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Safety culture and proactivity for safety in ground handling

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Safety culture and proactivity for safety in ground handling

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Introduction

Ground handling work performance is an important part of the civil aviation flight cycle. Safe and efficient performance in handling aircraft has to be maintained and concerns both the aircraft and frontline personnel. Safety and economy are strongly coupled in this type of operation. Aircraft are extremely expensive to repair, and delays or cancelled flights due to aircraft damage can result in substantial indirect costs. Well-functioning safety management work plays a decisive role in minimizing the risk for both small-scale accidents (e.g. work injuries; minor damage to aircraft) and large-scale aircraft accidents. Well-functioning safety management in an organisation is very much dependent on the safety culture on management as well as workforce levels.

The purpose of this paper is to a) forward aspects important for safety in ground handling activities, b) present findings from a safety culture study performed in a ground handling company, and c) present findings concerning comparison of safety culture average scores across three transport branches: air traffic control, ground handling, and passenger shipping.

Aspects important for safety

An organisation's safety culture/climate, its artifacts such as the health and safety management system and safety behaviour are often viewed to have reciprocal relationships [1, 2]. Safety culture plays an important role in the overall development of effective health and safety management within a company and also in encouraging employees to behave safely. Research [3, 4, 5] indicates that organisations and companies that have a proactive and functional safety management are likely to experience fewer work-related accidents and incidents, improved safety awareness within the company and improved risk and safety behaviour among employees. Even so, safety culture would fail without the support of management commitment, allocation of resources, time and knowledge, competent and motivated personnel [6]. This is also true for efficient safety management. Here, leadership must be visible and serve as a good role model for safety. A culture in which safety is an over-riding priority should permeate all activities and, ideally, be self-sustaining (and therefore partly independent of the leadership). Employee commitment and participation in safety at work is also a key factor. Knowledge and motivation mediate the impact of a proactive safety environment on individual safety behaviour [7]. It is claimed that an individual places emphasis on safety due to her or his own motivational construct [8]. Employees working in an environment where safety is a concern comply with established safety procedures and participate in safety activities if they believe that these behaviours will lead to a valued outcome [9]. Ultimately, safety culture must be seen also as an individual attitude cultivated at work and hereafter workers can take this attitude from one context to another, from work to home and from one workplace to another [10].

Rules and procedures associated with health and safety often compete with other priorities such as productivity and efficiency. This will result in gaps between an organisation's enacted and

espoused priorities [11]. Over time, employees adapt to behaviour that conforms to the enacted policies and priorities that are likely to be rewarded and supported [12, 13]. To achieve efficient safety management, the cost-benefit balance has to be positive and with an awareness of the conflicting goals.

Furthermore, well-functioning learning in an organisation is associated with having a proactive approach to safety [14, 15]. It is vital to implement continuous learning cycles through practices such as collecting, monitoring and analyzing relevant information on safety and a feedback system on implementing improvements [16]. In Jacobsson et al [16], who studied the learning from incidents in chemical process industries, weaknesses were revealed in the organisational learning; both in the horizontal learning (geographical spread of lessons learnt) and in vertical learning (double-loop learning). The results also showed that the effectiveness in the different steps of the learning cycle was low due to insufficient information in incident reports, shallow analyses of the reports, decisions that focus on solving the problem locally where the incident took place and also late implementations of weak solutions [17]. Similar weaknesses are believed to be found also in other sectors and in many countries.

Study of safety culture in a Swedish ground handling company
Safe and efficient performance in handling aircraft when refuelling, loading/unloading, towing, and so forth has to be maintained and as said above, the safety culture has an important role in this activity. In a ground handling safety culture study [18] the aim was to develop and test a method for assessing safety culture based on nine safety culture aspects in a ramp division in a ground handling company. The aim was also to see if the method and empirical results would be usable tools in the proactive process of evaluating, improving and securing safety culture and safety in an airport ground handling organisation.

Safety culture can be defined as attitudes, values and understandings about safety shared in an organisation. The operational definition of safety culture used in the study has the focus on the ability to create and preserve a learning organisation. The nine aspects of safety culture used in the study are: Learning, Reporting (individuals' willingness to report incidents and anomalies), Justness (enhances the co-worker's willingness to make such reports), Flexibility (the ability to transform the work organisation in order to meet changing demands (e.g. in periods of high workload)), Communication, Attitudes towards safety, Safety-related behaviours, Risk perception, and perceived Working situation.

The ramp division studied consisted of 67 men, among whom 50 (16 managers and 34 operators) completed a safety culture questionnaire (using a five-point scale), resulting in a response rate of 75%. Semi-structured interviews were conducted at the airport with ten of these subjects. The average age of the respondents was 34.3 years (range 21–58), and the average time in the company was 9.6 years (range 0.7–35).

The results of the safety culture assessment revealed a generally good existing safety culture, from an average-score point of view. *Attitudes towards safety* (3.71) and *Communication* (3.54) received high average scores, while *Flexibility* (3.17), *Justness* (3.27), *Learning* (3.30), and *Risk perception* (3.32) received somewhat lower scores.

Analyses were conducted to see whether individual characteristics such as time in company, age, and in-house educational level among personnel had an effect on how safety culture aspects were perceived and judged. It was found that none of the characteristics or variables had a significant explanatory effect. Furthermore, concerning the possible effects of individuals' hierarchical position in the company, the result showed that the management group almost always gave higher average scores on safety culture aspects (eight of nine aspects) than did operators, these differences reaching statistical significance only for *Flexibility*.

The questionnaire survey identified 30 items on which 20% or more of the responders gave negative responses (i.e. 1-2 on the five-point scale). The work conditions on the ramp that were reported by responders to negatively affect compliance to safety rules were time pressure, small staff size, and high workload.

Managers' expectations and goals
Six managers in the organisation were asked to make three judgments on each of eight questions representing eight of the nine safety culture aspects (*Working situation* was excluded due to its multifaceted content). The judgments concerned their estimation of the percentage of their personnel who would describe a good/very good safety culture on that question ('estimated reality'), what percentage would be desirable ('managers' goal'), and what lower percentage level would indicate the need for improvement ('lower limit of acceptability'). For every safety culture aspect, an average score across the six managers was calculated for each of the three areas of judgments, and these average manager estimates were compared with the employees' actual scores for the eight questions obtained through the questionnaire survey. Not unexpectedly, managers' goals were uniformly high. However, for seven of the eight aspects, the actual scores of the employees were, on the average, lower (i.e. poorer) than the managers' lowest acceptable limit for safety culture. *Communication* was the only aspect on which employees scored above the managers' lowest acceptable limit.

Comparison across sectors
In the thesis *Safety culture in sea and aviation transport* [3] safety culture was studied using the same methodology in three transport branches: air traffic control, ground handling, and passenger shipping. A comparison of average scores for safety culture aspects across transport branches (Figure 1) showed that air traffic control often had somewhat higher safety culture scores compared to the other two branches, while the ground handling ramp organisation generally had the lowest scores.

The differences in safety culture level (average scores of aspects) could be a reflection of several components, which probably can affect safety culture aspects in different ways. One component could be the nature of the work (or the working situation), where the physically heavy ramp work (compared to air traffic controllers, for example) could lead to a more pessimistic view among personnel. Furthermore, differences in average scores for safety culture aspects between operative and administrative organisations within air traffic control, can also be a reflection of type of work, since scores for *Risk perception* and *Reporting* can have a different meaning to the two groups and can be higher among operators than among the administrative staff. Other components concern the safety management system and leadership within an organisation. The ramp work is not as standardized and regulated as within air traffic control and on board ships,

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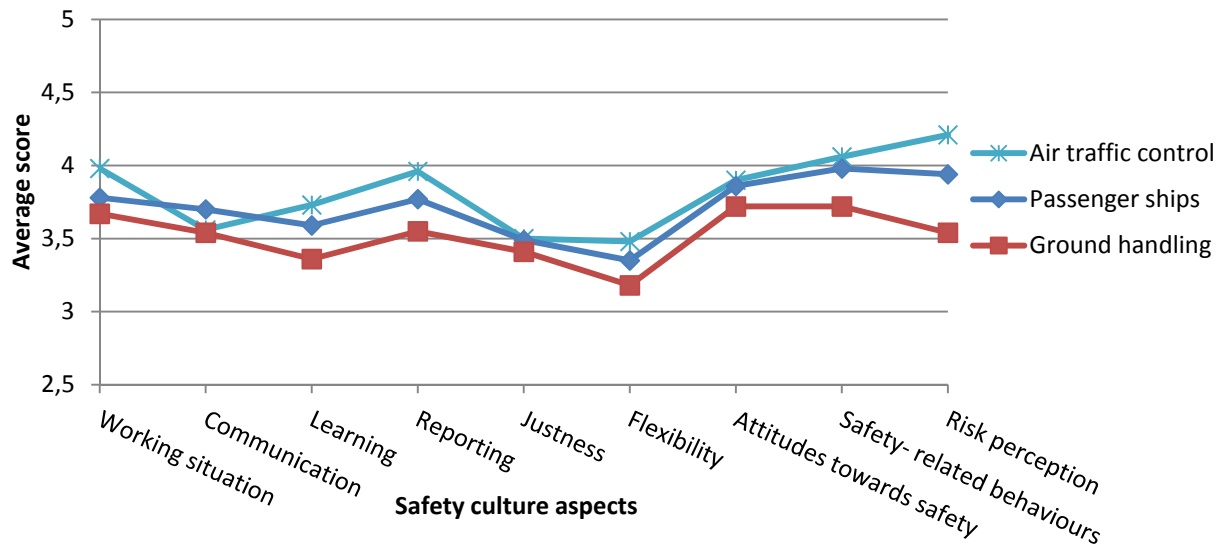
Figure 1. Comparison of average scores for safety culture aspects from three transport branches (identical item sets within aspects): air traffic control (operative units), passenger shipping, and airport ground handling (ramp organisation) (from [3]).

which could influence the manifestation of safety culture in everyday practice. Similarly, the fact that air traffic controllers (as compared to administrators) should comply with safety management procedures and need to have another awareness of risks, could be an explanation for the differences in safety culture perceptions and judgments between these two groups. Furthermore, if the local management at the different study locations has made deliberate attempts to create or form a certain safety culture, or parts of it, this can also be reflected in differences in average scores for safety culture aspects. The differences in average safety culture scores between the branches could also be a manifestation of the maturity level in safety culture. Air traffic control could thus be said to be the most 'mature' among the three branches. The results also show that learning processes for safety are better developed in the air traffic control setting than in passenger shipping and airport ground handling ramp activities.

Conclusions
The results of the safety culture assessment of the ramp division revealed a generally good existing safety culture. However, the study points to many specific topics and areas that could be the focus of continued improvement. Generally, to achieve continuous safety improvements in ground handling the application of safety management systems are essential as well as creating good safety cultures constituting driving forces to safety.

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