

CHARACTERISTICS, DESCRIPTION AND ASSESSMENT OF THE ORGANIZATION'S SAFETY CULTURE SUBSECTORS

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Abstract: The safety of the organization is influenced by various factors. In order to increase the level of safety, it is necessary to focus on these factors and to influence them the right way in order to enhance their level. Regarding the safety, safety culture is one of the endogenous factors of organizations.

Safety culture issues have not been given much attention so far, although a safety culture can play an important role at a complex level of safety for the organization. In order to increase the level of safety culture, it is required to assess its current state of play. The process of assessing the organization's safety culture is dealt with by one of the institutional grant projects at UNIZA's Faculty of Security Engineering.

The elaborated article focuses on the first part of this process, which is the identification of the safety culture sub-sectors and safety culture indicators. Safety culture indicators serve for evaluation of identified sub-sectors, the values of which will be further used to assess the complex level of the safety culture.

The article identified 6 safety culture sub-sectors and twenty safety indicators. The individual indicators were later allocated to the corresponding subsectors. In addition, the relevance of each subsystem, which can help to better assess the safety culture, has been celebrated.

The methods of analysis and description, as well as the explanation methods, were used to process the article. The results of this article are useful to the professional public, the security science students, as they extend the theoretical foundation of organization security. The results of the article can also be used by any organization looking at the possibilities of analysing its safety.

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Introduction

Security and safety are becoming one of the priorities of each organization. The security and safety of the organization are affected by several internal and external factors, including the safety culture. However, this respective organizational safety factor has not yet been described in detail and its direct relationship to the organization's safety is not sufficiently demonstrated.

Another emerging problem is the identification of tools for assessing safety culture. After a closer analysis of this concept, we are gradually proposing, applying and verifying safety culture assessment tools. The whole process of this assessment consists of several partial processes.

This article focuses on answering the following questions:

- Which subsectors constitute the organization's safety culture?
- What safety culture indicators can be used to evaluate identified subsectors?

By answering these questions, we will open a description of the proposed process of assessing the organization's safety culture.

Safety culture definitions

For a better understanding of the issues studied, it is necessary to provide the theoretical basis for this issue.

The concept of safety culture was first used in 1986 by a group of staff of the International Atomic Energy Agency (IAEA) after the Chernobyl nuclear reactor accident. This group used the term weak safety culture as one of the identified factors to contribute to the accident (Kerstan, 2013). The IAEA Group of staff stated that the safety culture applies to the personal commitment and responsibility of all individuals involved in any activity affecting the safety of nuclear installations. However, the group left the concept open and did not provide guidance on how to assess and further develop this culture (Loveček et al, 2016).

After this event, the safety culture was at the center of interest, in order to optimize the impact of corporate culture on employee safety behavior (Slováčková, 2015). The safety culture has begun to be

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used as a tool to reduce or eliminate the impact of undesirable events and factors related to individuals, social groups and the state (Hofreiter, 2015).

There are several definitions of safety culture. Some of the definitions may differ, especially because the safety culture cannot be said only in terms of organization and its safety. The selected authors defined the safety culture as follows:

Mohamed (2003) sees a safety culture as a subgroup of organizational or national culture that affects the attitudes and behavior of individuals in the context of ongoing safety work.

Cox and Cox (1991) say that the safety culture reflects the attitudes, beliefs, perceptions and values that individuals share in terms of security.

Hale (2000) asserts that a safety culture refers to attitudes, beliefs and perceptions that groups define as norms and values and which influence their action and risk-related responses.

Richter and Koch (2004) characterize safety culture as a tool that guides people's activities in relation to risks, accidents and prevention.

Cooper (2000) notes that culture is the product of multiple target-oriented interactions between people, the work environment and organizational measures. While the safety culture is observable, a measure of effort to which all members of the organization draws attention and act to improve safety daily.

Safety culture can be defined as an organization's commitment to addressing safety at all levels of the organizations. A safety culture helps promote safety through employee training, communication and risk awareness. In particular, an employee who feels responsible for workplace safety is a sign of strong safety culture (Price and Forrest, 2016).

According to the Institute for Industrial Safety Culture, a safety culture can be defined as a set of behaviors and thinking that are shared within an organization in order to manage the most important risks associated with their activity. A safety culture affects the way society considers and approaches safety (2019).

With respect to the proposed definitions of a safety culture, it is possible to state that they all have something in common - each of them focuses on the way people think or behave in relation to safety.

The safety culture can be explored at three different levels: state level, group/organization level and the level of individuals.

For the purposes of this article, in the next review, we focus mainly on the level of organization and the level of the individuals, which may influence to a certain extent the previous level.

Subsectors of an organization's safety culture

For the future assessment of an organization's safety culture, it is necessary to identify its subsectors, assessing which of them will be able to determine the resulting level of organizational safety culture. Based on the available information resources and long-term experience, we propose a division of the safety culture into the following subsectors (Safety culture subsector – SCS):

- Priorities and objectives of the organization (SCS1),
- Safety education (SCS2),
- Organization Security Management (SCS3),
- Work environment (SCS4),
- Safety awareness and behavior (SCS5),
- Statistical data (SCS6).

Priorities and objectives of the organization

Thinking about organizational leadership and its direction can play an important role in assessing the safety culture. This subsector involves the organization's own attitude towards securing and enforcing security in its internal and external environment. The organization and its leadership prioritize its functions and objectives, it is important to identify the safety priority and safety objectives of the management of the organization under review. The organizational safety priority can be identified in a variety of ways, ranging from the amount of funding spent to ensure safety, anchoring safety management in organization structures to controlling, continual improvement and regular evaluation of the success of the safety measures taken. The organization's security priority is identifiable also based

on the adopted safety objectives that need to be achieved to ensure the required level of organization safety (the level that senior management requires to ensure the smooth running of the organization). Moreover, the safety objectives must be advanced to broaden and support the organization's main goals. The safety objectives must be visible, measurable and regularly evaluated. All safety actors at the appropriate level must be aware of safety objectives or parts of them, of course these actors must be identified and actively promoted by them. The safety objectives adopted at the lower levels of the organization's safety management must be adopted in such a way that they do not conflict with already accepted security objectives and that the safety objectives adopted by the organization's top management are developed (Loveček et al, 2016).

Safety education

Safety education focuses on educating all employees of the organization in the safety sector. Employee training can take the form of training, workshops, consultations, or verifying knowledge and skills. These include education in the field of health and safety at work, work with technical equipment. The effort of each organization should be at least as consistent with the training requirements for employees as set out in current legislation. However, this minimum can often not be considered enough to build a positive safety culture of the organization. It is advisable to support admissions or ongoing training in legislation by providing additional, up-to-date training, expanding knowledge of the organization's employees, thereby influencing the safety awareness and behavior of selected employees (Lovecek et al, 2015)

Organization Security Management

The organization's security management subsector plays an important role in assessing the safety culture. The very way of managing the organization's security shapes the safety culture in it. Security can be managed centrally or can be decentralized. Managing the organization as needed will create the security manager's position and its team in its organizational structure. The impact of security management on safety culture is identifiable on how to secure, regulate, monitor, evaluate, and continually improve organization security. It is also possible to include a process of assessing safety risks that, in the absence of a risk manager, may fall within the competencies and tasks of the security manager.

Work environment

The subsector of the work environment of safety culture reflects the state of workplace safety that can be influenced by the workforce. This may include identifying and adhering to accepted rules and regulations. Occupational safety also affects workplace culture from corporate clothing, through physical violence and discrimination to drinking alcohol and narcotics (Šoltés, 2016).

Safety awareness and behaviour

Safety awareness and behaviour subsector applies to the organization's employees. These two factors undoubtedly affect the organization's safety culture, which is mainly formed by individuals within it. There is some interaction between the organization's safety culture and safety awareness and behaviour. It can be said that they interact with each other. As the safety awareness and behaviour of individuals in an organization may positively or negatively affect the organization's safety culture, the safety culture that is established and applied in the organization can form the safety awareness and behaviour of individuals. It is not possible to try changing the values of a safety culture without focusing it carefully on the organization's activities and thinking about safety issues.

Statistical data

The statistical data subsector is based on the past. Statistical data shall be examined for a specified period. This subsector is closely related to safety documentation and its quality that is processed in the organization. There are many statistical data that can be considered as safety indicators or indicators of the organization's safety culture. During the safety culture assessment, it is possible to focus on working deaths, injuries, accidents or near-accident. It is also possible to assess the success or failure of any attempts to disrupt the internal or external safety environment of the organization.

The importance of subsectors of the safety culture

It is important to note that all of the aforementioned subsectors of the organization's safety culture are mutually intertwining and have common points. Therefore, identified safety culture indicators that will

serve us in assessing a safety culture cannot be filtered by the subsectors. One indicator may serve for evaluation of one, two or three subsectors of safety culture. Synergy of these subsectors enables to determine the complex level of the organization's safety culture (Šoltés, 2016).

In the final assessment of the safety culture of the organization, the subsectors of the safety culture will not be considered equivalent. The values of some subsectors affect safety culture more complexly, others less. For this reason, they need to be compared with each other in order to determine the weighting of the values of each subsector of the safety culture. For the mutual comparison of the subsectors, we will use Saaty's method using the following evaluation degrees.

Table 1: Evaluation degrees for compare safety culture subsectors

Evaluation degree	Comparison of subsectors of the safety culture (SCS _j and SCS _{j+1})
1	Same importance
2	SCS _j is slightly more important in assessing the safety culture as SCS _{j+1}
3	SCS _j is more important in assessing the safety culture as SCS _{j+1}
4	SCS _j is much more important in assessing the safety culture as SCS _{j+1}
5	SCS _j is strongly more important in assessing the safety culture as SCS _{j+1}
6	SCS _j is definitely more important in assessing the safety culture as SCS _{j+1}
7	SCS _j is extremely more important in assessing the safety culture as SCS _{j+1}
8	SCS _j is unconditionally more important in assessing the safety culture as SCS _{j+1}

Source: Author

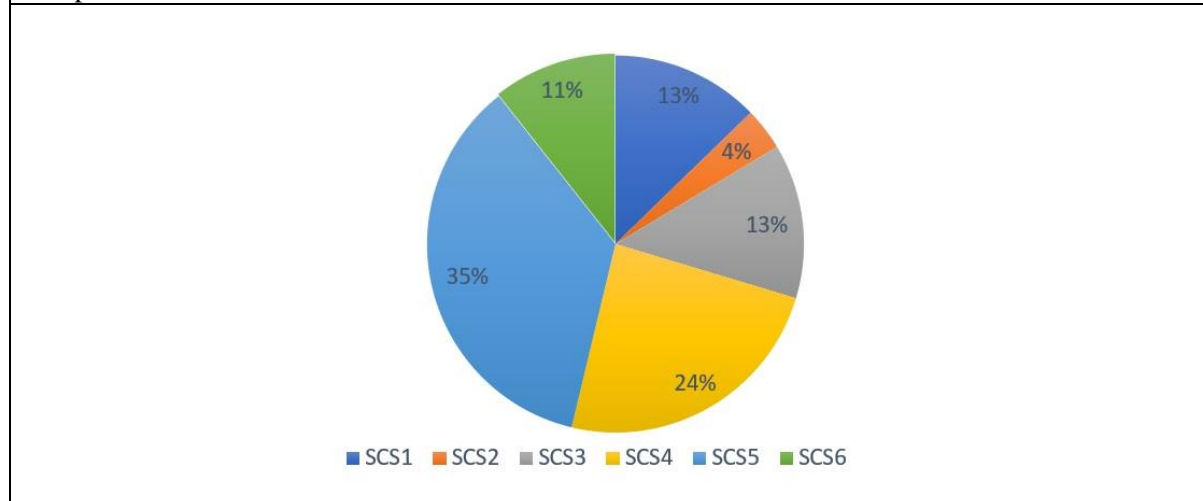
These degrees allow us to evaluate the impact of each subsector of the safety culture and its values in its complex assessment. An inverse value is assigned to the subsector of lower importance.

Table 2: The calculation of the value of the subsectors of the safety culture in its complex assessment using the established evaluation degrees

SCS	SCS1	SCS2	SCS3	SCS4	SCS5	SCS6	Σ	Importance	Value
SCS1	X	3	2	1/3	1/4	1/2	6.08	4	0.12
SCS2	1/3	X	1/3	1/3	1/4	1/2	1.74	6	0.04
SCS3	1/2	3	X	1/2	1/3	2	6.33	3	0.13
SCS4	3	3	2	X	1/2	3	11.50	2	0.24
SCS5	4	4	3	2	X	4	17.00	1	0.36
SCS6	2	2	1/2	1/3	1/4	X	5.08	5	0.11
Σ							47.73		1.00

Source: Author

Figure 1: Graphical expression of the share of the sub-sectors of the culture of security in its complex assessment



Source: Author

This method has enabled us to identify the most important and, on the contrary, the least important subsector of a safety culture in its complex assessment. The result of this comparison can also be displayed graphically. This Figure 1 represents the percentage share of each sector for the safety culture assessment.

The data obtained will later be used as the coefficients of each subsector of an organization's safety culture when calculating its complex value.

Identification of safety culture indicators

In order to evaluate the subsectors of the organization's safety culture, it is necessary to identify its indicators. Indicators of organization safety culture characterize or reflect its level, furthermore, they serve to measure its level effectively and can determine the success of the goals set. Therefore, it is necessary for the safety culture indicators to be adequately visible, identifiable and measurable (Belan, 2015). Based on their nature and their ability to express them (qualitatively, quantitatively), they can be used to measure and assess the level of safety culture and its subsectors.

We can classify two groups of organizational safety culture indicators (Hofreiter and Byrtusová, 2016):

- reactive indicators,
- predictive indicators.

Safety culture indicators may differ from one organization to another. Their number and range will depend on the specifics of each organization (size or focus). Safety culture indicators need to be correctly identified and evaluated using one or a combination of several selected methods before they can be used to evaluate either the subsectors or the complex safety culture of the organization.

To evaluate the safety culture and its subsectors, combinations of the following safety culture indicators (SCI1-20) can be used:

- The importance of security for management (SCI1),
- The importance of security for employees (SCI2),
- Creation, implementation and content of security policy (SCI3),
- Amount of funds and other resources spent to ensure security (SCI4),
- Measures taken to protect the assets of the organization (SCI5),
- Performance of entry and on-the-job training in safety, their form and content (SCI6),
- Required professional competence of employees (SCI7),
- Compliance with safety laws, standards, and standards (SCI8),
- Existence of established procedures (operating rules) and assigned tasks in the safety sector (SCI9),
- Compliance with adherence to established operating regulations (SCI10),
- Organization's preparedness to address unforeseen crisis situations (SCI11),
- Creation and maintenance of safety documentation (SCI12),
- Frequency of theft and magnitude of damage caused by theft (SCI13),
- Number of accidents, accidents and injuries for a specified period (SCI14),
- Number of accidents and other undesirable events due to negligence over the time period specified (SCI15),
- Collaboration among employees of the organization (SCI16),
- Respect and identification of employees with the organization (SCI17),
- Recognition of tasks in the security sector of the organization by its employees (SCI18),
- Perception of the need to ensure safety for employees of the organization (SCI19),
- Implementation and frequency of checks, controls, audits and their results (SCI20).

Assessment of subsectors of the organization's safety culture

The assessment of the subsectors of the organization's safety culture will be based on the values of the safety culture indicators. Some of the assessed indicators will play a role in assessing more than one subsector. The use of individual safety culture indicators for identified subsectors is illustrated in the Figure 2.

Figure 2: Use of individual safety culture indicators to chase its subsectors



The values of the security culture sub-sectors are obtained by the arithmetic mean of the values of the safety culture indicators on the selected scale.

Conclusion

In this article, we describe the definitions of possible subsectors of the safety culture, the synergies of which will later be used to assess the organization's safety culture. The calculated values for the subsectors of the safety culture will also be considered in the next evaluation process.

At the same time, safety culture indicators have been described, groups of which are useful in assessing identified subsectors. However, the article does not describe the process and method of evaluating the above-mentioned indicators.

The main objective of the paper was to identify the safe culture sub-sectors and safety indicators, on the basis of which we can evaluate the complex safety of the organization. Six sectors of safety culture and twenty indicators have been identified. The individual indicators were empirically assigned to individual sectors. In addition, the individual value of the safety culture sub-sectors was also assessed.

As we can see, this article is the gateway to describing the whole process of assessing the organization's safety culture. Further outputs of the safety culture assessment conducted will be ranking of the organization's safety culture indicators, description of the methods of evaluation of the organization's safety culture indicators, way of assessing the organization's safety culture indicators and design of a process for assessing an organization's safety culture that considers identified and assessed subsectors with their values and identified and evaluated indicators of the organization's safety culture.

Future research will focus on the quantitative evaluation of the safety culture in the organization. Individual indicators of safety culture will be evaluated within the defined sub-sectors. Based on the result, we will be able to determine the resulting level of organization.

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