



A study of experience feedback from reported unwanted occurrences in a construction company

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ABSTRACT

An interview study in a major Norwegian construction company was conducted to analyse learning from reports of unwanted occurrences (RUO). Systems for reporting unwanted occurrences are one of the most important tools in systematic safety management to ensure efficient experience feedback that will improve safety performance. The interview study identifies two major obstacles to efficient learning from reports of unwanted occurrences (1) under-reporting at the sharp end, and (2) reports are not analysed and applied to improve the safety performance. The reasons for under-reporting are the same as those identified in previously published studies on under-reporting, with one exception. The interviews show that many workers are flexible and choose to correct the situation right there and without documenting the occurrences in order to perform both effectively as well as safely. It is paradoxical that those at the sharp end prefer to put things right and continue the work in a safer manner without spending time reporting, at the same time as the HSE management wants all unwanted occurrences to be documented for learning purposes. A root cause for the identified obstacles is a conflicting objective between production and safety.

1. Introduction

The accident statistics for the Norwegian construction industry are much higher than the average for other industries in Norway (Mostue et al., 2016). This situation is the same in most countries (Häkkinen and Niemelä, 2015; Hoła and Szóstak, 2015; HSE, 2017). The risk picture is characterised by temporary organisations, a dynamic context and hazardous work involving high energy potential. Safety in the building and construction industry is generated by several different actors during different project phases. Decisions by the client and designers in the early project phases have a major impact on safety performance in the production phase (Behm, 2005; Frijters and Swuste, 2008; Jørgensen, 2013). Additionally, systematic safety management in the production phase is required to ensure barriers against loss.

Experience feedback is a basic principle in systematic safety management, where information about safety performance is used as input to decisions to improve safety and prevent accidents from happening (Kjellén and Albrechtsen, 2017). One key method of providing experience feedback is to use a system for reporting unwanted occurrences. Systems for reports of unwanted occurrences (RUO) are common and widely used by organisations in order to learn from unwanted incidents, near-misses, unsafe conditions and unsafe acts so as to prevent such occurrences in future. Observed unwanted occurrences are reported,

registered in a database and analysed to provide a basis for development and implementation of countermeasures. The purpose of this paper is (1) to describe experience feedback based on RUOs in a large Norwegian construction company and (2) to identify and discuss obstacles to effective experience feedback.

2. Reporting and learning from unwanted occurrences

2.1. Experience feedback and reporting of unwanted occurrences

Safety management is based on the principle of experience feedback, i.e. the process by which information about the results of an activity is fed back to decision makers as new input to modify and improve subsequent activities (Kjellén, 2000; Kjellén and Albrechtsen, 2017). The purpose is to use information about experienced or expected safety performance as a basis for decisions that prevent accidents. Kamsu Fogueu et al. (2008) have a similar interpretation: experience feedback is a process whereby experience at an operational, tactical or strategic level is disseminated in such a way that the knowledge is used to improve the organisation's performance. Experience feedback thus aims at learning and improvement in the organisation, i.e. double-loop learning (Argyris and Schön, 1996), as opposed to single-loop learning where an unwanted occurrence is handled without further learning in

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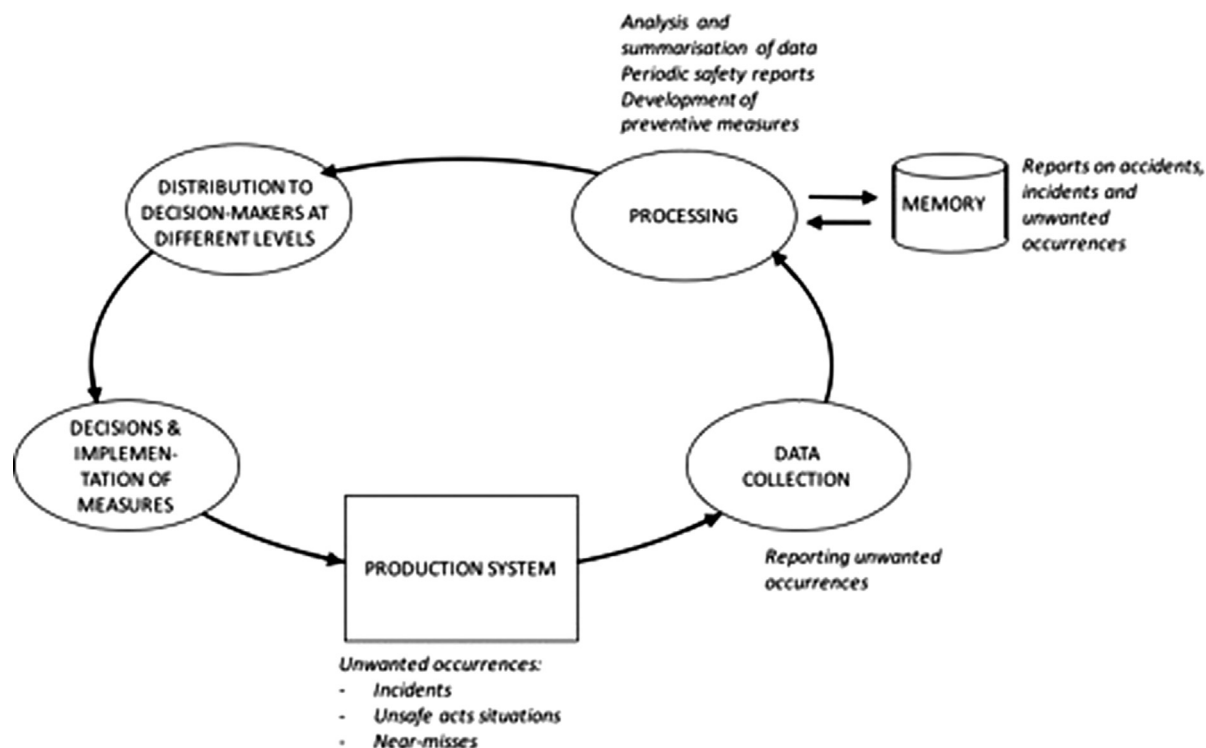


Fig. 1. A model of a safety information system (Kjellén and Albrechtsen, 2017). Exemplified by reports of unwanted occurrences in italics.

the organisation.

Experience feedback in practice is explained in Kjellén and Albrechtsen's (2017) model for safety information systems, see Fig. 1. Safety performance data are collected by looking to the past (RUOs, investigations), the present (inspections, audits) and the future (risk assessment). The data collected are registered, analysed, distributed and used as support for decisions to implement countermeasures. The safety information system is thus a necessary sub-system for decision-makers in the line organisation.

A well-functioning system for experience feedback contributes to and maintains a good safety culture. Reason (1997) argues that a good safety culture is an informed culture, i.e. those who manage and operate a system has knowledge about the conditions that in sum make up the safety of the system. An informed culture is based on reporting, fairness, flexibility and learning. A reporting culture is dependent on the willingness of workers at the sharp end to report, which means that it depends on a culture of fairness and trust. In such a situation, workers are encouraged to contribute with safety-related information, at the same time as there is a clear distinction between what constitutes acceptable and unacceptable conduct. A learning culture entails the presence of both the willingness and skills to draw the right conclusions from the information system as well as to implement necessary measures. Such a culture is essential to enable efficient data collection and use of the safety information system.

A typical RUO system is described in Fig. 2. Unwanted occurrences (accidents, near misses, unsafe acts and unsafe conditions) are reported by a worker, line manager or safety delegate either on paper or electronically. The report is the quality assured and recorded in a database. Analysis of the single report or collections of reports is then used as decision-making support for different means (counter-measures, safety performance statistics, input to risk assessments, etc.)

Unwanted incidents, near misses and unwanted conditions must be reported by workers at the sharp end in order for the RUO system to work. The reliability of reporting (number of reports in relation to the actual number of occurrences) has proved to be a problem in many different industries (Oltedal and McArthur, 2011; Storgård et al., 2012;

Probst and Graso, 2013). Under-reporting is the result of a combination of different personal, organisational and technological factors. Van der Schaaf and Kanse (2004) propose four main categories of personal factors that explain under-reporting: fear of being blamed and disciplinary reactions; acceptance of occurrences; no perceived benefits of reporting; and practical issues like having the time to report and the user-friendliness of the reporting system. These categories are supported by empirical studies, e.g. Storgård et al. (2012) and Prang and Jelsness-Jørgensen (2014).

There is more literature about organisational and technological causes of under-reporting than about personal causes (van der Schaaf and Kanse, 2004). Commitment and support from top and middle management are key factors for improving reporting reliability (Nielsen et al., 2006; Storgård et al., 2012; Prang and Jelsness-Jørgensen, 2014). Vague or inadequate feedback from top or middle managers, on the other hand, has an adverse effect on reporting reliability (Reason, 1997; Sanne, 2008; Oltedal and McArthur, 2011; Storgård et al., 2012; Prang and Jelsness-Jørgensen, 2014). Organisations that avoid focusing on guilt and blame, and emphasise openness and trust instead, will have a higher degree of reporting reliability (Reason, 1997; Oltedal and McArthur, 2011; Storgård et al., 2012). Rossignol (2015) shows that actual reporting practice is related to solidarity between colleagues. Other organisational factors that influence reporting include: unclear reporting procedures (Prang and Jelsness-Jørgensen, 2014); lack of training and instruction (Sanne, 2008; Oltedal and McArthur, 2011); the user-friendliness of the system, including how comfortable the users are with electronical reporting systems (Reason, 1997; Storgård et al., 2012; Prang and Jelsness-Jørgensen, 2014). Workers who do not perceive that they can influence their own working situation, are less likely to report (Sanne, 2008). Studies of the maritime industry in Finland, Norway and Sweden have shown that reporting reliability is weakened by lack of communication between ships and the onshore organisation, in addition to lack of safety awareness in the onshore organisation (Oltedal and McArthur, 2011; Storgård et al., 2012).

There is also a clear relationship between the pressure to produce and under-reporting (Oltedal and McArthur, 2011; Probst and Graso,

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