

Institution: Loughborough University
Unit of Assessment: C19 Business and Management Studies
Title of case study: LSCAT: Changing Attitudes and Systems in Safety Management
<p>1. Summary of the impact</p> <p>Developed from Loughborough University research into the employee impact of safety management, the Loughborough Safety Climate Assessment Toolkit (LSCAT) has helped change attitudes and raise awareness across a variety of industry sectors. Freely available in the public domain, it has facilitated the assessment of safety climate as part of a process of culture change and wider management system enhancement. Beneficiaries during the impact period have included the Royal College of Nursing and the NHS, which have used the tool as a “fundamental” means of benchmarking best practice, and logistics giant DHL Supply Chain, which has used it to identify specific areas for improvement in its safety management systems.</p>
<p>2. Underpinning research</p> <p>Safety at work is a key concern to employers, employees and regulators, yet there is still no universally recognised definition or model of employee impact on safety management. From 1980 to 2000 the collaborative efforts of industry, researchers and regulatory bodies saw considerable progress towards understanding safety climate (workers’ attitudes) and safety culture (their underlying beliefs and convictions) in “real” working environments. One outcome of this work in the research community was an appreciation that analytical tools could be developed to investigate employees’ opinions about safety climate and that information could be used to encourage and maintain safe practice.</p> <p>Original research in the area of safety climate assessment was conducted at Loughborough University between 1996 and 2000 by Professor Alistair Cheyne (in post from 1993 to present) and Professor Sue Cox (in post from 1984 to 2001). This work, which explored the architecture of employee attitudes to safety, led to the development of a dedicated analytical tool for assessing safety climate.</p> <p>By combining a theoretical evaluation of the safety climate literature with a practical consideration of organisational issues, Cheyne and colleagues developed an assessment of safety climate and modelled the main elements of safety attitudes in relation to individuals’ activity in safety issues [3.1]. The resulting model highlighted that the strength of employees’ attitudes played a pivotal role in explaining levels of safety activity, confirming the importance of management commitment in organisations with well-developed safety cultures [3.1]. Given the results, this work was developed to explore the architecture of attitudes at different employment levels [3.2].</p> <p>Cheyne and Cox went on to take the importance of different attitude dimensions further by incorporating such models into the assessment of safety culture and climate in offshore environments. A set of measures was designed to assess the tangible outputs of an organisation’s safety culture – for example, how employees might perceive and describe the importance given to safety issues and how local arrangements might seem to reflect this. The research used a number of assessment methods, including questionnaires, focus groups, behavioural observations and situational audits, to describe and explore the efficacy of health and safety management systems. [3.3]</p> <p>This led to the development of the Loughborough Safety Climate Assessment Toolkit (LSCAT) [3.4]. Initially created for the oil and gas industry, LSCAT provides an assessment technique that includes practical tools for assessing safety climate, with the overall aim of aiding the promotion of a positive safety culture in an organisational environment. It was designed to be used periodically to examine changes in safety climate over time and underwent a lengthy development process as part of a joint industry project, ‘The measurement of safety climate in safety cases’, which included piloting, revision and follow-up use with Chevron UK, Chevron Gulf of Mexico, Mobil North Sea and Oryx UK [3.5].</p> <p>Loughborough’s body of work in this field was among the first to use explicative modelling to</p>

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explain the relationships between safety attitude variables. It was also among the first to employ a confirmatory approach to understanding the structure of safety climate offshore.

3. References to the research

- 3.1. Cheyne, A.J., Cox, S.J., Oliver, A. and Tomas, J.M., "Modelling Safety Climate in the Prediction of Levels of Safety Activity", *Work & Stress*, 12(3), 1998, 255-271, DOI: 10.1080/02678379808256865 (impact factor 3, 7th of 72 journals in applied psychology (quartile 1) and continues to be cited (total citations 222)).
- 3.2. Cheyne, A.J.T., Tomas, J.M., Cox, S. and Oliver, A, "Perceptions of Safety Climate at Different Employment Levels", *Work & Stress*, 17(1), 2003, 21-37, DOI: 10.1080/02678373.2003.10160665 impact factor 3, 7th of 72 journals in applied psychology (quartile 1)).
- 3.3. Cox, S.J. and Cheyne, A.J., "Assessing Safety Culture in Offshore Environments", *Safety Science*, 34, 2000, 111-129, DOI: 10.1016/S0925-7535(00)00009-6 (impact factor 1.402, 19th of 77 journals in operations research and management science (quartile 1) and continues to be cited (total citations 255)).
- 3.4. Loughborough Safety Climate Assessment Toolkit, 2000, User Guide and Toolkit <http://www.lboro.ac.uk/media/wwwlboroacuk/content/sbe/downloads/Offshore%20Safety%20Climate%20Assessment.pdf>
- 3.5. UK Health and Safety Executive. Joint Industry Project: The measurement of safety climate in the assurance of offshore safety cases. (HSE ref: project 3389). Cited in Davies, F., Spencer, R. and Dooley, K. (2001). Summary Guide to Safety Climate Tools. HSE Offshore Technology Report 1999/063, pp. 28-29.

The quality and importance of the work is recognised in the calibre of journals and the number of citations.

4. Details of the impact

The academic safety science community and many organisations now accept that the inclusion of an assessment of safety climate within a process of continuous improvement can be a precursor to culture change and the wider development of safety management systems. LSCAT has enabled this process by changing attitudes to and raising awareness of the value of safety climate assessment.

Since its development LSCAT has been available free of charge in the public domain. This has facilitated its continued use both with and without the direct involvement of the research team, as has been illustrated by examples of its successful application throughout the impact period.

LSCAT's use since 2009 by the Royal College of Nursing (RCN) has resulted in greater awareness of employee safety within the NHS. The tool was brought to the wider attention of the healthcare community through a study carried out by the Project Manager and Programme Manager for Evaluating and Improving at the RCN's Learning and Development Institute. They set out to consider whether the idea of safety climate was a measurable concept that could be used to support a more positive culture for safety in a healthcare environment. LSCAT was tested in a large acute services teaching trust that at the time provided services to more than 600,000 people living in eastern England. The study sought responses from employees from all staff groups – including nursing, medicine, management, clerical, scientific, technical and ancillary staff and allied health professionals – to the questionnaire element of the original toolkit.

The results showed LSCAT was easy to apply and well understood by respondents. The Learning and Development Institute's Project Manager and Programme Manager, who had to make only minor modifications to the tool for their purposes, noted: "[It] is a valuable, user-friendly instrument for measuring safety climate in an NHS healthcare setting and can be used effectively in a range of care settings." Explaining the benefits further, they concluded: "Regular measurement of staff perceptions of safety climate provide organisations with a way to review periodically the state of safety at a particular point in time. The most fundamental way of doing this is to use the revised safety climate questionnaire."

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The study demonstrated how the tool could help organisations target their safety initiatives in a range of specific areas requiring improvement. As a result, the questionnaire was made available as a web-based application as part of a range of tools on the RCN's Quality Improvement Hub [5.1, 5.2]. Designed to be a fully integrated element of systems to facilitate the benchmarking of best practice in safety, it has subsequently been used by a number of hospitals in both the acute and mental health sectors. [5.3]

LSCAT's use in industry has led not only to greater awareness but to enhanced management practice and policies. For example, in 2008 a division of DHL Supply Chain, Tradeteam, used a slightly revised version of the original questionnaire to benchmark safety climate with regard to various locations and functions within the organisation and to relate the resulting perception measures to other safety performance metrics. The exercise, carried out in collaboration with the research team, highlighted disparities consistent with other data gathered on accidents and incidents, including a finding that depots with poor safety records also reported poorer attitudes across the range of safety climate measures. Other key insights to emerge included a link between incident frequency and perceptions and the importance of management and supervisor commitment in helping to mitigate incidents.

Tradeteam subsequently drew on the findings to implement a variety of safety-related improvements. Its National Health and Safety Development Manager has remarked: "The results of the work helped inform the organisation on where and to whom specific improvement initiatives should be targeted." [5.4] The resulting interventions were later rolled out over the company's entire supply chain business and informed the development of its organisational safety system.

The success of the Tradeteam assessment encouraged DHL Supply Chain to apply the tool across all of its supply chain operations in 2010. Once again carried out with the direct input of the research team, this exercise gathered more than 17,000 responses, representing nearly 40% of DHL Supply Chain's employees in all business units (including automotive, consumer retail, fashion, food retail, healthcare, industrial, Ireland, non-food retail and Tradeteam). This provided further detailed analysis of a range of operations and facilitated the assessment of the initiatives initially applied in the Tradeteam division.

5. Sources to corroborate the impact

The following sources of corroboration can be made available at request:

- 5.1. Currie, Cooper, Watterson (2008) Resources for Learning & Improving. RCN Learning & Development. Safety Climate Assessment Tool: Briefing Sheet for Senior Managers.
- 5.2. Currie, L (2008) Introducing the Safety Climate Assessment Tool.
http://www.rcn.org.uk/_data/assets/pdf_file/0006/248451/introducing_safety_climate_tool.pdf
- 5.3. Currie L, Watterson L (2010) Measuring the safety climate in NHS organisations. *Nursing Standard*. 24, 24, 35-38. Date of acceptance: December 9 2009.
- 5.4. Letter of corroboration from National Health and Safety Development Manager, Tradeteam, DHL Supply Chain.