DEVELOPMENT OF WORKPLACE SAFETY CULTURE – IMPLICATIONS FOR MANAGEMENT PRACTICE

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Purpose: The objective of the paper was to identify significant contemporary challenges to development of the safety culture in Polish organisations.

Design/methodology/approach: To accomplish this aim, analysis of the literature on the subject and available secondary data on circumstances of accidents at work was undertaken.

Findings: The analysis resulted in determination of areas showing deficiencies regarding the safety culture in Polish organisations and identification of directions for necessary actions related to its development.

Research limitations/implications: The reasoning process performed has certain limitations. Included in the study, Statistics Poland's (GUS) data only enabled a general outline of the current challenges to development of the safety culture in organisations in Poland. More detailed guidance for these activities would be obtained from an in-depth study of employees in relation to the organisational culture (including the safety culture) of the organisations in which they are employed.

Practical implications: Conclusions from the analysis undertaken can be used by managers of various types of organisations in Poland to create a safe working environment.

Originality/value: The paper analyses the causes of accidents at work in the context of identifying areas of deficiencies in the safety culture of Polish organisations. The study is addressed to researchers and practitioners involved in the study and development of the safety culture in different types of organisations.

Keywords: safety culture, management, employee behaviour.

Category of the paper: research paper.

1. Introduction

Safety culture as a certain social, organisational or individual reality is related to human mentality, beliefs, preferred values and norms – both individual and collective – relating to risk and safety issues. Within an organisation (company, institution), it should also be seen through the perspective of organisational solutions, procedures and rules aimed at shaping the desired

patterns of safe behaviour at work. The solutions to be implemented should, above all, play a preventive role so that accidents do not occur. The effectiveness of these solutions is fostered by accurate identification of accident causes. In addressing the issue of the workplace safety culture in this study, a reference was made to the situation in Poland, and the objective of the paper was to identify significant contemporary challenges to development of the safety culture in organisations in Poland from the perspective of circumstances of accidents at work. The paper is theoretical and empirical in nature – it includes a review of the literature on the subject and an analysis of available secondary data on the causes of accidents at work.

2. Workplace safety culture – essence and development

The point of reference for emergence and development of the concept of organisational safety culture was the research into corporate organisational culture, which was initiated in the 1980s (Milczarek, 2000). The concept first appeared in 1987, in the OECD Nuclear Agency's report on the 1986 Chernobyl disaster (Cox, Flin, 1998), which identified poor workplace safety culture as a significant cause of the disaster. Pioneers of research into the theoretical concept of safety culture include N. Pidgeon (1998), F.W. Guldenmund (2000) and D. Cooper (2000, 2002).

Workplace safety culture is defined as a component of organisational and social culture (Mearns and Flin, 1999). Three levels thereof may be distinguished (Studenski, 2000):

- **society safety culture** – expressing the attitude of a particular social group or society as a whole towards risk, defining accepted norms of behaviour in a hazard situation and the way in which individuals takin risks are assessed and, at the same time, the value attributed to life and health,

- **company safety culture** – defined as the state of risk awareness characteristic of majority of the workforce, formal and informal norms of behaviour in the event of hazard, as well as technical and organisational achievements that affect integration of safety and health issues into the company's management, organisation of tasks, supervision and evaluation of employees, as well as into explaining the causes of accidents and disasters,

- **individual safety culture** – encompassing the individual's attitudes and beliefs about safety, reflecting individual attitudes towards risk, accepted patterns of behaviour and conduct in situations of hazard and risk.

A concept similar to *safety culture* is that of *safety climate*, encompassing a set of values and beliefs within an organisation, creating specific patterns of behaviour in the field of occupational health and safety. A pioneering study of safety climate, understood as the atmosphere perceived by employees around occupational safety issues, was undertaken by

D. Zohar (1980). Monitoring of the safety climate promotes a high safety culture (Mearns, Flin, Gordon, Fleming, 1998).

In his *reciprocal safety culture model*, D. Cooper (2002, 2016) pointed to 3 essential – psychological, situational and behavioural – interacting elements influencing the workplace safety culture:

- **Safety Climate**: shaped by intrinsic psychological factors characterising employees – their preferred values, individual and group attitudes at the workplace, recognised norms and perceptions of safety issues – determining the extent to which they underestimate hazards and risks, the scope in which they control their own (and their colleagues') safety at work, and influencing their beliefs concerning the causality of accidents.

- **Safety System** characterising the organisation: diagnosable by external observable factors - situational, systemic factors related to the organisation's safety management system (such as safety communication, accessibility of safety instructions, means of personal and collective protective equipment, status of persons in charge of safety within the organisation) and to risk control and assessment, competence, organisational policies, procedures and rules, work pressure (affected by the status of safety goals among the company's business objectives, required work pace, work-related stress, employee conflicts).

- **Safety Behaviour**: defined as external observable factors related to behavioural safety: actions and behaviours, including management practices and involvement understood as safety leadership.

In the presented model, *safety culture* is treated as a subculture of the overall culture of the organisation and should be seen as the product of a number of goal-oriented interactions between internal psychological factors, explicit behaviours and situational aspects of the workplace. The organisation's prevailing safety culture is, thus, the result of the dynamic relationship between members' perceptions of safety goals and attitudes towards them, everyday safety behaviours directed towards these goals, as well as the presence and quality of the organisation's safety systems and subsystems that support behaviours oriented on safety goals (Cooper, 2016). Also among Polish researchers, the predominant opinion is that when shaping the safety culture model, it is important to ensure creating solutions that are flexible, can be modified, improved, adapted to the needs of the organisation's stakeholders (Bartosz et al., 2017; Jamroch, 2018) and to continuously changing technical, organisational and social conditions (Gembalska-Kwiecień, 2019).

3. Reasons of accidents at work and areas of deficiencies in the area of workplace safety culture in Poland

In order to accomplish the objective of the paper and identify challenges to the safety culture in organisations in Poland, the study involved analysis of the causes of accidents at work. The research covered the period of 2011-2020. Data from Statistics Poland (GUS) were used – data on accidents at work are obtained annually by GUS from the Statistical Card of Accidents (Z-KW) and refer to individuals working in the national economy, excluding those working on individual agricultural farms and budgetary units carrying out activities in the field of national defence and public security, where the information refers only to civilian employees (Accidents at Work, 2020). Table 1 shows the number of victims of accidents at work in absolute numbers and the accident rate (per 1000 persons employed), as well as structural indicators on the causes of accidents in breakdown into particular years.

Table 1.
Injured persons and causes of accidents at work, at workplaces in Poland in 2011-2020

Reason	Years									
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Total: - no. of people - accident rate	97,222 8.34	91,000 7.78	88,267 7.55	88,642 7.53	87,622 7.24	87,886 7.07	88,330 6.80	84,304 6.30	83,205 6.06	improvement 62,740 4.54
Causes attributable to the organisation (company/institution):										
Improper condition of a material factor: - %	9.0	8.8	8.5	8.6	8.6	8.4	8.4	8.5	8.4	improvement 8.3
Improper organisation of work: - %	5.1	5.0	4.7	5.2	4.6	4.4	4.3	4.1	4.2	slight deterioration 4.5
Causes attributable to the organisation and the employee:										
Improper organisation of the workplace: - %	5.5	5.5	5.3	4.6	5.3	5.3	5.4	5.4	5.5	const. 5.4
Causes attributable to the employee:										
Absence or improper handling of a material factor: - %	7.4	7.4	6.9	7.5	7.5	7.4	7.3	7.2	7.2	slight improvement 7.1
Failure to use protective equipment: - %	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	repeated growth 1.7
Improper, unauthorised behaviour of the employee: - %	6.9	6.8	6.6	6.7	6.9	6.8	6.6	6.7	6.7	const. 6.8

Cont. table 1.

Improper psychophysical condition of the employee: - %	1.9	1.8	1.6	1.6	1.6	1.5	1.4	1.4	1.8	repeated growth after decrease 1.7
Incorrect behaviour of the employee: - %	54.2	54.0	55.5	59.0	59.2	60.1	60.5	60.8	60.8	growth 60.8
Other reasons: - %	8.5	9.1	9.3	5.3	4.8	4.6	4.7	4.3	3.8	decrease 3.7

Source: own compilation based on Statistics Poland (GUS) data: Accidents at work in 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020.

As shown in Table 1, between 2011 and 2020, the number of accidents at work decreased (by about 34,500 per year) and the associated accident rate fell as well. Over the analysed period, the most important cause of accidents at work invariably remained "incorrect behaviour of the employee"; the importance of this factor has been increasing in recent years, reaching around 61% in 2020.

The second most common cause of accidents at work was "improper condition of a material factor" (8.3% in 2020) – an area that has improved slightly in the last 10 years. Another cause of accidents at work (more than 7% in the years studied, although there has been a slight decrease in the share of this cause among all causes since 2016) was "absence or improper handling of a material factor". The fourth place (almost 7% of accident causes) was occupied throughout the study period by "improper, unauthorised behaviour of the employee". "Improper organisation of the workplace" has invariably (with the exception of 2014) accounted for around 5.5% of the causes of accidents at work in the last 10 years. As far as the factor "improper work organisation" is concerned, there was a slight deterioration (4.5% of the causes of accidents in 2020) after a continued downward trend between 2011 and 2018. The occurrence of "other causes" of accidents more than doubled during the period under review – they accounted for around 3.7% of accident causes in 2020. "Improper psychophysical condition of the employee" became the cause of 1.7% of occupational accidents in 2020, with the importance of this factor – after declining between 2011 and 2018 – increasing again between 2019 and 2020. "Failure to use protective equipment" caused 1.7% of accidents at work in 2020 – after a slight decrease between 2011 and 2017, there has been a slight increase again in the share of this factor among the causes of accidents at work since 2018.

The analysis made it possible to conclude that the main group of causes behind accidents at work were the conditions attributable to employees. In the case of organisational causes of accidents, the predominant factor was improper condition of the material factor.

Taking into account the causes of accidents at work presented above, further considerations focused on identification of the main areas of deficiencies in the safety culture of organisations in Poland, "liable" for the occurrence of such incidents. To do this, the *reciprocal safety culture model* of D. Cooper was used, as well as more precise explanations of the reasons for employee behaviours leading to accidents at work, which were taken from the Statistical Accident Card.

Due to the limited scope of the study, the analysis took into account the four most important (according to magnitude of occurrence) causes of accidents at work: three attributable to employees (incorrect behaviour of the employee, absence or improper handling of a material factor by the employee, and improper, unauthorised behaviour of the employee) and one attributable to the organisation (improper condition of a material factor).

Table 2.
Identification of areas of deficiencies in the area of workplace culture safety in Polish organisations

Causes of accidents at work	Reasons for employee behaviours leading to accidents at work[1]	Areas of safety culture where deficiencies occur
Incorrect behaviour of the employee (60.8% of accident causes)	ignorance of hazards	employee knowledge and competence
	ignorance of health and safety rules and regulations	employee knowledge and competence
	negligence of hazard (bravado, excessive risk taking)	attitudes, values
	negligence of superiors' instructions	attitudes, values
	insufficient focus on the immediate activity	attitudes, values, employee knowledge and competence
	surprise by an unexpected event	random factor, employee knowledge and competence
	improper pace of work	employee knowledge and competence
	lack of experience	employee knowledge and competence
Improper condition of a material factor (8.3% of accident causes)	defects in the design and materials of the material factor that cause the hazard	causes attributable to the manufacturer
	improper technical and ergonomic solutions of the material factor (including absence or inadequacy of safety devices, absence or inadequacy of collective protection equipment)	causes attributable to the manufacturer, safety management system, procedures and policies, status of safety targets in the organisation, risk control and assessment, knowledge, competence of managers
	improper handling of a material factor (e.g. overuse, insufficient maintenance, improper repair and renovation)	safety management system, procedures and policies, status of safety targets in the organisation, risk control and assessment, knowledge, competence of managers
Absence or improper handling of a material factor by the employee (7.1% of accident causes)	using a material factor not suitable for the work in question	employee knowledge and competence
	carrying out the work manually instead of using a material factor	employee knowledge and competence
	use of a material factor while persons are in the hazard zone	employee knowledge and competence
	improper protection of the material factor (e.g. failure to apply the brake when stationary)	employee knowledge and competence
	access to the material factor granted by the employee to an unauthorised person	knowledge, competence, attitudes, values
	use of a material factor against its purpose	employee knowledge and competence
	improper grip and holding of a material factor	employee knowledge and competence
	faulty installation, attachment, suspension of the material factor by the employee	employee knowledge and competence

Cont. table 2.

Improper, unauthorised behaviour of the employee (6,8% of accident causes)	performing work which is not within the employee's job description	attitudes, values, employee knowledge and competence
	crossing, passing or being present in prohibited areas	attitudes, values, employee knowledge and competence
	entering, driving into a hazardous area without making sure that there is no hazard	attitudes, values, employee knowledge and competence
	carrying out activities without eliminating the hazard (e.g. failure to switch off the machine, failure to switch off power supply)	attitudes, values, employee knowledge and competence
	driving too fast	attitudes, values, employee knowledge and competence
	incorrect use of limbs in the hazard zone	attitudes, values, employee knowledge and competence
	pranks, fighting	attitudes, values

[1]see: Statistical Accident Card (Z-KW).

Source: own compilation using the Statistical Accident Card.

The analysis performed leads to the conclusion that the predominant areas of deficiencies in the area of safety culture in Polish organisations concern the knowledge and competence of employees, their attitudes and values (see Table 2). Meanwhile, more than 8% of accident incidents connected with improper condition of a material factor (which has for years held the second place among causes of accidents at work) referred to the state of knowledge and competence of managers, quality of the safety management system, procedures and rules in force in the organisation, status of safety targets in the organisation and related risk control and assessment in the work processes.

4. Discussion of results

The completed analysis of causes underlying accidents at work showed that the human factor played a key role in the occurrence of accident incidents in Polish organisations. This is supported by other research findings, which indicate that the root cause of 80% of process safety disasters is not equipment failures, but lack of appropriate safety-related managerial behaviours (Wood, 2015). One must agree with this statement, as it seems obvious that the behaviours of employees in relation to safety are the result of the management's supervision (or lack thereof) over working conditions. Indeed, these behaviours to some extent result from the attitudes and values preferred by employees, from intrinsic psychological conditions that characterise employees – identified as one of the main deficiencies of the current safety culture in organisations in Poland but, on the other hand, employees also pay attention to such aspects of workplace safety as the importance attributed to OSH training, level of risk at work, status of OSH employees, management attitudes towards safety (Zohar, 1980). What matters, therefore, is how the management takes care of general working conditions. In turn, these conditions are determined primarily by the condition of the material factor,

level of knowledge and competence of employees and the level of commitment of the entire workforce (above all, of the management) to safety.

The culture of an organisation is mainly shaped by the leadership style and values preferred by the leaders. If the organisation is profit-driven, its functioning is subject to a dynamic tension between four fundamental business drivers: productivity, quality, cost and safety. It is up to the management team to determine the value assigned to safety (Ryan). Therefore, the safety culture is fostered by the implementation of a safety management system. As Abad (Abad et al., 2013) points out, when companies are certified according to international standards (e.g. OSHAS 18001), that contributes to improved safety conditions at the workplace and allows for significant improvements in safety performance and productivity. Through audit and review processes, the safety management system codifies and streamlines employee behaviours, which promotes a reduction in accident occurrences (Cooper, 2016).

Summary

The analysis undertaken enabled areas of deficiencies in the safety culture in Polish organisations to be identified. These include issues related to:
- attitudes and values preferred by employees in relation to the issue of safety and willingness to take risks in their work,
- knowledge and competence of rank and file employees and managers,
- functioning of safety management systems, work safety procedures and rules, risk control and assessment in the workplace,
- status of safety targets in the organisation.

The current deficiencies of the workplace safety culture in organisations in Poland, as indicated above, were used as a means of specifying important challenges for its development. The areas of safety culture where action should be intensified are shown below, which would have direct impact on the causes of accidents at work, resulting in a reduction in the number of accident occurrences:
- BUILDING THE COMMUNITY: emphasising the value of the health and life of all employees – integrating occupational safety objectives into the company's mission and core objectives, involving employees in decisions related to building a safety culture, taking into account employees' opinions on safety issues, without ignoring their ideas, initiatives, reports on safety issues (fostering a sense of responsibility and mutual trust); promoting safe and responsible attitudes through the example of managers, servant leadership (building a positive authority of managers), promoting mutual support in carrying out work so as to create safe working conditions (building a sense of shared responsibility - not only for oneself, but also for colleagues).

- EDUCATION: placing greater emphasis on good quality, up-to-date training related to OSH, building employees' knowledge and skills, and their relevance to organisational practice; periodic and ongoing verification of employees' skills and knowledge necessary for safe work; consolidating values such as thoughtfulness, defined as the ability to analyse and anticipate the consequences of ignoring rules, principles and norms, learning from past accident experience, not disregarding one's own experience and drawing on the experience of other people, organisations (considering positive and negative examples).

- COMMUNICATION: creating awareness in the workforce of the risks and consequences of unauthorised risks: meetings, briefings, continuous dialogue with employees (informing them of the implementation of safety plans, taking into account their ideas, initiatives), efficient processing of safety related information coming from various sources.

- REVIEWS, AUDITS: ongoing and periodic monitoring of technical condition of the material factor, status of compliance with OSH rules and regulations, applied solutions related to work organisation as well as technical and ergonomic solutions; improvement and periodic verification of management skills in the area of occupational safety management; implementation and improvement as well as reviews and audits of occupational safety management systems.

When analysing the issue of developing the workplace safety culture, it is important to bear in mind a kind of feedback loop between employee behaviours and safety culture: as Ejdys (2010) puts it – human behaviours, on the one hand, depend on the organisation's safety culture, while, on the other hand, it is human behaviours that shape this culture by reinforcing certain beliefs and attitudes. It is, therefore, important what kind of risk and safety beliefs become "vocal" in the organisation. The behavioural safety targets of rank and file employees and those of managers will be different (Cooper, 2016), but it is necessary to make – and the role of managers should be emphasised here – everyone "speak in one voice" on the subject of workplace safety. Although work on the psychosocial aspects of safety is a long-term process (Gabryelewicz, Krupa, 2015), it needs to be undertaken, and this is an important task for managers, because the nature of human potential requires moulding, guiding and setting an example for it, while full potential that does not require such interference emerges rarely (Ryan).

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