situation. However, for the most basic level of advice, IOSH believes that health and safety practitioners should be qualified to meet the National Occupational Standard level 3 and have at least five years' operational experience. Clearly, some of the levels of training and qualification reported by these respondents fall below this most basic level.

Training and qualification level	Held by	
	<i>n</i>	%
None	3	9
Contractor's passport	3	9
British Safety Council Certificate in Safety Management	1	3
British Safety Council Diploma in Safety Management	2	6
Managing safely (IOSH awareness training course)	11	33
S/NVQ level 3	1	3
S/NVQ level 4	8	24
NEBOSH Certificate	19	58
NEBOSH Diploma (awarded before 2000)	5	15
NEBOSH Diploma (part 1)	4	12
NEBOSH Diploma (part 2)	3	9
Degree or diploma of higher education in health and safety	7	21
Postgraduate diploma or master's degree in health and safety	4	12

Table 2
Advisers' training and/or qualification level

In particular, over a third of respondents thought that improvement was needed in:

- workforce involvement in proposing improvements
- risk assessments
- the health and safety committee
- workforce involvement in identifying hazards
- audits and inspections.

When the research team took into account the respondents' training and education and IOSH membership, they found a trend that IOSH members and practitioners with higher levels of training and education had more components of the safety system in place.

Most advisers felt they had influence over directors' decisions on health and safety, although only one third thought that health and safety had equal priority with other aspects of the business.

Safety culture

Based on analysis of 1,752 completed climate surveys, the research team found that safety climate measures varied across the participating organisations, as well as within and between industry sectors.

When the research team looked at the results according to whether organisations operated in traditionally higher or lower hazard sectors of industry, it found significant differences in 'line management commitment to safety', 'personal role', 'workmates' influence', 'competence', 'reporting accidents' and overall mean score for all areas. In each case, organisations from higher hazard sectors had more favourable responses. A similar, although not significant, pattern was found for other areas, suggesting a consistent difference in safety climate by industrial sector.

A generally more positive safety climate in more hazardous sectors may reflect a greater awareness of the importance of safety among people working in these sectors.

Using the information from the climate survey and the data on individual safety performance, the research team also found that where employees' perceptions and attitudes towards safety were more positive, they had fewer accidents and a greater sense of health and wellbeing.

Relationship between safety climate, practitioner competence and experiences, and performance

Our researchers then drew together the findings from the three surveys to look at the links between the three areas of interest.

They found several significant links between corporate safety performance and safety climate measures. More favourable climate responses from employees – a positive safety culture – were linked with more positive corporate safety performance.

They also found some links between practitioners' competence and experiences and corporate safety performance. Interestingly, lower hazard management scores were linked with higher levels of training and education of advisers. The researchers examined this further according to sector, finding that organisations in more hazardous industries are more likely to make sure that they have highly qualified health and safety practitioners. It's also possible that poorer performance scores may reflect more accurate reporting of incidents. It wasn't possible to assess this formally because of the small numbers of participating organisations in some industrial sectors.

Comparing safety climate scores with measures of practitioner competence and experiences suggests little association between the two. However, it's worth noting that the practitioners in this study were employees of the participating organisations, and as such were integral to and operated within the existing safety climate.

Finally, our researchers looked at the links between measures of safety climate and practitioner competence and experiences, and corporate safety performance, independently of other potentially influential factors. Taken together, these analyses suggest that safety climate is positively associated with corporate safety

performance. Any association with practitioners' competence and experiences, though, is complicated, and may reflect a link with risk level and industry sector since the findings here imply that organisations operating in higher risk sectors are more likely to employ health and safety practitioners with higher levels of formal health and safety training and education. Nevertheless, positive links between advice and both specific hazard management areas (repetitive movement, noise and vehicle handling) and benchmark hazard management scores suggest that more competent advice may also be linked to improved safety performance.

What does the research mean?

- Safety culture is consistently and independently associated with corporate safety performance – having a more positive safety culture is linked with better safety performance.
- The relationship between advice and performance is more complicated and there's no clear pattern. More rigorous research is needed to clarify the relationship, using more practitioners with different qualification levels from organisations with varying levels of risk and from different industry sectors.
- Positive employee attitudes to and perceptions of safety are associated with better individual safety performance, health and wellbeing.

Don't forget

Like most studies, this one had some limitations. Questionnaire-based tools were chosen to be appropriate for small and medium-sized enterprises. This category seemed the most likely source of organisational participants but during recruitment it became apparent that large organisations also wanted to take part. Other tools might have been more appropriate for larger organisations.

All the information gathered was self-reported, introducing potential problems of bias at the individual and organisational levels.

Although established measures of culture, performance and advice were used, the advice survey was the only one available and had to be adapted for cross-sector use. The cross-sector nature of the study was limiting in that it wasn't possible to unravel the confounding relationships between industry sector, advice and performance.

Organisations and individuals took part in the study voluntarily. A common problem in research like this is the possibility that participating organisations represent only the best end of the health and safety performance range.

What's next?

This project is the third in a research series commissioned by IOSH to focus on the impact of health and safety advice on performance.

The first report in the series, 'Superior safety performance' from Glasgow Caledonian University, looks at the effect of investing in health and safety advice on performance in the construction sector. The second, 'The impact of health and safety management' from Loughborough University, examines the impact of health and safety management on organisations and their staff.

This research shows the benefits of a positive safety culture on an organisation's performance and on employees' performance and wellbeing. For more information on this topic, see our research on 'The effectiveness of training in promoting a positive culture'.

These can be found at [iosh.com/research](https://www.iosh.com/research).

Our summary gives you the major findings of the independent project report by Cardiff University. If you want to read about the study in more depth, you can download the full report at [iosh.com/research](https://www.iosh.com/research).

IOSH is the Chartered body for health and safety professionals. With over 50,000 members in more than 130 countries, we're the world's largest professional health and safety organisation.

We set standards and support, develop and connect our members with resources, guidance, events and training. We're the voice of the profession and campaign on issues that affect millions of working people.

IOSH was founded in 1945 and is a registered charity with international NGO status.

IOSH
The Grange
Highfield Drive
Wigston
Leicestershire
LE18 1NN
UK
+44 (0)116 350 0700
www.iosh.com

 twitter.com/IOSH_tweets
 facebook.com/IOSHofficial
 linkedin.com/company/iosh
 youtube.com/IOSHchannel
 instagram.com/ioshofficial
 tiktok.com/@ioshofficial

Reg Office: IOSH, The Grange, Highfield Drive, Wigston, Leicestershire, LE18 1NN, United Kingdom © 2023
IOSH. Registered charity in England and Wales No. 1096790 and Scotland No. SC043254. VAT registration
number 705 3242 69. IOSH Services Limited company registration number 01816826