WHAT ARE THE BOTTLENECKS IN THE LEARNING FROM INCIDENTS PROCESS?

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The main purpose of our ongoing study is to develop knowledge on how to improve learning from incidents in organisations. In this phase of the study insight into the main bottlenecks is created.

Many organizations investigate accidents and incidents to understand what happened, what caused it and why, and how to learn lessons from them to prevent re-occurrence. No matter how accurate the investigation and analysis are: further steps are necessary to prevent re-occurrence. By learning from incidents, re-occurrence of these incidents and the occurrence of similar events can be prevented and therefore safety performance can be improved. In an earlier phase of the study a model of the learning from incidents process, which is the process from reporting an incident to verifying the effectiveness of remedial measures, is developed. A survey was performed to locate where the main bottlenecks arose. In this paper the types of bottlenecks that hinder the learning from incidents process will be described.

INTRODUCTION

Preventing and reducing the number of incidents is an important objective of organisations. Many of them have problems in lowering the number of incidents, partly because of inadequate learning from previous incidents (Jones, 1999; Kjellén, 2000; Kletz, 2001, Körvers, 2004).

In this paper by using the term incidents we refer to all kinds of unwanted deviations or occurrences of the business processes without detailed specification of their consequences. They are symptoms of the failure causes and identifying these causes and learning from them can be an important contribution to safe and reliable processes with fewer incidents (van Vuuren, 1998; Reason, 1990; Groeneweg, 1998).

Learning from incidents is not only focused on prevention of recurrence, but also on improving the learning process and by that the organisations ability to deal with all kinds of deviations to achieve a process of continuous improvement. In order to accomplish that goal it is of great importance to prevent re-occurrence of incidents by taking adequate measures targeted at the root causes and establishing the effectiveness of them. That means that the overall process from the moment an incident emerges up till implementation of interventions on the root causes and evaluating effectiveness, must be improved.

To analyse how companies can learn from incidents and where bottlenecks in that learning process can occur, TNO developed an analytical framework (Drupsteen, 2010). This framework enables analysis of the learning from incidents process and consists of eleven steps, divided into four blocks or phases: incident investigation and analysis, planning of interventions, intervening and evaluating. The framework shows that bottlenecks or barriers are possible in each phase and in different steps.

The first stage is incident investigation and analysis, starting with reporting of an incident and followed by registration of the incident, determining the depth and scope of research, fact finding and incident analysis. This stage results in understanding of the causation. The second stage is called planning of interventions and consists of determining the priority and urgency of actions, formulating recommendations and formulating the action plan, resulting in a realistic action plan. The third stage: intervening, results in the realisation of actions, after communicating them to relevant actors and after finding the resources to perform these actions. In the final stage: evaluation, are the implementation process and the effectiveness of the actions evaluated.

Each of the four phases leads to a result (gate or a portal) that forms input for the following phase. The result is important, but not sufficient to effectively learn from incidents. If results are not obtained, or if they are inadequate, the next phase can still be performed. It is for example possible that recommendations are formulated even without actual understanding of the causation of an incident.

In a previous article the steps in the learning from incidents cycles are presented in further detail and the main bottlenecks or barriers are located (Drupsteen, 2010). The results indicated that bottlenecks arise mainly in the verification of the effectiveness and in the evaluation of the process, but some hindrances exist in the reporting of accidents and near misses as well. To resolve the bottlenecks and to improve the learning from incidents process, insight into the bottlenecks is needed. What the barriers and bottlenecks are will be described in this paper.

METHODS

The information in this study was collected during an online survey with open ended questions and a workshop with 15 safety professionals from a wide range of organisations. These activities are both performed in 2010, as part of the study "learning from incidents". In this paper bottlenecks in the learning process are presented. All results are qualitative.

ONLINE SURVEY

Participants in the present study were all safety professionals. From 702 participants in an earlier questionnaire 173 volunteered to participate also in this qualitative study. The online survey is based on the eleven steps of the learning from incidents process:

- reporting
- registration
- determining scope
- investigation
- analysis
- prioritizing
- formulating recommendations
- action plan
- communicating actions
- performing actions, including finding resources
- evaluating

For each step participants were given the opportunity to elaborate on the bottlenecks in a blank field.

WORKSHOP

The steps from the learning from incidents process were presented in an expert-meeting with 15 safety representatives from industrial companies and five researchers on occupational safety. In this session, the model and the steps were presented and participants discussed how these steps were performed in daily practice. They discussed the main bottlenecks for the process itself and for its steps. The workshop was held according to a semi-structured protocol and the information was used to complete the results from the online survey to answer the question: what are the main bottlenecks in the learning from incidents process?

RESULTS

For each step the answers are analysed and clustered into categories. These categories describe the problems as indicated by the safety professionals. In the analysis of all comments in the online survey, descriptions of the problems as well as other additional remarks could be distinguished. In this paper only the descriptions of the problems are used. All categories are presented for each of the four stages and eleven steps, in Table 1. The results are described for each stage in further detail below.

INCIDENT INVESTIGATION AND ANALYSIS

In the earliest steps: reporting and registration of incidents, there are very clear descriptions of what goes well and what doesn't. The table shows that more elaborations are given for these steps in comparison to later steps. These steps are highly influential on the learning from incidents process, since they form the input to learn from. A high percentage of respondents indicate that there is no problem in reporting and registration since they have a procedure. Others indicate however that the main problem in these

steps is that there is a procedure that is not being followed. People don't want to register, because they don't see why they have to and what use it has or in worse cases they are afraid of blame. Besides, a complex registration system, database or a form that has to be completed by hand, make registration very difficult. Since many people indicate that once the first step is accounted for, the second step is performed as well, there is a lower amount of remarks on problems for the registration step.

Use of the reports for learning is hindered because information is often lacking, only very generic information is given and because each organisation or each department has its own way of registering. For the following steps, from determining the scope to the end of the first stage, fewer comments are given and the remarks are more descriptive in their nature. Many of the problems are related to a lack of resources such as time, financial resources and knowledge, but steps and their quality are also highly dependent on personal judgement. Whether an investigation and analysis are performed and to which extent, is determined by this personal opinion. Interpretation of the results of the analysis and therefore also the selection of the main factors to formulate recommendations are often made by a single decision maker as well.

PLANNING OF INTERVENTIONS

In this second stage the interpretation and differences in perceived relevance form important bottlenecks. The decision on which factors are most relevant is very subjective and often determined based on available resources and on the speed and effort that is needed to start an action. In formulating the recommendations people find it hard to find the right actors to involve or the people performing this step miss the right knowledge.

INTERVENING

In this stage of the learning from incidents process, actions are communicated and performed. Although most people are willing to act, the actions are often not performed because it is hard to prioritize in the enormous flow of actions that follow incident analyses, audits, year-planning, etc. There is no overview of the actions and choices are mainly based on availability of resources such as time and money. Easiest actions are performed and more complex actions are left unattended for.

Information is often shared by managers or stored in online databases. Feedback to the person that reported an incident is often given after an action has been performed, for example by email. Whether the information is also shared with others within or outside an organization is dependent on the departments and teams. Sometimes attention is given in a toolbox meeting.

EVALUATING

The safety professionals indicate that this step contains the main problems. Whether actions are performed or not is

Hazards XXII

Table 1. Bottlenecks for each step in the learning from incidents process

Stage 1	Incident investigation and analysis					
Step	Problem	Problem	Problem	Problem	Problem	Problem
Reporting	Incidents are not reported	Near misses are not reported	Incidents and/or near misses are reported late	Quality of reports is insufficient	Process of reporting not clear	
Total: 67	28	30	5	3	1	
Registration	People don't want to register	Registration is incomplete	It is too difficult to register	Separated over departments		
Total: 23	5	6	10	2		
Determining scope	Solely based on outcome severity	Dependent on individual judgement	There is no procedure	All incidents investigated in-depth		
Total: 55	20	23	9	3		
Investigation	Number that is carried out	Depth of investigation	One technique even if it doesn't apply to all	Knowledge and competences not available		
Total: 25	6	9	6	4		
Analysis	Number that is carried out	Depth of the analysis	Not involving the right (number of) actors	Time and knowledge not available	Not well performed	No method available
Total: 38	12	6	7	6	5	2
Stage 2	Planning of interventions					
Step	Problem	Problem	Problem	Problem	Problem	Problem
Prioritizing	Is not performed	Based on available resources: easy, short-term	Differences in interpretations of importance	Based on image		
Total: 18	5	6	5	2		

Hazards XXII

Formulating recommendations	Only short term	Not specific enough	Only aimed at technical solutions	Knowledge and competences not available	Follow-up lacking	Not involving right actors
Total: 24	5	2	3	4	6	4
Action plan	There is no clear owner of the action list	Follow-up is not monitored	Plan involves mainly ad hoc actions	There is no overview of all separate actions		
Total: 18	5	5	4	4		

Stage 3			Intervening			
Step	Problem	Problem	Problem	Problem	Problem	Problem
Communicating	Only through a system/email	Only top-down	No feedback			
Total: 28	11	10	7			
Performing actions	Only based on earlier determined plan	Dependent on costs	Forgotten to perform	Takes too long	Actions are not performed	
Total: 27	5	10	4	3	5	

Stage 4			Evaluating			
Step	Problem	Problem	Problem	Problem	Problem	Problem
Evaluation	There is no evaluation	Only implementation evaluated	There is no feedback			
Total: 40	20	16	4			

rarely monitored or evaluated. Neither is the effectiveness of the actions evaluated and therefore valuable input for the learning process is left unattended.

DISCUSSION

The results in the previous section show that bottlenecks may arise in all stages and in all steps of the learning from incidents process. Problems in one step influence the quality of following steps as well. Especially when the first steps: reporting and registration, are not performed, the learning process cannot be completely and effectively performed.

There is also no feedback about earlier steps, so people don't know what happens after they have reported an incident. And if information is shared it happens often through automated systems or by email. Since it is indicated that some people don't report because they don't see what use it has, transparency in the follow-up process might increase the amount of reports and therefore new input for the learning from incidents process will be gathered.

Whether the learning process is fully functioning is also depending on the persons performing the steps. If the main actor is willing and able to, the steps are usually performed, but often the resources to perform these steps, such as time and knowledge are lacking and the quality of the output is low.

According to the safety professionals main problems arise in performing the actions and in monitoring the implementation and effectiveness of these actions. The evaluation step is often not performed, even though this is a critical step in the learning process. If actions are not successful and this is not known or left unattended for, improvement will not take place.

This qualitative approach enables us to give an overview of main problems in the learning from incident process as experienced by safety professionals. This does not necessarily reflect the daily practice within an organisation. Safety professionals are often involved in the learning process and by reflecting on the learning from incidents process they also reflect on their own work. We are currently performing focus groups in three organisations to gain an overview of the employees' view on the learning from incidents process. We believe however that the problems that are indicated here are a good representation of bottlenecks in many organisations.

To resolve bottlenecks more attention is needed for the organisational context in which the process is embedded and for the learning processes as known from organisational learning theories, including acquisition of knowledge, sharing and dissemination of knowledge and the appliance and storage of the knowledge. Further research will focus on the influence of the culture of the organisation as well as its structure, since for example company size is known to influence how lessons are learned from incidents.

LITERATURE

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