Differences in elements of safety culture between large domestic companies and SMEs

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Abstract: Within the concept of safety culture, the role and responsibility of companies is particularly important, as they have an impact on all aspects of sustainability, including social processes and environmental protection, in addition to their own safe operations. This requires organisations in which safety is both a priority and a value. The interdisciplinary nature of the field under study includes the study of the interaction between people and organisations and the interrelationship between the disciplines of organisational behaviour. The main objective of my research is to investigate and analyse the perceptions, attitudes and motivations based on value preferences of employees of companies operating in Hungary in relation to organisational safety and to identify the elements of safety culture that are specific to the company. My main research question is what cultural factors influence the safe functioning of an organisation. In this article, I present the main differences based on the variables of the large company vs. SME category

Keywords: elements of organizational safety culture, SMEs, large corporations, value preferences, organizational behaviour, applied psychology

1 Defining a safety culture

The concept of safety culture was first raised in the investigation into the causes of the Chernobyl disaster in 1986. Experts from the International Atomic Energy Agency's International Nuclear Safety Advisory Group analysed the disaster and concluded that the events could not be attributed solely to human error, technology or the socio-technical system. The identified cause was a set of organisational and management factors, which they identified as safety culture [1]. The studies showed that technology alone or human activities alone can no longer be interpreted as capable of causing accidents, but that deep layers of corporate functioning (e.g. value preferences, beliefs, beliefs, attitudes, identity, etc.) must be considered in their interaction.) The first definition was also formulated at this time by the IAEA Advisory Committee on the Safety of Nuclear Installations study group on human factors (ACSNI): 'The safety culture of an organisation is the set of individual and group values, attitudes, perceptions, competencies, behaviours that define the organisation's commitment to, and style and management's competence in, health

and safety'. [2] The cultural approach to corporate safety is thus chronologically linked to the nuclear industry and the high-risk industry, but it now has a role in all sectors and research is therefore essential.

Further concepts of safety culture are largely derived from definitions of organisational culture used in social and management science. Antonsen [3], for example, considers safety culture as a conceptual label that denotes the relationship between culture and safety. Some research suggests that safety culture is an expression or manifestation of a particular organizational culture, which is then crystallized in a safety management system [4]. Others emphasize that safety culture is a kind of organizational culture that is closely related to organizational culture, but that safety culture has its own identity. [5]

Summarising the different approaches, most researchers define safety culture as an aspect of an organisational culture that is specifically focused on safety [6], other authors define it as a subordinate or secondary element [7], or a sub-dimension [8] or subset [9], referring to health and safety factors and characteristics related to employee functions [10].

2 Elements of a safety culture

In the literature, several authors propose different models to capture the safety culture, its main characteristics and measurable indicators, thus identifying the components of a safety culture. In my research, the questions (core variables) included in the theory-based questionnaire I constructed are composed of items derived from relevant organisational culture and safety culture models. Among these, I present the elements of the models related to the research result extracted for large companies vs. SMEs.

2.1 Reason model

Reason [11] defines a safety culture as one characterised by "chronic anxiety" and the maintenance of awareness and vigilance about potential health and safety hazards. One of the most influential models underpinning the theoretical background of safety culture, it emphasises the co-existence of four closely interrelated elements to achieve effective organisational safety. The elements are

(1) a reporting culture, (2) a just culture, (3) an adaptive culture and (4) a learning culture.

The culture of reporting is that minor failures and near misses are seen by organisations with a functioning safety culture as a symptom that can be used to avoid more serious incidents. Accordingly, it is important that all 'lessons learned' incidents are reported, investigated and evaluated. In other words, this is a "Don't

sweep it under the carpet" culture, for which an atmosphere of trust, acceptance, good faith, communication without fear of retaliation, constructiveness and a "more important to know than to punish" attitude are essential.

A just culture means that the reporting of safety concerns and problems is open and encouraged [12]. It involves the leader "hearing the 'bad' news and reports of problems and rewarding them to promote resolution, so that members of the organization are empowered to help intervene, change and improve safety problems [13]. A culture of justice accepts and acknowledges that unintentional human errors will occur, [14] and therefore a culture needs to be developed where work is conducted in a non-punitive environment and the disclosure of information will not have a negative impact on employees' career progression or career prospects. In addition, a culture of fairness is the extent to which reporting of errors, safety concerns and problems is open and encouraged, based on the recognition that 'honest', unintentional human errors will occur. A culture of fairness implies that reporting of problems is rewarded by management and that all members of the organization are empowered to help intervene, change and correct the problem that has developed. For this to work, there needs to be a high level of trust: employees are 'operating in a non-punitive environment', they are aware that disclosing information will not have a negative impact on their careers, job prospects or mean they will be 'disloyal to colleagues, bosses or organisation' [15], and there is a confidential reporting system that not only enables but encourages all members of the organisation to disclose errors or safety hazards. Such a culture is characterised by fairness, acceptance and investigation without blame. My empirical studies have shown that safety managers are aware of the risks of the lack of a just culture when they say that in Hungary the social embeddedness hinders the functioning of the just culture and its integration into the organisational (safety) culture, because the "hierarchy gradient" (see power distance index) is too high, which results in a "we dare not speak out" attitude. The commitment of security area managers is decisive, but not enough in itself. For a culture of fairness to work, a declared organisational safety policy must be developed and the possibility of anonymous reporting must be ensured, with the basic attitude that "we are looking for a systemic failure, not a human being". The primary research has shown, among other things, that Hungarian companies still have much to improve in both the systems approach and the culture of error.

A resilient culture is the lack of rigidity in decision-making within the organisation and the increasing need to review its response to production pressures for increased security. The degree of freedom in making decisions at different organisational and individual levels, with safety as a priority, can also be seen as an indicator of the adaptability of the system. [16] In addition, the availability of "contingency resources", such as materials, planning-oriented resources, or additional time for people to respond, allows the organisation to cope with unforeseen problems, to react quickly when unknown disturbances occur [17]. Resilience allows the organisation to cope with unforeseen problems or to respond quickly to disruptions,

and the norms and rules themselves allow for a flexible approach and decentralised decision-making. The basis for this is that senior management sees security as a core value of the organisation to which it is committed. This commitment is reflected in a sustained and positive attitude of management at the level of communication and practice: (a) consistently emphasising the importance of safety,

(b) prioritising safety over production in all situations, (c) ensuring adequate resources for the implementation of safety standards and activities, (d) actively promoting safety at all levels within the organisation.

A learning culture is concerned with whether an organisation reacts to unexpected, undesirable events with denial, correction or genuine reform, and how it manages and resolves safety problems. It is also important that the organisation 'does not rest on its laurels' and that past successes are not seen as a guarantee of future success [13]. Safety incidents should be signaled throughout the organisation, 'lessons learned from incidents and other events should be treated seriously' and feedback given at all levels of the organisation. It must also ensure that discussions about safety and risk continue to take place, even if, for example, no accidents are experienced. In addition, it is important that the different organisational safety subcultures are different, because too much homogeneity can have a negative impact on organisational learning. which means that each subculture needs to recognise its own role in how it can contribute to safety, and in a way that interacts appropriately with the other participants.

2.2 Westrum model [18]

This concept raises the question of who in the organisation manages security information and responsibility. Accordingly, it defines three types: (1) pathological,

(2) bureaucratic, (3) evolving culture. For example, that security information is actively sought (evolving) or rather concealed (pathological), that responsibility is shirked in case of failure (pathological) or shared and learned from (evolving), that new ideas are only disruptive and therefore regulated (bureaucratic), or that innovation in security solutions is encouraged (evolving).

2.3 McKinsey's 7S model

This model [19] classifies the elements of organisational culture into two groups. The "hard" elements belong to the regulatory framework of the organisation. E.g. strategy, organisational structure, management tools, production systems, etc. These dimensions are governed by the principles of economic utility, efficiency, technological necessity and practicality.

By contrast, the "soft" elements are harder to capture and are often not quantifiable, but their importance is equally crucial in shaping organisational culture. They include, for example, elements such as skills, workforce, (management) style, the

skills, explicit and implicit knowledge, training, skills of employees and managers, and the values and norms of the organisation. In the case of safety culture, the core values are commitment, awareness and a 'safety first' approach.

Based on this model, the elements of a safety culture can be divided along similar lines:

- hard elements: regulatory framework, laws, directives, legislation, standards, control strategies, security governance, methods, management, strategy, IT systems, security specialised systems, quality assurance systems, etc.
- soft elements: organisational behavioural factors, attitudes, safety awareness interventions, methods, education, training, sensitisation, values, etc.

2.4 Schwartz's value dimensions model

According to Schwartz [20] , the different value dimensions are organized into ten value classes along two major value axes. The idea of the theory is that a validated value test can be used to identify and rank people's value preferences and by aggregating these at different scales, value systems of different cultures can be described and compared. The 10 universal values are also relevant for the security culture: (1) power, (self-actualization), (2) achievement, (self-actualization), (3) benevolence, altruism (self-enhancement), (4) universalism, (self-enhancement),

(5) conformity, (conservation), (6) tradition, (conservation), (7) security, (conservation), (8) self-reliance, (openness to change), (9) stimulation, risk-taking, (openness to change), (10) hedonism.

3 Description of the primary research

3.1 Organisations involved in the research

In connection with the safety culture survey, I contacted 41 organisations (sectors: security, defence, services, energy, transport, IT, consultancy, trade, infocommunications, pharmaceuticals, chemicals). I conducted a questionnaire survey in 8 companies (security, defence, services, trade, transport, energy, nuclear). 301 employees completed the questionnaire, of which 280 were assessable. Respondents were purposively surveyed using an expert sampling procedure.

3.2 Research questionnaire

In the course of my research, I developed a self-designed questionnaire consisting of 45 items, which includes attitudes, motivations, values, and elements and characteristics related to safety, as formulated in the safety culture models. My measurement instrument asks about the organisational reality as perceived by employees, focusing primarily on organisational behaviour. Respondents were asked to rate the extent to which the statements in the questionnaire were

representative of their own and the company's operations, using a 7-point Likert scale.

3.3 Sample characteristics

Of the questionnaires that could be evaluated (N=280), 70.4% were completed by employees of large companies (64.6% public) 197, the remaining participants (83 employees) work in the SME sector, of which 41.1% (N=113) are in managerial and 57.9% (N=162) in non-managerial positions. (Five questionnaires did not have an evaluable answer to this question.) The companies surveyed are characterised by a Hungarian ownership background (85.4%) and a German ownership background (14.6%). The demographic distribution of respondents is as follows: the largest proportion (63.8%) belongs to Generation X, followed in descending order by Generation Y (30.1%), Baby Boomers (5.1%) and Generation Z (1.1%). 91.1% of the survey respondents work in the field of security, while 8.9% of the demographic question indicated a non-security related occupational field. In this quantitative research, statistical analysis was conducted using SPSS 20 software. The comparative analyses sought to answer, among other questions, whether there is a significant difference between the security culture characteristics of domestic large companies and SMEs and, if so, which elements differ most.

4 Correlation test with T-test

4.1 Category variables by size of organisation: SME vs large enterprise

In the statistical analyses, I examined for which variables there is a significant difference between the subgroups I have defined.For the analyses, I used the following categories of variables:

(1) Ownership background:Hungarian / German, (2) Company size: SME / large company, (3) Owner: private / public, (4) Hierarchy: manager / subordinate, (5) Company security area: security / defence

In this article, I present the results obtained on the basis of the variables in the large enterprise, SME category, which are summarised in the tables below.

	SMEs (n=83)		Large company (n=197)		Level of significance of difference
	mean	deviation	mean	deviation	
You are familiar with the Organisation's security policy.	3,82	1,761	4,26	1,723	0,054
Safety instructions, standards and documents are appropriate and up to date.	3,72	1,603	4,45	1,364	**0**
Security depends on standards and the regulatory system.	4,02	1,689	4,04	1,353	0,956
The Organisation spends enough to increase safety.	3,55	1,540	4,14	1,339	**0,002**
Your priority is to earn a lot of money with the Company.	4,23	1,140	4,29	1,243	0,68
Safety is a value.	5,18	1,261	5,26	,954	0,547
It is important to work in safe conditions.	5,49	,802	5,53	,773	0,74
The security standards, regulations and technology used in the Organization are consistent.	3,78	1,415	4,20	1,245	**0,014**
At the root of the errors are organisational process problems.	3,53	1,501	3,35	1,371	0,322
Workplace conditions contribute to errors.	3,59	1,554	3,58	1,578	0,974
Your managers will occasionally make you aware of the Organisation's safety.	3,35	1,817	4,24	1,542	**0**
You apply the guidelines set out in the Organisation's security policy in your daily work.	4,33	1,586	4,60	1,416	0,148
Security standards are reported to the Organisation.	3,67	1,740	4,23	1,636	**0,012**
Safety training contributes to the achievement of the Organization's security objectives.	4,36	1,722	4,68	1,259	0,13
Safety is everyone's responsibility.	5,19	1,477	5,42	,909	0,203

A risk, a "safety gap", if the Organisation is not able to learn from its mistakes.	5,13	1,187	5,37	,950	0,075
An inadequately trained worker contributes to errors.	5,47	,846	5,37	,880	0,36
You can learn company security rules and applications, but there are not always ready-made guidelines for dealing with uncertain and unexpected situations.	4,55	1,318	4,32	1,405	0,195
At all levels of the organisation, they are actively seeking solutions to ensure safe operations.	3,65	1,573	4,11	1,364	**0,015**
You are expected to follow the rules "blindly".	3,96	1,427	3,62	1,640	0,078

Table 1.

Summary table for SME and Large Enterprise categories (with 1-20 basic variables), values in red indicate significantly higher values for large enterprises

	SMEs (n=83)		**Large company (n=197)**		**Level of significance of difference**
	mean	**deviation**	**mean**	**deviation**	
You are conscious about safety.	4,29	1,534	4,44	1,461	0,426
are characterised by your concern for the safety of others.	5,36	,820	5,16	,990	0,099
He strongly believes that people should protect their environment. Preventing environmental risks is a priority.	5,19	,943	5,22	1,034	0,847
People working in your environment ow safety procedures even if their supervisor cannot check.	4,04	1,452	4,44	1,203	**0,017**
ses the risk if errors are not treated fairly.	4,89	1,334	4,88	1,161	0,958
Individual personality traits and characteristics affect safety.	4,86	1,128	4,64	1,168	0,155
Human error is influenced by an ual's lack of motivation and preparedness.	5,25	,809	5,07	1,127	0,184

It's important for you to be modest and understated. You try to work in a way that doesn't distract others from your safety.	3,66	1,720	4,24	1,393	**0,007**
It is important for you to be respected by others. You want them to do what you say when the situation is uncertain.	4,23	1,434	4,24	1,317	0,928
It is important for you to come up with lutions when you encounter a security problem.	4,76	1,164	4,24	1,475	**0,002**
It's important to feel good about yourself, even if it creates uncertainty.	2,04	1,663	2,66	1,611	**0,004**
u have the autonomy to decide how to solve security problems.	2,58	1,768	2,36	1,815	0,356
nturous and likes to take risks.	1,89	1,593	2,28	1,709	0,077
It's important for you to demonstrate ability to deal with organisational issues related to security.	3,84	1,573	3,55	1,621	0,159
In case of danger, all the conditions n, technical) are available to remedy the fault.	3,49	1,565	4,16	1,361	**0,001**
ypical to get help to solve a safety problem.	4,16	1,604	4,42	1,425	0,181
management is committed and does its utmost to ensure safety.	4,13	1,629	4,50	1,391	0,055
Risks are increased by power differences within the organisation.	3,60	1,814	3,52	1,753	0,708
ormation about security is shared within your Organisation.	3,58	1,815	4,43	1,464	**0**
Do you think it is typical for members of the organisation to work together to	3,93	1,621	4,51	1,231	**0,004**
ations, they prefer to help others.	5,06	1,075	5,09	,960	0,839
It is important that all workers are treated equally when it comes to safety.	5,47	,801	5,47	,878	0,98
Honest disclosure of undesirable security incidents is rewarded, and the organisation's remuneration system includes appropriate management of	2,34	1,823	3,14	1,825	**0,001**

security incidents.					
Factors outside the Organisation (social, economic, political, press, public opinion, authorities, etc.) have a strong influence on safety.	3,34	1,734	3,73	1,550	0,06
It influences risks if the Organisation is flexible and able to adapt to the external and internal environment.	4,05	1,962	4,50	1,369	0,057

Table 2.

Summary table for SME and Large Enterprise categories (with 21-45 basic variables), values in red indicate significantly higher values for large enterprises

In the case of large corporate culture, soft elements of organisational security are significantly more prevalent than in SMEs. These include safety awareness at management level towards employees, proactive behaviour towards safety at all levels of the company, compliance with rules, a safety-conscious attitude, modesty and restraint, which is part of the value dimension of conservation, information sharing, including honest disclosure of adverse events and cooperation for safety. In summary, therefore, the elements of a culture of development, learning, justice and meaning. The perceptions of the respondents suggest that the underlying causes of human error are organisational culture, non-compliance with formal rules, regulations and standards, and the area and circumstances of work. Among the hard culture elements, it is perceived that instructions, standards and documents related to safety are up to date, that they are in line with the technology used and that all conditions are in place to prevent errors in case of danger. Workers in a large company environment perceive that the organisation spends enough to increase safety and that managers not only make safety standards known but also hold them accountable. Thus, according to Westrum's model, bureaucratic culture plays a role in addition to development. In addition, uncertainty avoidance means that secure solutions are sought at all levels of the organisation. At the same time, employees also consider the value dimension of hedonism to be important, so it is an essential aspect to feel good about oneself, even if this may create uncertainty. However, this result raises further questions which are not covered by this research.

In the case of large companies, therefore, safety preservation and risk reduction are determined by (1) a safe organisational environment, (2) responsible, committed behaviour and (3) safe operating rules. To maintain these three pillars, it is necessary

to increase security awareness, which, in addition to training, means organisational learning, including the operation of a culture of reporting and fairness, i.e. honest disclosure of security incidents and sharing of information, which presupposes the presence of trust in the organisation. Learning is therefore at the heart of this development, closely linked to management commitment and responsibility for security, proactivity at all levels of the organisation, consistency of standards and technology, and the financial resources to achieve this.

In contrast, the SME sector shows significantly higher scores on the dimensions of autonomy and openness to change, which mainly means that workers consider it important to find new solutions to solve security problems. There are also significantly higher values for actively seeking good solutions (innovation) for safety, or being cooperative in preventing mistakes, and altruism (looking out for the safety of others). Thus, the most important characteristics of SMEs are attitudes at the individual level, mainly helpful, supportive and cooperative behaviour (goodwill and altruism value dimensions). In addition, employees believe that it is mainly personality traits, individual characteristics, motivation and preparedness that determine organisational safety and that human error depends on organisational culture. Compared to large companies, uncertainty avoidance is high in private firms, with respondents' perceptions showing that they are expected to follow rules "blindly", while for employees here, the ability to make decisions autonomously to solve safety problems is also an important aspect.

Summary, conclusion

Overall, it can be concluded that the elements of the security culture of the large companies and SMEs operating in Hungary that participated in the present study differ significantly. While in the case of large enterprises, a strong emphasis is placed on safety-conscious attitudes, compliance, information sharing (soft elements), and the up-to-date existence and operation of safety-related instructions, standards and documents in the organisations (hard elements), in the case of SMEs, the importance is attached to actively seeking good solutions for safety at the individual level, the role of cooperative, altruistic behaviour and individual personality characteristics in relation to safety. This is due to the smaller size, flatter organisational structure and greater flexibility of the SMEs surveyed. The results also point out that a common feature of both types of companies is that employees perceive the existence of soft elements rather than regulatory systems as the main factor in the safety of their company.

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