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The value of safety and safety as a value

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SAF€RA is a partnership between 19 research funding organizations from 10 European countries who collaborate on research programming and launch joint calls in the field of industrial safety. It prolongs the work developed in the SAF€RA ERA-NET, which was funded by the European Union's Seventh Framework Programme for research, technological development and demonstration.

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Abstract

Title	The value of safety and safety as a value
Keywords	values, culture, priorities, principles, corporate social responsibility
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Many companies describe safety as their top priority, but does that mean that safety is a (core) value? Values are operating philosophies or principles that guide an organization's internal conduct as well as its relationship with the external world. Values provide guidance for people on what is good or desirable and what is not. This means that values are more stable and can be expected to have a more sustainable impact on safety than safety as "just a priority".

The research presented in this document analyzes how safety values are defined and used in practice, in particular by managers, and how they affect employers' and employees' decisions and behaviour at work. The work comprises three complementary activities:

- a **literature review** on the value of safety and safety as a value, focusing on the moral, social and business dimensions that strengthen safety values;
- a set of **semi-structured interviews** with CEOs in several European countries, which collected their perception of safety as a value and its impact in company strategy and in the workplace;
- a **Delphi survey** (*N*=111), which collected consensus statements on the value of safety, on values that support safety, and the mechanisms that form and reinforce values that are perceived to support safety values in practice.

About the authors

The authors belong to two European R&D organizations, the Finnish Institute of Occupation Health (FIOH) and TNO (the Netherlands). The work has been undertaken in the context of the SAF€RA ERA-NET, a collaboration between 19 European organizations that fund research on industrial safety.

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Foreword

The value of safety and safety values

What is the value of safety? To quote the text of SAF€RA's 2013 call for proposals *Human and organizational factors including the value of industrial safety* which led to the research presented in this document, the term "value" may be interpreted in two ways:

> ▷ *In terms of **utilitarian ethics** ("the greatest good for the greatest number"), as the worth or the instrumental value of safety. Under this approach, firms analyze the business case for preventive or protective measures, to judge whether they are profitable; regulators use techniques such as benefit-cost analysis to assess the net value (difference between social benefits and costs) of proposed projects.*
>
> ▷ *In terms of **duty ethics** (adherence to rules that bind you to your duty), as the intrinsic value of safety, or the moral imperative not to cause harm.*
>
> *Both of these viewpoints are used in society's management of hazardous industrial activities. The utilitarian ethics viewpoint on the value of safety is adopted by firms and regulators in deciding whether a given level of spending on safety leads to a level of risk which is "as low as reasonably practicable". The duty ethics viewpoint is widely adopted in occupational safety legislation, and to a certain extent in firms' social ethics commitments (corporate social responsibility programmes, in particular).*

Though these two competing justifications for risk prevention often pull in the same direction, encouraging individuals and firms to undertake actions to avoid accidents, they may sometimes conflict[1]. There has been little research on the relative influence of these two justifications on individual safety behaviours, nor on how they affect decision-making and shape strategies at an organizational level, nor on how they are embedded within risk regulation in different industry sectors.

The research presented in this document provides some first answers to some of these questions. Do individuals perceive safety as a *value* (a deeply held principle or guiding philosophy), or only as a *priority* (an important element among others to be integrated in their arbitration between competing goals)? Do they believe that their employer treats safety as an (intrinsic) value, or as an (instrumental) goal, worth pursuing because it reduces losses and can impact productivity?

The SAFERA ERA-NET

This research project was funded in the context of the SAF€RA ERA-NET, a partnership between 19 research funding organizations from 10 European countries, who collaborate on research programming and launch joint calls for proposals in the field of industrial safety. The SAF€RA ERA-NET was funded for three years by the European Union's Seventh Framework Programme for research, technological development and demonstration. Since 2015, a majority of partners have decided to continue their collaboration, and launched a third joint call in 2016.

For more information on SAF€RA, see `www.safera.eu`.

[1] One classical illustration of this conflict is that of a surgeon with five patients who are dying of organ failure and one healthy patient whose organs can save the five. Utilitarian ethics would suggest that the surgeon should sacrifice the healthy patient to save the five others. A similar illustration is that of a fat man who may (under utilitarian ethics principles) be pushed in front of a runaway trolley if his being crushed by the trolley will halt its advance towards five workers who are trapped on the track.

Funding for this project was provided by the following partners:

- the *Finnish Institute of Occupational Health* (FIOH), a research and specialist organization in the field of occupational health and safety, funded person-months for its researchers who contributed to the project;
- the *Finnish Work Environment Fund* (FWEF), which funds R&D undertaken in Finland which improves the working conditions and promotes the safety and productivity aspects of the working place activities;
- the *Foundation for an Industrial Safety Culture* (FonCSI), a French public-interest research foundation working in the area of industrial safety;
- the *Netherlands Organisation for Applied Scientific Research* (TNO), a non-profit company in the Netherlands that develops and applies knowledge for private and public organizations, funded person-months for its researchers who contributed to the project.

Kenneth Johansson (FWEF) & Eric Marsden (FonCSI)
May 2016

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Introduction

Internationally, there is a growing attention for the value of safety and safety values. The International Atomic Energy Agency was probably the first international authority that stated that "safety should be a clearly recognized value" **[IAEA 2009]**. In the more recent European Guideline for offshore operations of the oil and gas industry, that industry is required to have 'safety as a core value'[2]. The expression "safety is our value" is also increasingly used by representatives of the industry and by consultants.

Many companies describe safety as their top priority, but does that mean that safety is a (core) value? Values are operating philosophies or principles that guide an organization's internal conduct as well as its relationship with the external world. Values provide guidance for people on what is good or desirable and what is not. This means that values are more stable and can be expected to have a more sustainable impact on safety than safety as "just a priority".

Many companies nowadays have defined their core values. In principle, these serve to define and develop their "corporate identity". The impact of shared core values is extensively addressed in the management literature. The well-known 'Seven S model' of McKinsey[3] states that shared values impact the structure, strategy, systems, style, skills and staff of organizations.

The value of safety contributes to sound business and organizational safety. Safety values are important because they underlie an organization's safety culture. Especially in an era of deregulation, globalization, economic downturn and the "changing world of work", values and culture are more stable than management systems or priorities.

In the last few years it has been increasingly acknowledged in safety research that (value-based) management commitment and an economic perspective is of crucial importance for safety performance. However, so far, there is little research on the value of safety, there is confusion on the definition and impact of safety values, and there are no evidence-based methodologies to support, promote and share safety values.

One can state that safety is a value in itself **[Zwetsloot et al. 2013b]**. There are good reasons to say that safety at work represents a value in itself. Safety certainly belongs to "what most people judge to be important in life" (a definition of value). However, that does not give us a definition or further insight into the value of safety, or safety values.

Document objectives

As there is no generally accepted definition of the value of safety, or safety as a value, this 'Value of safety' research project aimed to fill that gap. In this study, safety values and other supporting values for safety are addressed in the context of business strategy, corporate identity and corporate social responsibility. As values are abstract basic concepts, the question is how safety values are defined and used in practice by the key agents, especially higher managers, and how they affect employers' and employees' decisions and behaviour at the workplace.

In this study, the main objective was to develop a common understanding of how safety as a value is defined by a variety of key stakeholders — CEOs/managers, employee representatives, safety experts and researchers — and to identify practical dilemmas and bottlenecks in practicing safety values, and how organizations can effectively deal with these dilemmas.

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[2] Directive 2013/30/EU of the European parliament and of the council of 12 June 2013 on safety of offshore oil and gas operations.

[3] See for example mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/enduring-ideas-the-7-s-framework.

Structure of the document

The project comprised different research methods:

1. Literature review
2. Interviews with senior managers
3. Delphi study

In the literature review, described in chapter 1, we have reviewed the issue of value of safety and safety as a value in the research literature and in practice, including general background and context of values that support safety, focusing on the mechanisms that strengthen safety values (moral, social and business aspects), and the values that support safety.

We then developed a semi-structured interview method and form based on previous knowledge, research, and practices, and conducted interviews with several European CEOs, to provide practice-based information on safety values and their impact on organizations' functions. The results of the interviews are discussed in chapter 2.

Both the literature review and the interviews were used as a background when developing the Delphi study survey, which is presented in chapter 3. The Delphi study aimed to define consensus on value of safety, a definition of values that support safety (covering moral, social and business aspects), and identification of mechanisms that form and strengthen values that support safety values in practice.

The final chapter provides a discussion of the findings made in the study.

1

Literature review on the Value of Safety and Safety as a Value

1.1 Aim

The aim of the literature review was to review the scientific literature on the value of safety and safety as a value. Safety can be a value for organizations, for individuals (e.g. managers and workers) and for society at large. There are very few peer-reviewed scientific publications on the value of safety, other than on the economic value. In fact, the value of safety and safety values are implicit in most safety research (as the aim is usually to somehow contribute to the improvement of safety). However, it is only very seldom explicitly addressed in the scientific literature. Therefore, we have also included some non peer-reviewed publications in this literature review.

We first focus on the value of safety and safety as a value. Though there is not yet an accepted consensus on what safety as a value means, there is still some literature wherein practical issues with respect to safety values are mentioned. While it is likely that the respective authors give different meanings to the concept of "the value of safety", it seems nevertheless relevant to give an overview of the literature on the impact of safety values on daily routines, and on factors relevant for implementation.

1.2 The concept of value

Before focusing on value of safety and safety as a value, we need to briefly explore how values are understood in general, other than the monetary value of something. In table 1.1 we have listed some common definitions from dictionaries and, in summary, there are two different definitions:

1. value (especially in singular) is defined as the **importance of something**
2. values (especially in plural) are defined as **beliefs or principles that guide behaviour** as well as judgements and decision making.

[Rokeach 2000, p. 2] has described values as "core conceptions of the desirable within every individual and society". On the other hand, [Colley et al. 2013] defined values as beliefs regarding what is important, either for individuals, or for the organization as a whole. [Meglino and Ravlin 1998] include also social learning in the definition when describing that values are a "constant set of core beliefs held by individuals concerning how they should or ought to behave over a broad range of situations" which are difficult to change in adulthood, but can be modified during the socialization processes experienced during life. Values are motivational elements [Meglino and Ravlin 1998]. They give a reason to desire one alternative over another.

[Schwartz 2012] lists six implicit main features of values. According to him, values are beliefs, refer to desirable goals, transcend specific actions and situations, serve as standards or criteria, and are ordered by importance. Also, the relative importance of multiple values guides action. These features concern all the values. However, there are different motivations or needs underlying the values (e.g. needs for control, variety, pleasure etc.). Values can serve individual needs as well as needs that are important for group functioning.

[Keller et al. 1992] have shown in their work value study that 40% of the variance in measured values of individuals was related to genetic factors, and 60% of the variance was associated

Term	Definitions
value	"Importance or worth of something for someone" (English - English Dictionary 2015)
	"The importance, worth, or usefulness of something" (Oxford dictionaries 2016)
values	*"Principles or standards of behaviour"* (Oxford dictionaries 2016; English - English Dictionary 2015)
	"One's judgement of what is important in life" (Oxford dictionaries 2016)
	"[O]perating philosophies or principles that guide an organization's internal conduct as well as its relationship with the external world. Values provide guidance for people on what is good or desirable and what is not. They exert major influence on the behaviour of individuals and teams and serve as broad guide lines in all situations." (British Quality Foundation 2016)
	"The beliefs people have, especially about what is right and wrong and what is most important in life, that control their behaviour" (Cambridge Dictionaries 2016)
core value(s)	*"A principle or belief that a person or organization views as being of central importance"* (Oxford dictionaries 2016)
	"Set of concepts and ideals that guide someone's life and help them to make important decisions" (Collin 2009)
	"The main commercial and moral principles that influence the way an organization is run and the way it conducts its business, and that are supposed to be shared by everyone in the organization from senior management to ordinary employee" (Collin 2009)
	"A principle that guides an organization's internal conduct as well as its relationship with the external world. Core values are usually summarised in the mission statement or in a statement of core values." (BusinessDictionary.com 2016)

Table 1.1 – *Some definitions for value, values and core value(s)*

with environmental factors and error variance. This means that the values of individual people can be influenced significantly by environmental factors, but also that there are personality factors that cannot be influenced.

[Paarlberg and Perry 2007] investigated the question "Can workplace values be managed?". They found out that strategic values are motivating for employees to the extent that they reflect employees' internal affective, normative, and task-oriented values; a zone of existing values. According to **[Paarlberg and Perry 2007]**, values management is a social process that results from routine interactions, however, formal management systems provide opportunities to enhance the social interactions that are motivating to employees. They also described the process of aligning values being a social process that occurs through routine interactions between employees, managers, and even customers and other stakeholders, and the routine interactions that reinforce employees' existing values. They pointed out that middle managers play key roles in interpreting strategic values in terms of employees' values and employees' everyday work responsibilities, as well as communicating and rewarding performance toward those values. The middle managers are acting as integrators, connecting employees' individual values, derived from the societal, cultural, and religious experiences, with the organization's strategic practices. **[Paarlberg and Perry 2007]** concluded that values can be managed to a certain extent, but not completely.

1.3 Safety as a value and the value of safety

There are many different definitions of values. However, when speaking about *safety values*, the number of definitions is more limited. There is no unanimously accepted definition or mutual understanding of safety (at work) as a value.

Already in 1948, the United Nations Universal Declaration of Human Rights stated that "everyone has the right [...] to just and favourable conditions of work". In 1976, the United Nations International Covenant on Economic, Social and Cultural Rights reaffirmed that the above-mentioned statement covers "safe and healthy working conditions" **[Alli 2008]**.

[Cooper 2001] has stated that the idea of 'safety is a value' is based on the "fundamental philosophy that all injuries are preventable and that the goal of zero injuries can be achieved". **[Zwetsloot et al. 2013b]** call the "zero accident vision" the only ethically sustainable long-term goal for safety management.

Values are learned from others but after that strengthened and moulded by individual's experiences and values can be changed through socialization. Organizations can set safety as a priority but that does not automatically include the value of safety, certainly not for all individuals. However, systematic and consistent prioritization of safety can be seen as a tool for sharing values and encouraging members of the organization to acquire them.

One can state that safety is a value in itself **[Zwetsloot et al. 2013b]**. There is a good reason to say that safety at work represents a value in itself. Safety certainly belongs to what most people judge to be important in life (which was part of one of the definitions of a value, given above) **[Zwetsloot et al. 2013b]**.

In their white paper on Injury and Illness Prevention Programs **[OSHA 2012]**, US OSHA quote the CEO of Parsons cooperation:

> *Establishing safety as a value rather than a priority tells our employees and our customers that safety is built into our culture, not something we do to merely comply with regulations.*

The value of safety is expressed through the organization's safety policies, practices, and procedures **[Sinclair et al. 2010]**. In safety-critical organizations, a framework supplied by value-focused thinking helps to understand decisions made by operators **[Merrick et al. 2005]**.

Safety values are defined by Newman and her co-workers **[Newnam et al. 2012]** as the importance associated with safety within an organization. According to Newnam et al., safety values are predictors of the safety information exchange between supervisors and employees. **[Newnam et al. 2008]** concentrated on intrinsic value of safety, rather than extrinsic motivators, such as rewards and punishment.

Perceptions of workplace safety values are transmitted across levels of the organization. **[Fu and Chan 2014]** defined safety values at Taipei International Airport as safety practices which are implemented even under the pressure of competing tasks.

Safety is considered as a value and "having safety as a value" is a commonly encountered aspiration for organizations. For example, the Robert W. Campbell Award[4] identifies safety as a value by recognizing organizations that "uphold EHS as a key business value and link measurable achievement in EHS performance to productivity and profitability".

Since values are motivational elements **[Meglino and Ravlin 1998]** and they give a reason to desire one alternative over another, they give a great potential when trying to improve safety performance. However, this does not give us a definition or further insight into the value of safety, or safety as a value.

[4] The Robert W. Campbell Award. (2015). Recognizing Business Excellence in Safety and Health. The Campbell Institute 2015. Available at campbellaward.org. [28 July 2015].

1.4 Relations of value of safety to safety culture and climate

Safety values are closely connected with organizational culture. As for safety values, there is no unanimously accepted definition of safety culture. Organizational culture is defined as shared values and beliefs that interact with company's people, organizational structures and control system to produce behavioural norms [Edwards et al. 2013]. On the other hand, [Guldenmund 2000] includes beliefs and values about work, people, the organization and the community that are shared by most members within the organization as a part of organizational culture.

According to [Schein 1997, 2007], there are three levels of organizational culture: **basic assumptions, espoused values, and artifacts**. Basic assumptions are the core of an organizational culture, although they cannot be directly perceived. Espoused values are values and rules of behaviour stated by the organization, and they are often expressed in official philosophies and public statements of identity. The visible aspect of an organization's culture is reflected in artifacts, which are identifiable and easy to measure, but it might be difficult to clarify their links with the underlying layers of the culture. The influence of the deeper layers of culture – the basic assumptions and values – on the members of the organization remains largely unconscious or even subconscious [Hofstede et al. 2010; Schein 1997, 2007], and is transferred to new members of the organization through implicit socialization processes. For a long-lasting safety improvement, a change in the organizational culture can be needed [Schein 2007, 2009], by not only limiting the change to the artifacts or espoused theories, but also extending the changes to the 'basic assumptions,' which are assumed to include internalized values [Giddens 1991].

According to [Schein 2010], culture can be best thought of as what a group has learned throughout its history in solving its problems of external survival and internal integration. Its core is the shared, tacit assumptions that have come to be taken for granted and that determine the members' daily behaviour. These assumptions are stated as norms of behaviour or as the way things are done around here; how, for example, safety issues are managed.

[Schein 2014] also points out that the way in which people view safety and how cultural factors impact safety issues is also influenced by national cultures and, even more importantly, by occupational cultures. In every organization there are subcultures, which have their own subsets of assumptions on safety. For example, executives are concerned about the financial conditions, the designers are interested in process safety and the operators in coping with all the surprises of standardized operations [Schein 1996]. These subcultures have their roots and origins in the occupations and professions, not merely inside the organization. There are also cultural variations of the occupations in different industries.

Safety culture concerns meanings, interpretations, attitudes, values, beliefs, rules and procedures related to safety [Díaz-Cabrera et al. 2007]. Safety culture is seen as an organization's *ability and will to understand* what safe operations are, what risks an organization's activities involve, and how they can be prevented. It is also the *ability and will to act* safely, prevent the realization of risks, and to promote safety. Safety culture combines the experiences and perspectives of employees, the social phenomena of work communities, and organizations' operational processes [Reiman et al. 2008].

According to [Reason 1997], a characteristic of a positive safety culture is a "just culture": an atmosphere of trust that encourages people to deliver OSH-relevant information and where everybody knows what is acceptable and unacceptable behaviour. Justice and reliable information, even if it is bad news, generates credibility and confidence in safety management. Reason also emphasized the importance of informedness and trust as values that are necessary elements of a good safety culture.

The definitions of **safety culture** and **safety climate** often share the same words, illustrating the weak boundary between organizational climate and safety culture. Safety climate describes individual perceptions of the value of safety in the work environment [Neal et al. 2000]. Organizational safety climate is a specific form of organizational climate, which denotes the shared perception of safety values, norms, beliefs, practices, and principles that workers have of their work environments [Gyekye et al. 2012; Gyekye and Salminen 2009a,b]. An anthropological view sees safety culture as a set of underlying beliefs, attitudes, values and assumptions shared by members of an organization [Edwards et al. 2013].

In addition, [Díaz-Cabrera et al. 2007] found in the factor analysis of organizational safety climate a factor including the following values: values ruling fulfillment, values in sincerity and participation, values of goal achievement, values in collaboration in goal achievement,

values participating in safety promotion, values ruling observation, values contributing creative ideas, and values initiating in finding new solutions. [Griffin and Neal 2000] developed a five-dimensional safety climate survey tool including a four-item scale about the degree to which managers were perceived to value safety in the workplace.

As stated by [Amalberti 2015], "safety culture [...] is often cited as the final step in achieving an optimal level of safety..." [nevertheless having the lowest priority in the total of optimizing processes in many cases, which makes its effect restricted by earlier choices]. There can, however, be little doubt that (shared) values underlie also the decisions about technology, business opportunities, etc.

1.5 Safety-related supporting values

[Dierdorf and Morgeson 2013] wrote that achievement (accomplishment and utilization of one's abilities), independence (reinforcement and stimulation of initiative and creativity), altruism (fostering harmony and service to others), status (advancement, recognition and prestige), and comfort (supportive and free from stress) were safety-related values. On the other hand, [Colley and Neal 2012] had identified 42 concepts across a series of interviews, which were indicators of the value and importance ascribed to safety.

[Gregory et al. 2009] mentioned five culture domains, associated with competing values:

1. Group culture, which included belonging to the group, cohesiveness, participatory decision making, and support from co-workers,
2. Development culture: flexibility and adaptation
3. Rational culture considering goal attainment, productivity, achievement and competition
4. Hierarchical culture: internally focused control, job security
5. Balanced culture including values associated with each domain are strongly held.

The basic values of security cover an emphasis on safety, harmony, and stability [Hystad and Bye 2013].

In the book of [Townsend 2013] there is attention to safety values and beliefs. He analyses the values and beliefs of 11 companies and the UK Health and Safety Executive (HSE), based on the companies' CSR reports and a HSE report. Based on the idea that a value is what is important to the organization, he regards statements like "injuries are unacceptable" as a value. As a follow-up, Townsend analyses how consistently they then translate these values into "key themes and concepts" i.e. commitment, audits, worker/staff behaviour, competency, communication, skills, ability and proficiency, shared values and attitudes, motivation, and mutual trust and reciprocal dialogue.

[Zwetsloot et al. 2013b] identified twenty-nine values and value related factors that are described in the literature as supportive to Health, Safety and Well-being at Work. These were clustered around seven core values. These seven core values were then grouped in three value clusters. The first value cluster is characterized by a positive attitude toward people and their 'being'; it comprises the core values of interconnectedness, participation and trust. The second value cluster is relevant for the organizational and individual 'doing', for actions planned or undertaken, and comprises justice and responsibility. The third value cluster is relevant for 'becoming' and is characterised by the alignment of personal and organizational development; it comprises the values of growth and resilience.

1.6 Mechanisms that form and strengthen organizational safety values

Values can be conveyed through organizational socialization, when leaders set the values of the organization and propagate them to employees. This requires that values serve some kind of function for the individual or they must be presented as the only possible interpretation of the situation [Meglino and Ravlin 1998].

Some mechanisms have been found that strengthen safety values. For example, supervisor safety practices are associated with stronger safety values, and drivers were motivated to drive safely if they perceived that both their supervisors and the fleet manager value safety.

Management tend to be associated with global policies and safety culture, and so influence safety at an industry level. On the other hand, supervisors and workmates influence safety climate and group values and thus showed a greater influence on local safety performance. At the shop-floor level, the guidelines and values are modified or reinterpreted. Level of trust in workmates was the strongest predictor of involvement in near-miss analysis [Conchie and Donald 2006]. Trust/mistrust attitudes towards management were identified as the strongest influence on safety performance [Conchie and Donald 2006]. Trust is a necessary condition for the spread of safety values (compare with [Reason 1997]). Well-aligned words and actions send clear signals to employees that appropriate safety behaviour will be rewarded and inappropriate safety behaviour will be sanctioned.

Trade unions make workplace safety a high priority in contract bargaining. Safety motivation was related to the union and supervisor safety values, but safety knowledge was not related to safety values [Sinclair et al. 2010]. When seafarers had high levels of hardiness, personal values had no effect on safety behaviour. On the other hand, when hardiness was low, conservation values (security) seemed to increase safety behaviour [Hystad and Bye 2013].

In learning from accidents, [Saleh and Pendley 2012] used the concept of safety value chain. It identifies those who contribute to accident prevention and sustaining system safety. It also highlights the agencies influencing and contributing to accident prevention and system safety. The safety value chain includes operators, technicians, engineers, system designers, managers and executives, shareholders, regulator representatives, safety inspectors, and accident investigators [Saleh and Pendley 2012]. [Gregory et al. 2009] listed managers' support, empowerment, mentoring and supporting teamwork as ways to improve safety values.

1.7 Impact of safety values on daily routines

It is known that CEOs and production managers play a key role in safety management and safety promotion in their organization. Their commitment depends ultimately on their values and those of the organization, and of its key stakeholders.

Safety and environmental matters are the first on the agenda, said an English CEO [Karr 1999]. When managers espouse safety values in their speeches, employees perceive the leader's concern for safety as more genuine, and are therefore more likely to speak about safety issues [Halbesleben et al. 2013]. Responsibility of Australian fleet managers in safety management could be acknowledged more formally, in order to strengthen the fleet manager's role to ensure the organizational approach to fleet safety. They also provide feedback to drivers on their safety performance in a work vehicle [Newnam et al. 2008]. A supervisor who values safety is more likely to be committed to prioritizing safety within their work role tasks, and this tendency is consistent with their safety actions [Newnam et al. 2012]. 88% of British senior directors indicated that employee morale and company reputation would be adversely affected by a poor health and safety culture [Smallman and John 2001].

In their study, [Colley and Neal 2012] found that corporate values were more central to supervisors' schema than to senior managers' schema. Corporate values play an important role for supervisors in the way that they approach and deal with safety. Issues relating to the work environment, e.g. trade-off between safety and productivity are more central for senior managers than for supervisors.

When workers perceive their organization to be supportive, they also perceive management as valuing their safety [Salminen et al. 2013]. Older workers had the best perceptions of safety, management's concern for workers' safety, and efficacy of safety programmes in place at the worksite [Gyekye and Salminen 2009a]. Workers who perceived organizational support as relatively high considered their company's safety programmes worthwhile, good, useful, first-rate, and important more often than other workers [Gyekye and Salminen 2007].

Values influence employee perception of safety [Colley et al. 2013]. Blue collar workers valued safe surroundings more than top managers in a large Finnish metal factory [Salminen and Koivula 2006]. Trade unions' safety values influence safety outcomes through its association with higher safety motivation, showing a similar effect to that of supervisors' safety values [Sinclair et al. 2010]. American contractors should emphasize organizational safety values to new workers during the selection process [Lai et al. 2011]. Seafarers with a stronger emphasis on conservation values reported a higher level of safe behaviours [Hystad and Bye 2013].

Safety values are also important among American college students. They predicted safety practices among students. Female students were found to be more conscious about safety values than male students [Crowe 1995]. In an American hospital, group culture and balanced cultures (with values necessary to operate in all four quadrants) achieve higher levels of patient satisfaction [Gregory et al. 2009].

Safety values are also included in questionnaires used at workplaces. For example, a social capital questionnaire includes items like feelings of safety and value of life and social agency [Kritsotakis et al. 2011]. A balanced cultural profile is associated with better safety [Colley et al. 2013].

According to previous studies, we can say that a person's status in the company contributes to how they considered valuing safety affects daily routines. Top managers report that safety is at the top of agenda, and often it is held among the first issues in meetings. On the other hand, employees look at safety values in a more practical way concerning their personal safety.

1.8 Barriers for implementing safety-related values

Values cannot be easily implemented. It is relatively easy to espouse (safety) values, but "values have to be 'lived', by most individuals and be confirmed in social interactions before they are really internalized as 'shared values'" [Zwetsloot et al. 2013b] and become an integral part of the corporate culture. Implementing values therefore takes a lot of time, say 5-10 years. Nevertheless, such a long-term development can be regarded as implementing safety-related values.

Values set for the organization may lose their priority if an organization rewards value violation, or when individuals are forced to choose between conflicting values [Meglino and Ravlin 1998]. Few studies have been done concerning barriers for implementing safety-related values. For example, managers in health care may be forced to espouse high safety values, without being able to follow-up on these expectations themselves. In addition, looking at only one indicator (e.g., frequency of injuries) may not represent the whole picture of safety [Halbesleben et al. 2013]. In an Australian transportation fleet, it is uncertain whether senior-level managers had given supervisors directives on how to manage their fleet safely [Newnam et al. 2008].

[Colley and Neal 2012] argue that bottlenecks in transferring and reinforcing the safety message may occur because of the communication styles and differing values of supervisors. Managers are more likely to emphasize components of safety that are prominent in their individual mental representation of safety (such as corporate values and organizational safety priorities), and pay less attention to topics that are central to the representations of employees (e.g. practices, procedures, and training). Employees often do not share unified beliefs about the value of safety with managers.

Line managers have to manage the dual goals of productivity/efficiency and safety. If a productivity schema is more salient and important in the thinking of individual managers, they may over-emphasize productivity and under-emphasize safety. Information that is communicated to employees that is inconsistent with their existing schema may not be recalled as easily and may be given less attention or even ignored. When these reasons are combined, it becomes important to develop and implement strategies to minimize miscommunication arising from misaligned safety schema [Colley and Neal 2012].

Prevention of occupational injuries should be focused on concerns with safety and responsibility [Higgins 2002]. The threat of work stoppages or grievances should increase management awareness about safety concerns and increase the likelihood that existing policies are followed [Sinclair et al. 2010].

These studies showed that barriers related to safety values are often connected to the wider culture in corporations.

1.9 Corporate social responsibility

In our study, we regard organizational safety as a vital aspect of corporate social responsibility (CSR), and as an aspect inherent in any business and production processes, which is important for the corporate identity. This is most clearly the case in companies committed to "vision zero": they feel their identity does not allow for (serious) accidents **[Zwetsloot et al. 2013a]**.

There are at least 37 different definitions of corporate social responsibility (CSR) **[Carroll 2015]**. CSR is a form of company self-regulation integrated into a business model. CSR policy functions as a self-regulatory mechanism whereby a company monitors and ensures its active compliance with the spirit of law, ethical standards and national or international norms. The term "corporate social responsibility" became popular in the 1960s and has remained a term to cover legal and moral responsibility more narrowly construed. **[Davis 1973]** insisted that social responsibility begins where the law ends. On the other hand, **[Epstein 1987]** connected corporate social responsibility and business ethics together into corporate social policy process. **[Buytendijk 2010, p. 124]** wrote that a moral discussion on corporate social responsibility was debated in the 1980s, but now it is an acceptable standard set of behaviour.

According to **[Carroll 1979]**, the first conceptual model of corporate social performance had three dimensions: 1) corporate social responsibilities, 2) the social issues must be identified, and 3) a response philosophy be chosen. Based on these dimensions, he presented the following definition: "The social responsibility of business encompasses the economic, legal, ethical and discretionary expectations that society has of organizations at a given point in time" (p. 500), where legal, ethical and discretionary aspects were borrowed from **[Aupperle et al. 1985]**. In the empirical test of 241 CEOs, **[Aupperle et al. 1985]** found a strong inverse relationship between the economic and ethical dimensions, which suggested a natural conflict of strategy. Later, **[Carroll 1983]** replaces the discretionary expectations by a voluntary or philanthropic function. **[Carroll 1991]** summarized that "the CSR firm should strive to make a profit, obey the law, be ethical, and be a good corporate citizen".

The World Business Council for Sustainable Development defined corporate social responsibility as "the commitment of business to contribute to sustainable development **[Holme and Watts 2000]**, working with employees, their families, the local community and society at large to improve their quality of life". On the other hand, **[Buytendijk 2010, p. 172]** defined corporate social responsibility as "a balanced approach for organizations to integrate social and environmental concerns in business operations in a way that aims to benefit the organization and its internal and external stakeholders". Corporate social responsibility is only one side of sustainability. The other researchers see that the social responsibility of corporations is to maximize profits **[Friedman 1962]**, whereas the others see that corporations have a moral obligation to society. Based on his lexicographic view of social responsibility[5], **[Johnson 1971]** suggested that strongly profit-motivated firms may engage in socially responsible behaviour.

Corporate social performance has been found to be positively related to both past and future financial performance. Thus, good management and corporate social performance are positively related **[Waddock and Graves 1997]**. Corporate social responsibility is highly correlated with the level of research and development (R&D) activities in the company but not with financial performance **[McWilliams and Siegel 2000]**. Based on the 31 studies, **[Ullmann 1985]** concluded that there is no discernible relationship between corporate social performance and financial performance. The reasons are a lack of good data and valid, reliable measures.

In the long run, corporate social responsibility builds corporate brand image, strengthens stakeholder–company relationships, and enhances stakeholders' advocacy behaviours for the company **[Du et al. 2010]**.

Negative effects of corporate social responsibility were argued by **[Henderson 2001]**. He insisted that corporate social responsibility represents a clear break from traditional corporate value-setting. In the developing world, companies can benefit from corporate social responsibility, for example through the reduction in welfare fees they are required to pay. From a sociological point of view, corporate social responsibility is best analyzed based on the world-capitalism paradigm **[Shamir 2011]**.

[Carroll 2015] has presented three scenarios about the future of corporate social responsibility. In the Gloomy Scenario, the concept faded from the scene and disappeared from business's

[5] In the lexicographic view of social responsibility, a company pays attention to social issues only after meeting its profitability goals.

agenda. The Hopeful Scenario is more optimistic, assuming that companies around the world increase their corporate social responsibility programmes. The Probable Scenario says that at least three factors – business acceptance, global growth and academic proliferation – keep the concept of corporate social responsibility alive and well. He assumed that the last one will be the trajectory for corporate social responsibility over the coming five years or more.

[Elkington 1997] introduced the framework of the *triple bottom line (TBL or 3BL)*, by adding (apart from the economic bottom line) two more bottom lines; social equity and environmental factors, also known as 3P's: People, Planet and Profit. **[Fisk 2010]** states that the concept of 'People, planet and profit' is much more than the conventional idea of CSR, which he describes as compensating the damages already done. **[Henriques 2004]** has noted that the TBL approach is necessary for sustainability, but on its own is not totally sufficient. **[Fonseca 2015]** has suggested extending the TBL by adding 'personal and family happiness' as a fourth dimension. There are also other suggestions for additional dimensions, e.g. how organizations treat their employees[6], progress[7], spirituality **[Inayatullah 2005]** and compassion[8]. Dialogue with stakeholders is often regarded as vital for CSR. It can hereby be useful to distinguish between external and internal stakeholders, the latter being the employees (who have a natural interest in safety and health at work **[Zwetsloot and Starren 2004]**).

The value that safety has for organizations can only partly be expressed in monetary terms, because issues like trust, better industrial relations, or avoiding painful conversations with relatives of victims cannot be expressed adequately in monetary terms. The focus in safety management is usually on the "rationalities of prevention", doing things right, which implies an operational focus. When this is combined with value management and doing the right things **[Zwetsloot 2003]**, a strategic approach to safety management is needed. Defining the value of safety in the context of business strategy and CSR seems a logical next step for safety improvement.

1.10 Conclusions

With the literature review we aimed to provide information on the general background and context of safety values, to define safety value, and to explore value perspectives. The literature review offers essential background information for the development of methods (surveys, interviews) presented in the next two chapters.

[6] Lawler, E. E. (2014). *The Quadruple Bottom Line: Its Time Has Come*, Forbes, forbes.com/sites/edwardlawler/2014/05/07/the-quadruple-bottom-line-its-time-has-come/.

[7] Cambridge Leadership Development. (2013). Quadruple Bottom Line for Sustainable Prosperity. Available from: cambridgeleadershipdevelopment.com/quadruple-bottom-line-for-sustainable-prosperity/. [29 February 2016].

[8] The Values-Based Business. (2014). Compassion as the fourth bottom line?. Available at http://valuesbased.biz/2014/08/10/compassion/valuesbased.biz/2014/08/10/compassion/. [29 February 2016].

Key issue

The following conclusions can be drawn from the literature review:

1. There is not yet a clear and broadly accepted definition of the value of safety or safety values.
2. Safety is a value in itself, associated with a basic human right.
3. The value of safety is often implicitly associated with the importance associated with safety in the organization.
4. "Safety as a value" goes beyond "safety as a priority". Organizational values have a more strategic impact than priorities. They can also be expected to have implications for a longer period, as priorities may easily change, while shared values are much more stable over time.
5. There are several safety-related values that are important for developing or supporting safety practices and/or safety culture. The most well-known are justice **[Dekker 2007; Reason 1997]**, trust and informedness **[Reason 1997]**. Trust between managers and employees, as well as a just culture seem to be necessary preconditions for the spread of safety values.
6. Safety values are closely related to organizational culture. But safety culture is a broader concept (also with many definitions), which includes, in addition to values, norms, beliefs, practices and principles that can be related to safety.
7. Top managers and supervisors can strengthen safety values by consistent actions.
8. It is important to distinguish between values that are really shared and lived-up to, and espoused values, which are mainly communicated verbally and in writing. When there is a difference between the two, employees will not believe the espoused values.
9. Employees look at safety values in more practical ways than managers and often do not share the same safety values as managers.

2

Interviews with stakeholders

2.1 Objectives

The second phase of the Valosa project involved interviews with senior managers, to obtain practice-based information on safety values and their impact on an organization's functions. The aim of the interviews was to find out:

- How safety values are defined
- What are the background and motives for safety
- How values are shared
- How values affect daily routines

The information gathered in interviews was used to develop the topics and questions for the Delphi study, which is discussed in chapter 3.

2.2 Data

Seventeen CEOs or top managers in 15 organizations from five European countries (Finland, Germany, United Kingdom, Spain, and Turkey) were interviewed. The organizations represent different sectors: Industrial services, Construction, Production, Trade, Transportation & Logistics, Waste, Power plants and Food. The number of employees working in the organizations varied from 100 to 70000. The interviewed CEOs and managers had up to 16000 subordinates. Some of the organizations were global companies.

2.3 Method

The semi-structured interview method was developed based on the literature review. The interviews were carried out as face-to-face interviews or using telephone or Skype/video meeting connections. A summary of the interview was sent to the interviewee for revision and comments when desired by the CEO/manager. Each interview lasted approximately one hour, and covered:

1. Background information of the interviewee and organization
2. Corporate values (core values, meaning of safety)
3. Background and motives for safety
4. How an organization shares the value of safety
5. Values in everyday work (motivation, dilemmas on value conflicts, value differences in different personnel groups)

2.4 Results

2.4.1 Corporate Values

In every company concerned by the interviews, corporate values were defined and some of the CEOs/managers mentioned that values were defined together with the personnel. In most cases, there were five core values, for example on respect, quality or safety. However, safety was not always mentioned as a core value, since safety was seen as so embedded in the core business (demonstrated in the mission statement) that it was not regarded necessary to also include safety explicitly in the company's core values. Safety culture was seen to "dominate" organizational culture: safety is an "umbrella of core values".

Safety was seen as:

- a priority, more important than productivity or any other thing
- a quality of work/product (sign of an expertise, efficiency of production)
- an investment for employees and the future of the company
- a goal, but also as an objective: a part of one's everyday work

The core values also corresponded with the interviewed CEO's/manager's own personal values. According to the CEOs/managers, it is important that the same values are shared also in personal life; thus one can commit themselves to the company's values, and can defend the values and "walk the talk".

2.4.2 Background and motives for safety

The background and motives for safety were based on the view that safety is a necessity, an integrated/built-in part of action/business or the core of the business. Safety risks and problems were seen as signs of poor management: an answer to how well the business is managed. The company was also seen to be responsible for taking care for human well-being (both their health and safety), the families of employees and society. Good safety and good working conditions were also seen as a way to attract employees, to commit them to the company: *"Safety costs money, but in return you get: involvement and passion for the job."*

The people interviewed perceived good safety to be a sign of:

- good business
- good management
- a responsible and respected employer
- engaged employees

The importance of safety was also partly based on the demands of the authorities or customer and the surrounding society: Legislation and instructions of authorities, information requirements (e.g. audit, accidents reports) of customers, reputation among customers and in the society. These reasons were, however, mentioned as secondary motivations for safety. As one CEO said: *"Neither the legislation nor the customers set pressure; the company is ahead of them"*. It is the companies themselves that have the responsibility for safety. Taking care of the company reputation was seen as one of the factors which motivates companies to do their best in safety. The government's role is important to control, for example for the development of new equipment, or chemicals, however, it should be done with trust and not only with more paperwork. All this also requires that the company can afford and have resources to take care of safety. It was mentioned that the societal responsibility and the costs requirements do not always go together.

2.4.3 Sharing values

The most common way to share the value of safety was communication. Regular (managerial) meetings (safety as the first thing in the discussion list), safety walks, information sessions, leaflets, posters, videos, campaigns and yearly safety events were mentioned as ways to communicate with employees on safety related issues. Employees were also invited and encouraged to 'blow the whistle' or leave a complaint in a safety box about their safety concerns. The spreading of the safety story throughout the organization was mentioned as a much better way of dealing with safety than with the standard toolboxes and audits.

The importance of **role behaviour** of the management was also emphasized in the CEO/manager interviews. Management visits to the workplace were seen as a good way of showing the value of safety for employees. Opportunities to discuss with management were raised as a key solution especially in cases where the company wanted to modify their safety culture. In one of the studied companies, the CEO had small group meetings with all of the employees to spread the safety message.

Core values can be used in communication and strategy anchoring. In addition to this, values have been useful in cases of problems with an individual's behaviour (behaviour is in conflict with the organization's values). Values were seen as an excellent instrument to give constructive feedback in such situations and to open up discussion.

The second most common way to share the value of safety was **training**. In particular, orientation of new employees was mentioned as a way to share the value of safety. However, sometimes all employees get regular training on safety related issues. Also a culture of continuous professional education was mentioned as a goal of the company. In some cases, compatibility with a company's values is explicitly used as selection criteria during recruitment.

The third way to share the value of safety was the company's development climate: the openness to new ideas, continual development of practices and products, following the development in other companies or field of business. These were often mentioned as a "good practice", a sign that the company values safety and does its best to improve it.

Interviewees also mentioned transparent reporting for accidents and near misses; an open process to investigate accidents and near misses; and yearly self-evaluation or measurement of safety changes work habits/proactive behavioural measures. In some companies, the aim was also to develop measurement to be more proactive, not only measures of things that had already happened or almost happened. Instead, the aim was, for example, in future to analyze the data to find 'tip of the iceberg' issues or problems.

Less commonly mentioned ways were:

- use of safety bonuses: sometimes it was for management only, but in some cases for each employee
- an annual performance appraisal of employees (a tool to discuss the gap between managers' and employees' own perceptions)
- involvement of supervisors and employees in decision-making
- fair and honest project calculations
- co-operation with other companies, networks, and universities or schools
- a company's own initiative to organize once or twice a year a high-level meeting on safety together with other parties

2.4.4 Values in everyday work

The CEOs/managers also recognized some challenges in successfully sharing the safety values of the company in everyday work. The challenges inside the company are related to:

- employees' attitudes towards safety, complying with regulations and standards
- the dilemma of the costs of best safety available and the financial situation/decision

To tackle employees' attitudes towards safety, different approaches are used. For example:

- motivating the less motivated people was seen as the duty of managers/supervisors
- use of fast and flexible work habits in the tasks in which safety is required

- paying attention to planning and scheduling, not accepting haste as an excuse
- "competing" on safety

The attitudes towards using money (pay) as a way to motivate employees were contradictory. Whereas in some companies good wages were used as a source of motivation, in others they were not – *we don't offer a salary: we offer a future, a perspective*.

It was recognized that the high ambitions on professionalism and craftsmanship sometimes lead to frustration, e.g. in case of disappointments when things don't work out because of planning/money issues. This can be a trigger for unsafe acts. Also the need to innovate and find new ways of working can be exciting and unsafe at the same time. Finding the right balance in these issues was seen as a challenge.

The CEOs/managers saw the safety attitudes as an individual-based issue and, for example, gender was not seen to have a role in it. The differences were seen between individuals in every group. However, views related to the role of age differed. Sentence should become: Some CEOs/managers said that younger employees have better safety values and culture compared to older employees; while some saw older employees as opinion leaders. Some said that young employees might face more accidents, but it's about lack of skills and lack of understanding of risks, and some said that young employees used more often personal protective equipment than older ones. Some saw differences in values and safety culture between different locations. However, it seems that the main problem is that risk is not recognized, which is why employees continue to work in unsafe ways or situations.

The challenges related to the surrounding society are:

- (Sub)contractors' safety values or quality standards: e.g. in the common workplace, where the habits of different companies do not match
- Country culture: e.g. attitudes towards safety, education
- Global situation: e.g. conflict areas (general safety level in a country)
- EU directives on governmental tendering: e.g. suppliers are competing on price only, and that safety qualities of products and services are not considered

To tackle the inconsistency of company's own safety values and requirements and the values and requirements of (sub)contractors, some companies offer safety training to their contractors or require, for example, a general occupational safety card.

2.5 Conclusions

The interviews showed that in every company the corporate values were defined. However, safety was not always mentioned as a core value, since safety was seen so much embedded in the core business (demonstrated in the mission statement) that it was not regarded necessary to also include safety explicitly in the company's core values. The core values also correspond with the interviewed CEO's/manager's own personal values, thus they could commit themselves for company's values, can defend the values and "walk the talk".

Safety was seen as:

- a priority, more important than productivity or any other thing
- a quality of work/product (sign of an expertise, efficiency of production)
- an investment for employees and the future of the company
- a goal, but also as an objective: a part of one's everyday work

The background and motives for safety were based on the view that safety is a necessity, an integrated/built-in part of action/business or the core of the business. The importance of safety was also partly based on the demands of the authorities or customer and the surrounding society: Legislation and instructions of authorities, information requirements (e.g. audit, accident reports) of customers, reputation among customers and in the society. These reasons were, however, mentioned as secondary motivations for safety.

Good safety is a sign of:

- good business

- good management
- responsible and respected employer
- engaged employees

The most common ways to share the value of safety were

- communication (regular meetings, different kind of information material, joint discussions)
- training
- continuous development of practices and products

3

Delphi study

As the literature review showed (*cf.* chapter 1), there is no generally accepted definition for "safety as an organizational value" or "having safety as a value". Along with exploration of the definition and possibilities of the concept of a safety culture, the question of the relationship between organizational values, safety as a value, and safety has arisen. To state that safety is a value or core value is very abstract and the meaning in practice is unclear. Through the Delphi study, we aimed to fill that gap.

3.1 Objectives

The aim of the Delphi study was to **develop consensus** on:

1. a) what it means when safety *is* an organizational value and b) the value safety *has* for organizations (i.e. added value)
2. the most relevant factors that *influence* the value of safety
3. factors that are *expressions* of having safety as a value and can be used to recognize or perhaps measure safety as a value
4. the *ethical* justification of "having safety as an organizational value"

3.2 Data collected

The sample was gathered amongst European safety experts from various backgrounds and positions who were deemed to have a valuable (expert) opinion on the topic of safety. Various CEOs and production managers, safety engineers, workers or workers' representatives, representatives of local or national authorities (including inspections), safety researchers or experts, and (social and privacy) insurers spread over Europe were invited. The connections were received via the researchers' professional networks, via the participant lists of safety conferences, and through a list obtained from www.CEOemail.com.

All respondents were invited via a personal email. A link to the online questionnaire was included in this email. All questionnaires were filled out via TNO's online survey system. The questionnaire was available in Dutch, English, and Finnish and respondents were able to chose their preferred language. The first round took place in the period between May and July 2015. On May 27th, the first invitations were sent and on June 8th a reminder was sent. The round was closed on July 3rd. Respondents were given a short introduction to the purpose of the Delphi panel before being presented with the various prepared statements.

Round 2 took place in November 2015. Participants were invited on the 3rd of November and reminders were sent on the 19th. This round was closed on the 23rd of November. During the second round, the panel was given a summary of the results from the first round and the panel members received an overview of the responses for the items where no consensus had been found in the first round. Concerning the latter, the experts were first asked to reflect on the overview and their response, and secondly, whether they would like to revise their original score.

For the first round of the Delphi panel, 750 individuals were approached by email to participate in the first round of the Delphi panel. This included 257 professionals from the personal

networks of the involved researchers and 493 additional CEOs, whose contact information had been obtained through www.CEOemail.com.

In total, 111 individuals started the questionnaire, indicating a total response rate of 14.8%. However, this response rate is biased since only 15 individuals from the list of 493 CEOs responded (response rate 3.0%). The response rate from the personal network was 37.3% with 96 participants.

Only individuals who had less than 50% missing values were included in data analysis, leaving 82 (73.9%) individuals (6 from the CEO list). Figure 3.1 shows the distribution of respondents' self-reported backgrounds. Individuals from 17 European countries participated. Furthermore, it was known that 65.9% were male and that 50.0% were older than 50, 39.0% between 35 and 50, and 7.3% younger than 35 (3.7% missing).

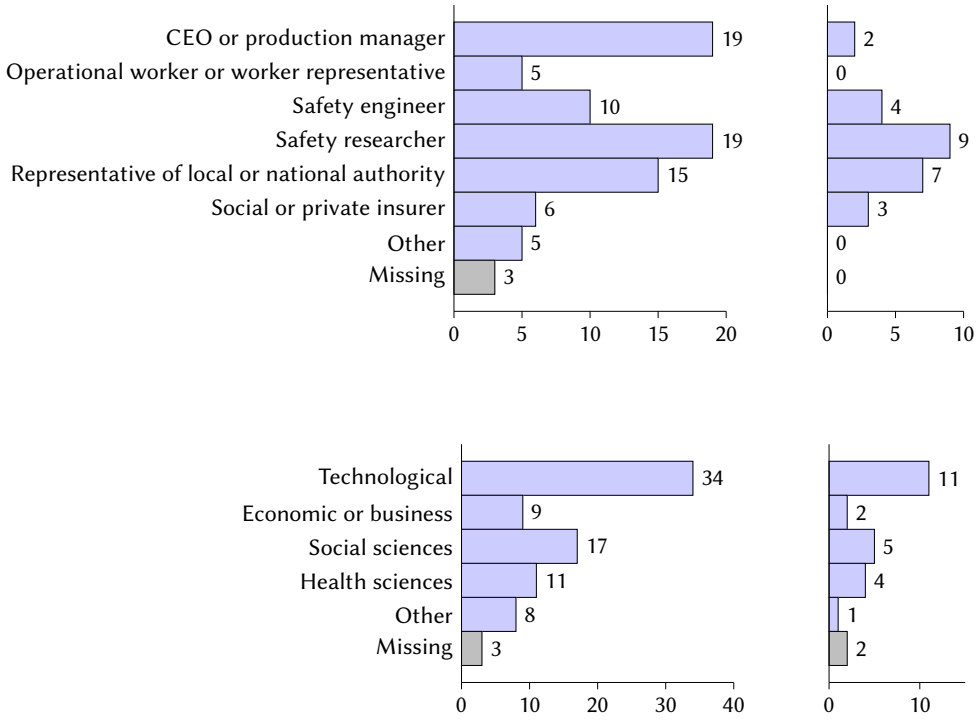

Figure 3.1 – *Functions and backgrounds of the respondents participating in the Delphi panel (left: round 1, right: round 2)*

The 82 participants who completed round one were invited to participate in round two. In total, 36 respondents started with the questionnaire from round 2 (43.9%). Only 25 participants (2 still from the www.CEOemail.com list) had fewer than 50% missing values and were included in the analysis. Figure 3.1 also provides the self-reported backgrounds for the participants of round two. Concerning the participants from round 2, 65.2% were male and 40% were older than 50, 40% between 35 and 50, and 12% younger than 35 (8% missing).

3.3 Method

A Delphi study is frequently used to develop consensus on what a specific new concept or development means, especially when opinions are expected to be diverse, and to define what factors are relevant for addressing a new complex issue, or what factors should be regarded as relevant for future developments. Therefore, in this part of our study we decided to use a Delphi panel to answer our research questions. Delphi studies have been widely used to collect the opinions of experts on various subjects **[Buccini et al. 2009; Robinson et al. 2015; van Scheppingen et al. 2015]**. A Delphi study generally consists of several phases, or rounds **[Martino 1972; Hsu and Sandford 2007; Yousuf 2007]**, and provides a systematic methodology to collect the opinions of a small but knowledgeable sample of experts to arrive at a meaningful consensus. Classical Delphi studies consist of four rounds, however two rounds can also be sufficient **[Martino 1972;**

van Scheppingen et al. 2015]. In this study, a questionnaire was developed addressing several aspects related to safety as an organizational value. This questionnaire was presented to the Delphi panel in two rounds.

The input for the structure and the items of the Delphi study were based on the literature study and the interviews with experts and relevant stakeholders that were also part of the Valosa project. First, the literature study was conducted to explore the relatively unknown field of safety values. Based on these findings, we developed a structured interview format for one of the most important stakeholder groups, which is seldom involved in safety research: senior managers. This has led to the following five main topics for the structure for the Delphi questionnaire:

1. What having safety as a core value exactly means for an organization
2. (a) When safety is an organizational value
   (b) The value safety has for organizations
3. Factors that influence how safety is valued within organizations
4. The manifestation in an organization of having safety as a value
5. The ethical justification of having safety as an organizational value.

All items in these categories of the Delphi study have been derived from the literature and the earlier interviews. The resulting questionnaire includes a list of 107 statements or factors considered relevant to understanding safety as an organizational value. The items are structured according to the four main topics, which differ in content but also in response format. Table 3.1 presents an overview of the response formats and the number of items in the Delphi questionnaire for each topic. The individual statements from the Delphi study are shown in § 3.5. In the first round, the respondents were given the option to suggest additional statements or factors thought to be lacking. These suggestions were taken into consideration for the second round.

3.4 Analysis

The main aim of the Delphi panel is to achieve consensus. Since the survey items used for this Delphi study make use of several different answer scales, two different sets of criteria were required for determining consensus. Table 3.2 summarizes the criteria for consensus for each topic.

For topics 1 and 4, the direction of consensus was determined by the median: a median lower than 3 meant consenting disagreement, a median higher than 3 meant consenting agreement, and a median of 3 indicated a consensus that respondents neither agreed nor disagreed.

For both topics 2 and 3, consensus was determined by looking at the distribution of the responses over the groups. Responses falling in a certain category were regarded as consensus if they exceeded 60% and none of the other categories had more than 25% of responses.

When considering the results, it is important to note that the fact that there was no consensus among the Delphi panellists does *not* mean that there was consensus that safety does not contribute to these values.

3.5 Results

3.5.1 Safety as an organizational value

In the Delphi study, 21 statements represented possible meanings of safety as an organizational value. There was consensus among the respondents concerning twenty of these statements in the first round (see table 3.3).

There was no consensus for one statement only: *When safety is an organizational value this means taking responsibility for the safety of the local community*. In the second round, this non-consensus was confirmed. In the second round, clarifications for the disagreement were given:

- ▷ It seems more appropriate that safety as an organizational value concerns the organization, and not the local community

	Topic	Items	Answering scale
1	**What does having safety as a core value exactly mean for an organization?**	38	
	a) *When safety is an organizational value, this [means that safety is]…*	*21*	5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree)
	b) *If safety has value for organizations, this implies that…*	*17*	
2	**Factors that influence how safety is valued within organizations**	**39**	11-point scale ranging from -5 (very negative influence) to 5 (very positive influence) with 0 in between as indicator of the belief that the factor has no influence
	Developments in national and international society	*6*	
	External factors	*9*	
	Organizational factors	*5*	
	Business values	*14*	
	Personal initiatives	*5*	6-point Likert scale of 0 to 5, assuming the initiatives are likely to have a positive affect (or else they would not be undertaken)
3	**How is having safety as a value expected to manifest in an organization?**	**24**	6-point Likert scale ranging from 0 (not characteristic at all) to 5 (very characteristic)
	Visibility in culture and behaviour	*9*	
	Visibility in management actions	*5*	
	Visibility in organization	*10*	
4	**What is the ethical justification for having safety as an organizational value?**	**6**	5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree)

Table 3.1 – *Summary of characteristics of the Delphi questionnaire*

	Topic	Answering scale	Criteria for consensus
1	**What does having safety as a core value exactly mean for an organization?**	5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree)	Interquartile range (IQR) 1 or lower ≥50% of all responses (those between the 25th and 75th quartiles) fall within 1 point of the scale.
2	**Factors that influence how safety is valued within organizations**	11-point scale ranging from -5 (very negative influence) to 5 (very positive influence) with 0 for 'no influence'	Category 1: Respondents who consider the factor to have a negative influence (-5 to -1) Category 2. Respondents who consider the factor to have no influence (0) Category 3. Respondents who consider the factor to have a positive influence (1 to 5)
		6-point Likert scale from 0 to 5	Category 1. Respondents who consider the factor to have no influence (0) Category 2. Respondents who consider the factor to have a positive influence (1 to 5)
3	**How is having safety as a value expected to manifest in an organization?**	6-point Likert scale ranging from 0 (not characteristic at all) to 5 (very characteristic).	1. Respondents who consider the statement not to be characteristic (1) 2. Respondents who consider the statement a little characteristic (2 to 3) 3. Respondents who consider the statement very characteristic (4 to 5)
4	**What is the ethical justification of having safety as an organizational value?**	5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree)	IQR 1 or lower ≥50% of all responses (those between the 25th and 75th quartiles) fall within 1 point of the scale.

Table 3.2 – *Summary of criteria for consensus in the Delphi study*

When safety is an organizational value, this means that safety is…

- …a core aspect of all business processes
- …part of responsible operations
- …a good investment in a sustainable future
- …a moral obligation
- …a core competence of professional skills
- …a binding factor between companies and society
- …more than calculating costs of accidents

When safety is an organizational value, this…

- …means taking responsibility for the safety of all employees
- …means that safety belongs to everyday business activities and decisions
- …means important safety investments are made despite the costs
- …means that safety is linked to the mission of the organization
- …means that safety is mentioned in the organization's core values
- …means that safety belongs to 'the genes' of the organization
- …means there are long-term ambitions to improve safety
- …means that safety is an important aspect of personnel development
- …implies a long-term commitment to safety
- …ensures that future managers will be committed to safety
- …ensures high safety standards (even in difficult periods)
- …generates a supporting work culture (climate) for safety
- …makes employees feel safe

Table 3.3 – *The consensus statements on "when safety is an organizational value"*

- This is too idealistic, especially for SMEs, which account for more than 95% of companies
- The current situation in our country shows that you have to start with the internal working environment, include safety aspects in work with subcontractors, sharing experience with other companies, etc. and only then should you take responsibility for the local community.

3.5.2 The value safety has for organizations

The value that safety has for an organization was addressed by 17 statements. In these statements, safety is not regarded as a value in itself, but primarily as a factor that (also) contributes to other values. The first round resulted in consensus for 12 of these statements, and in the second round positive consensus was achieved for two additional items (see table 3.4). No consensus was generated for three of the statements. These are presented in 3.5, along with some clarifications given by the respondents of the second round.

If safety has a value for organizations, this implies that safety...

- ...contributes to good business
- ...contributes to trust of employees in the management
- ...contributes to better relations between employer and employees
- ...contributes to better relations with the local community
- ...contributes to the attractiveness as an employer
- ...contributes to the corporate image of a reliable company
- ...contributes to the well-being of the personnel
- ...is regarded as essential for the continuity of production
- ...is appreciated by customers
- ...means that the organization is 'in control' of its production
- ...helps avoiding economic loss
- ...means that safety is an aspect of environmental protection
- ...contributes to the marketing of products or services*
- ...helps to avoid painful conversations with relatives of victims*

Table 3.4 – *The consensus statements on "the value safety has for organizations". Items marked with an asterisk* only saw consensus in the second round.*

3.5.3 Influencing factors

With influencing factors, we aimed to obtain the respondents' expert opinions on factors that influence the value of safety, and whether this influence was positive or negative. It can be seen that most factors were considered a positive influence and for six statements no consensus was found.

In the first round, consensus was reached on 33 out of 39 statements. Only economic crises were seen to negatively affect the way in which safety is valued in organizations. All other statements, like media attention to accidents, were commonly viewed to have a positive effect on value of safety in organizations. In addition to the 33 items of the first round, consensus was achieved on one additional item after revisions in the second round, which was the effect of the business value 'competitiveness'. The individual items and influencing factors are given in table 3.6.

Concerning the factors that influence how safety is valued in organizations, for the following five statements no consensus was achieved in either of the rounds:

- An ageing working population
- Scarcity of qualified personnel

No consensus statements	Explanations given
If safety has a value for organizations, this implies that safety contributes to better use of industrial assets	**Pro**: I see safety and reliability as tightly coupled in the production process. **Contra**: In some cases, safety is not necessarily helpful to use resources.
If safety has a value for organizations, this implies that safety is key to delivering industrial services	**Pro**: if safety is valued highly, the service delivery should also put special emphasis on safety issues. **Contra**: It could perhaps improve industrial services, but it is not key. This is context dependent.
If safety has a value for organizations, this implies that safety will lead to lower insurance costs	**Pro**: the impact depends on the national system of insurance. But all in all, insurance costs should decrease. **Contra**: Insurance costs mainly depend on other factors. In my country, social insurance against workplace accidents and diseases is compulsory, with premium rates identical for all companies (e.g. banks and construction companies pay identical premium rates).

Table 3.5 – *No consensus statements on "the value safety has for organizations"*

- Cost saving programmes
- Changes in corporate management
- Diversity

There is no consensus on the influence of diversity and an ageing working population on safety as a value. According to the Delphi panellists, both tend to have a positive influence on safety as a value. There is no consensus on the influence of 'Changes in corporate management'; a more in-depth look into the data shows that 59% of the respondents agreed that there is a neutral (0) influence of management changes on safety as a value. Also there is non-consensus on the influence of Cost Saving programmes and Scarcity of Qualified Personnel. Both were regarded as more negative than positive in their influence by the respondents.

3.5.4 Visibility in practice

Twenty-four items addressed describing visibility, meaning mechanisms for having safety as an organizational value become recognized in practice was addressed: in culture and behaviour, in management actions, and in the organization. Consensus was achieved for 21 of them; one of them after the second round (see table 3.7). There were three items with no consensus in either of the rounds (see table 3.8).

3.5.5 Ethical justifications

We stated six items related to the ethical justification of safety as an organizational value. In the first round, six items were included; for three of them consensus was achieved, for the other three this was not the case. In the second round, the three items for which no consensus was achieved were included. In round 2, these non-consensus factors were confirmed.

The items concerning ethical justifications on which consensus was reached in the first round are presented in table 3.9. The results show that the first two statements have been confirmed strongly as consensus items (> 80% strongly agree). The third statement is almost fully agreed on, although less strongly. There were three items concerning ethical justifications that did not lead to consensus in both rounds (see table 3.10).

Many respondents responded that all serious accidents can be prevented, but not enough to meet our criteria for consensus. There was less agreement on the statement that all minor incidents can be prevented. Also many respondents agree that zero accidents is the only justified goal for safety, but again not enough for consensus. This could be caused by the strong formulation (i.e. "the only justified goal").

Consensus on factors that influence how safety is valued in organizations		Direction of consensus
Developments in national and international society	Growing societal attention for safety	+
	Growing societal unacceptance of risks	+
	Growing attention for disasters in the press	+
	Growing importance of Corporate Social Responsibility	+
	Growing importance of business ethics	+
External factors	Governmental inspections	+
	Media attention to accidents	+
	Economic crisis	-
	Communication with external stakeholders	+
	Legal requirements	+
	Best practices of other companies	+
	Requirements from important customers	+
	Requirements from (social or private) insurers	+
Organizational factors	The experience of a serious accident	+
	Activities of workers or their unions to improve safety	+
	The adoption of "vision zero" (striving for zero accidents and/or harm)	+
Business values	Transparency (openness)	+
	Trust	+
	Justice	+
	Productivity	+
	Innovation	+
	Responsibility	+
	Sustainability	+
	Operational excellence	+
	Integrity	+
	Commitment	+
	Health	+
	Well being	+
	*Competitiveness**	+
Personal initiatives	Initiatives from the CEO	+
	Individual (higher) managers performing exemplary behaviour	+
	Initiatives from safety engineers/professionals	+
	Initiatives from employees	+
	Initiatives from family members	+

Table 3.6 – *Consensus for the statements concerning influencing factors. Items marked with an asterisk* saw consensus reached only in the second round.*

In culture and behaviour	The working habits reflect safety values
	Safety is regularly discussed informally
	There is shared understanding of safety issues
	It is preferred to choose safe ways of working in every situation
	Work is always done safely (or else production is stopped)
	Even if safe work is considered more difficult or time consuming, it is the preferred way of working
	Safety is always being discussed in work meetings*
In management actions	High appreciation for safety can be recognized in the top management's agenda
	Managers promote safety actively
	Safety aspects are explicitly taken into account in all decisions
	Managers and supervisors talk about safety issues with employees
	Managers and supervisors show exemplary behaviour by acting safely
In the organization	The value of safety is visible in an excellent safety culture
	Safety is part of the organization's training
	Safety is considered in guidelines and procedures
	Safety gets priority over productivity
	The focus is more on preventive maintenance than on corrective maintenance
	Safety extends to contractors management
	Safety is considered when evaluating new business opportunities
	Safety is considered when introducing new technologies
	Safety is an important topic in corporate communication

Table 3.7 – *Consensus items concerning visibility of safety values. The item marked with an asterisk* only saw consensus in the second round.*

In culture and behaviour	Safe behaviour is just as important in private life as in the job
	Safety issues are also communicated with partners/family members
In organization	Safety is part of the reward systems

Table 3.8 – *Items with no consensus concerning the visibility of safety values*

Occupational safety is a fundamental human right
Every employee has the right to return home safely after work
Safety is important in order to reduce human suffering

Table 3.9 – *Items with consensus concerning ethical justifications of safety values*

All serious accidents can be prevented
All minor accidents can be prevented
The only justified goal for safety policy is zero accidents

Table 3.10 – *Items with no consensus concerning ethical justifications of safety values*

3.6 Discussion

The aim of this Delphi study was to find consensus on safety values and their impact on an organization's functions, and at the same time to verify whether the outcomes of the interviews are shared by a broad range of stakeholders from industry, government, inspection and insurance companies.

Through the Delphi study, we were able to develop a consensus on what it means when safety is an organizational value, together with consensus on what the potential benefits of safety as a value are, what factors it is influenced by and how to recognize it in practice.

3.6.1 Safety as an organizational value

The result of our Delphi study is consensus among the experts/stakeholders participating in the study about what it means when safety is an organizational value (or perhaps core value). This gives also clarity in what it means when the IAEA (for nuclear power plants) or the European Commission (for offshore installations in the oil and gas industry) require that these industries have safety as a core value: what are the values that need to be dealt with, and how can they be influenced?

Key issue

Based on the Delphi study, we conclude that when safety is an organizational value, this means that safety is regarded as a positive value in itself, that it is integrated into the business strategy as well as in all business operations; it generates a work culture that is positive for safety, and it implies a long-term commitment. It also implies some guarantees that safety will be important in the future, e.g. it ensures that future managers will be committed to safety.

However, it seems the respondents consider an organizational value primarily as an internal issue, since there was no consensus on having safety as an organizational value meaning taking responsibility for safety of the local community.

3.6.2 Value that safety has for organizations

When exploring the value safety has for organizations, it can be concluded that safety has a value for organizations, apart from the meaning of safety as an organizational value in itself. This added value is certainly economic in nature (good business, corporate image, the continuity of the organization, appreciated by customers, helping to avoid economic loss). The consensus items in this section show that safety has many organizational qualities. It contributes to good business and better control over production processes, to better relationships between the employer and the employees, to the attractiveness of the organization on the labour market, it is often appreciated by customers and helps in the marketing of products, it contributes to environmental protection, etc. It seems to imply that good safety management is actually an important aspect of good management.

The non-consensus items seem to represent values that safety can have (better use of industrial assets, being key to delivering industrial services, lower insurance costs), but that are clearly context dependent. The specific context of certain branches or company cultures can make a difference. While for contractors doing maintenance work in *high hazard industries* like the chemical industry, safety is a key to delivering industrial services, this may be a low priority issue when they do maintenance work for a company/industries with less inherent risks (a contract in financial services for an IT company).

3.6.3 Influencing factors

In the Delphi study, three levels of context factors influencing safety as a value were identified: 1) societal (developments in national and international society, external factors), 2) organizational (organizational factors, business values), and 3) individual level (personal initiatives).

The factors *at a societal level*, as addressed in this part of the Delphi study, include external factors that are dominantly stemming from society at large and from national and international developments in the relationships between businesses and society. This implies that these factors form the context wherein individual organizations operate. According to our panel, these factors have an influence on safety as a value which is positive, except one: the economic crisis. Apparently safety has the tendency to descend on the priority list when 'day-to-day survival' comes up. This finding is compatible with the well-known "drift to danger" concept, introduced by **[Rasmussen 1997]**, which implies that continuous cost reduction efforts may easily undermine safety margins. Less clear, the external influence *of Scarcity of qualified personnel* shows a slightly negative influence, although consensus has not been reached. This could be an indication that sudden economic growth on the other hand can also be a critical issue for safety as a value, and that a fit of competent labour resources is very important for safety. Also, no consensus has been found on the role of *an ageing working population* on safety as a value. In both cases, there were more Delphi panellists who saw a positive influence than a negative one.

Non-consensus may be due to different compensation systems in the participants' countries. Thus, we cannot exclude the idea that safety contributes to these values. Factors on a societal level (developments in national and international society, external factors) form the context for organizations on how to deal with safety. Most of these factors are seen as positive influencing factors for safety, except for the economic crisis, which is seen as a negative influencer.

The factors at the *organizational level* (organizational factors, e.g. the occurrence of accidents, and business values like trust) are factors that in most cases can be changed within the organizations themselves. Most of the factors on the organizational level, like the occurrence of accidents, are agreed to be positive for safety as a value. These factors can mostly be controlled by the organization itself. No consensus has been achieved on the influence of *Cost saving programmes*, but most panellists saw a negative tendency here. Hence, costs saving programmes probably have a high priority during crises, and so are a threat for safety as a value. Also no consensus has been found on the influence of *"Changes in corporate management"*. The Delphi study shows that more than half of the respondents say there is a neutral (0) influence of management changes on safety as a value. However, this could be because the direction of this influence is very dependent on the manager. The business values that were found to have positive influence on safety as a value, more or less, correspond with the more concrete 'added-values of safety as a value' that were identified and discussed in the former section.

The last sub category concerns *the individual level*, e.g. the 'personal initiatives' that influence safety as a value. Our Delphi study underlines that all internal stakeholders (CEO, higher managers, Safety engineers/professionals, and employees) as well as family members can have a positive influence. For CEOs and higher managers this more or less reflects the literature on the importance of safety leadership, those of employees the literature on participation.

3.6.4 Visibility

Concerning the visibility of safety as a value, the results show that safety as a value is expressed by informal talking and communication about safety. The results also show that the state of unsafety has its boundaries, and action is taken when these boundaries are passed, even if this requires additional time and effort. Safety as a value is also reflected by management communication, setting of priorities and role behaviour in safety. It becomes also visible by integrating it in operational processes, like maintenance, training, procedures, interaction with contractors, investment choices and priority setting. The results also show that safety at home and safety in the workplace are not related to safety as a value in a straightforward way. The importance that is given to safety in the workplace in relation to safety at home differs and may be very personal. There was no consensus that safety as a value is visible in the reward systems. This can have various reasons, e.g. safety results may not be formally included in a reward system, but more informally communicated as positive feedback. This is dependent on the formal policies of the company or branch.

3.6.5 Ethical justification of safety as a value

This Delphi study shows very strongly that a safe workplace is a fundamental right and that it is broadly accepted that every employee has the right to return home safely after work. Also safety was considered as an important factor in reducing human suffering.

There is no consensus on the three statements referring to 'zero accidents'. This is clearly an area where safety experts do disagree: more people agree that all serious accidents can be prevented than that all minor incidents can be prevented. Also many respondents agree that zero accidents is the only justified goal for safety. However, there were not enough agreements for consensus. This could be caused by the strong formulation (i.e. the only justified goal). The disagreement could also be partly explained by the distinction that can be made between 'vision zero', expressing the ambition to prevent all (serious) accidents, if not now than in the longer term, and safety as an accountable target **[Zwetsloot et al. 2013a]**. Others may associate 'zero accidents' with an 'accountable zero accident goal', **[Zwetsloot et al. 2013a]** which can easily lead to false safety. Again, it is important to keep in mind that no consensus means that expert opinions vary, which seems to suggest that further research is needed, and perhaps further conceptual clarifications are required.

3.7 Conclusion

In this study, we wanted to develop a consensus on how safety as a value is defined by a variety of key stakeholders; CEOs/managers, employee representatives, safety experts, representatives of authorities and of private or social insurance, and researchers. We also wanted to identify practical dilemmas and bottlenecks when aiming to have safety as a value, as well as to find suggestions as to how organizations can deal with the dilemmas and promote safety as a value among the management and employees.

Nowadays, value based management commitment and an economic perspective are seen to have a crucial importance for safety performance. More and more attention is paid to the value of safety, what it means for organizations and what kind of consequences it has on organizations, to its employees, performance, reputation and financial success. However, as values are abstract basic concepts, our aim was to find out how safety values are defined and used in practice by the key operators, especially higher managers, and how they affect employers' and employees' decisions and behaviour at the workplace.

The main objective in this study was to develop a common understanding of how safety as a value is defined by a variety of key stakeholders: CEOs/managers, employee representatives, safety experts, representatives of authorities and of private or social insurance and researchers.

Our literature review showed no common definition of what is meant by safety values, value of safety, or safety as a value itself yet exists. We identified at least four different uses for 'safety and value' in our literature review:

1. *'Value of safety'* as a monetary worth of safety
2. *'Value of safety'* as the importance or worth of safety, priority of safety
3. *'Safety values'* mostly the same as 'value of safety', but focusing more on the expressions of valuing safety (e.g. **[Newnam et al. 2012]**)
4. *'Safety as a value'* as a core value or implicit value (e.g **[Cooper 2001]**)

Based on our research, we propose the following definition for having safety as an organizational value:

A long-term commitment in having safety integrated as a positive value within all business operations and strategies.

This definition holds three critical elements. First of all, the definition speaks of integration of safety within all business operations and strategies. That is to say that safety is taken into consideration and considered an important value within each step or process the organization undertakes. Secondly, safety is defined as a positive value. This means that safety should not be considered a hindrance to production, but instead a worthwhile value to be achieved alongside the optimization of production. Thirdly and lastly, the definition refers to a long-term commitment. This is to distinguish between organizations with temporary safety programmes and organizations that are truly committed to implementing safety in their business operations.

When safety is truly shared as an organizational value, it is clearly part of "the way we do things around here", whether these 'things' refer to strategies (management and organization), investments (new technologies or new activities) or personnel development. Hence, the existence of a safety culture is an outcome of broad managerial organizational processes, touched by the company's strategy, mission, and practical operational decisions. As such, safety as a value should be visible in behaviour, management communication, and operational processes.

When safety is genuinely an organizational value, this implies that in the organization, there is a shared intrinsic motivation to strengthen safety. As a consequence, it will not be easily influenced by external pressure, other organizational priorities, or specific contexts. This also means that it has a certain meaning for the future. Values that are internalized in people's minds and organizational cultures will not change easily and quickly. It is, of course, important to keep in mind that a value may be only "espoused" instead of genuinely adopted. Therefore, an important element of having safety as an organizational value is that safety should always be considered seriously in all decisions and activities.

An important challenge was identified in economic crises. Apparently safety has the tendency to descend on the priority list when 'day-to-day survival' comes up. This finding is compatible with the well-known "drift to danger" concept, introduced by **[Rasmussen 1997]**, which implies that continuous cost reduction efforts may easily undermine safety margins.

However, when an organization successfully implements safety as a value, our findings show that this contributes to other highly valued areas within the organization. It contributes to good business and better control over production processes, to better relationships between the employer and the employees, to the attractiveness of the organization in the labour market, it is often appreciated by customers and help in the marketing of products, contributes to environmental protection, etc. It seems to imply that good safety management is actually an important aspect of good management.

4

Discussion

In addition to developing a common understanding of how safety as a value is defined by a variety of key stakeholders – CEOs/managers, employee representatives, safety experts, representatives of authorities and of private or social insurance, and researchers – we wanted to identify practical dilemmas and bottlenecks in practicing safety values, and how organizations can effectively deal with these dilemmas. Here we will discuss some of these issues as they were obtained from the results.

4.1 Understanding safety as an organizational value and its value to organizations

In organizations, safety is commonly defined as a part of the organizational values. However, the CEOs/managers interviewed in this study showed that safety was not always mentioned as a core value of the organization, since it was seen so much embedded in the core business (demonstrated in the mission statement) that it was not regarded necessary to also include safety explicitly in the company's core values.

Among CEOs/managers in our study, safety is seen as a priority, more important than productivity or anything else; a quality of work/product (sign of expertise, efficiency of production); an investment for employees and the future of the company; a goal, but also as an objective: a part of one's everyday work. Nevertheless, many CEOs can only say that safety is priority in their company but cannot give a detailed analysis. They continued speaking about the place of safety in meetings of top-level managers, safety speeches, walk-around checks etc., which are usually thought to be included in safety management. However, the sample of CEOs/managers focused on safety-oriented companies and therefore these results cannot be generalized to all companies.

The experts in the Delphi study regard safety as an organizational value almost only relevant for safety in the organization (occupational and process safety), while there was no consensus about taking responsibility for the local community. This is remarkable, because "the impact of values does not stop at the fence of a production plant or workplace. Values have an impact in decision-making, acting and on the behaviour of the managers and workers that have internalized them. Indeed, in the long run, companies cannot be socially responsible externally without being socially responsible internally – and vice versa" **[Zwetsloot et al. 2013b]**, based on **[Zwetsloot and Starren 2004; Snowden 2005]**.

It can be concluded that safety can be an important aspect of the organizational values, especially when it refers to its future impact: a company's long-term ambition to improve safety, – a long-term commitment to safety – and future managers that are committed to safety. Safety as an organizational value has two complementary and compatible dimensions: safety as a value in itself (intrinsically motivated) and safety as a value as a factor that contributes to other highly valued areas such as good business (extrinsically motivated). Both can be motivating for safety and will lead to a commitment to safety improvement. The two types of safety values are likely to strengthen each other (synergies).

The importance of safety was also partly based on the demands of the authorities or customer and the surrounding society: Legislation and instructions of authorities, information requirements (e.g. audit, accidents reports) of customers, reputation among customers and in the society. These reasons were, however, mentioned as secondary motivations for safety. As one CEO said: *"Neither the legislation nor the customers set pressure; the company is ahead of them."* It

is the companies themselves that have the responsibility for safety. Taking care of company reputation was seen as one of the factors which motivates companies to do their best in safety.

Based on the literature review done in our study, organizational values have a more strategic impact than priorities; thus, 'safety as a value' goes beyond 'safety as a priority'. As values are more stable over time, they can also be expected to have implications in organizations for a longer period, as priorities may easily change. Therefore, the value safety has for organizations can only partly be expressed in monetary terms, because issues like "trust, better industrial relations, or avoiding painful conversations with relatives of victims" cannot be expressed adequately in monetary terms. In other words, safety is an important aspect of corporate social responsibility, since it has added value for all 3 P's: Profit, People and Planet. In practice, good safety was seen as a sign of a good business, good management, a responsible and respected employer, and engaged employees.

Safety as a part of the organizational values, especially when it refers to its future impact, can also be seen as an implication that the company and its managers have a long-term ambition to improve safety – a long-term commitment to safety. The literature review showed that safety values are closely related to organizational culture. However, safety culture is a broader concept (also with many definitions), which, in addition to values, includes norms, beliefs, practices and principles that can be related to safety. The Delphi study showed that safety as a value appears to be synergetic with the mentioned business values, such as transparency, trust, justice, innovation, responsibility, and, as also agreed in the second round, 'competetiveness'. The existence of a safety culture is an outcome of broad managerial organizational processes, touched by the company's strategy, mission, and practical operational decisions.

Safety as an organizational value has two complementary and compatible dimensions:

1. safety as a value in itself (intrinsically motivated)
2. safety as a value as a factor that contributes to other highly valued areas such as good business and profit, people and planet (added-values; extrinsically motivated).

These two dimensions of 'safety as a value' are clearly complementary, and it seems likely that there will be synergy between these two types of safety value. It is very likely that companies that have adopted safety as an organizational value will also recognize its contributions to other highly valued areas. On the other hand, for companies that have not adopted safety as their (core) organizational value, the contributions to other highly valued areas, such as its contributions to good business, business continuity and customer satisfaction can still be very motivating to commit the organization to safety improvement. In this respect, there is a clear relationship with the notions of intrinsic and extrinsic motivation. These types of motivation are complementary and compatible. In practical situations, the distinction may be somewhat artificial: in many organizations there will be people who dominantly see safety as a value in itself, and other people who mainly see safety as a factor that contributes to other highly valued areas such as 'good business'. In both cases, organizations and the people therein may recognize that safety is important and commit themselves to safety improvement.

Based on the Delphi survey, safety as an organizational value includes the idea that safety is part of personnel's professional skills. When safety is an organizational value, it is regarded in everyday business operations and safety also requires long-term commitment. When safety is an organizational value, it was seen as part of an organizations' existing operations, not as a separate function.

The Delphi survey also showed that the business meaning of safety was seen to be important when safety is an organizational value, i.e. good safety reflects better relations both in the organization and outside of the organization.

The signs that safety is seen as a value correspond with the characteristics of what safety as a value is and has. Safety as a value becomes visible also when it is (explicitly or not) well integrated in operational processes, like maintenance, training, procedures, the agenda of work meetings the interaction with contractors and investment choices.

4.2 Individual differences in perception of safety

In the interviews, the safety attitudes were seen to be individual-based issues, not related to, for example, gender. The differences were seen between individuals in every group. However, views related to the role of age differed. Some CEOs/managers said that older employees don't have so good safety values and culture as younger employees; some saw older employees as opinion leaders. Some said that young employees might face more accidents, due to lack of skills and lack of understanding of risks, and some said that young employees used personal protective equipment more often than older ones. However, there are research findings which indicate that older workers had the best perceptions of safety **[Gyekye and Salminen 2009a]**.

Some of the interviewed CEOs/managers saw differences in values and safety culture between different locations. As **[Schein 2014]** has pointed out, how people view safety and how cultural factors impact safety issues are influenced by national cultures and, even more importantly, by occupational cultures. In every organization there are subcultures, which have their own subsets of assumption on safety. These subcultures have their roots and origins in the occupations and professions, not merely inside the organization. There are also cultural variations of the occupations in different industries.

The challenges in successfully sharing the safety values of the company in everyday work inside the company were related to:

- employees' attitudes towards safety, complying with regulations and standards
- the dilemma of the costs of best safety available and the financial situation/decision

It seems that the main problems arise when risk is not recognized; that is why employees continue to work in unsafe ways or situations. To tackle the employees' attitudes towards safety, different approaches were used. For example:

- motivating the less motivated people was seen as the duty of managers/supervisors
- use of fast and flexible work habits in the tasks in which safety is required
- paying attention to planning and scheduling, not accepting haste as an excuse
- "competing" on safety

The challenges related to the surrounding society were:

- (Sub)contractors' safety values or quality standards: e.g. in the common workplace, where the habits of different companies do not match
- Country culture: e.g. attitudes towards safety, education
- Global situation: e.g. conflict areas (general safety level in a country)
- The EU directives on governmental tendering: e.g. suppliers are competing on price only, and that safety qualities of products and services are not considered

To tackle the inconsistency of a company's own safety values and requirements and the values and requirements of a (sub)contractor, some companies offer safety training to their contractors or require, for example, a general occupational safety card.

4.3 Ways, challenges and solutions in practicing safety as a value

When safety is truly shared as an organizational value, it is clearly part of 'the way we do things around here', whether these 'things' refer to strategies (management and organization), investments (new technologies or new activities) or personnel development. Safety as a value is understood through/by means of safety management.

Based on our findings, one can say that an organization that has safety as a core value can be recognized by: informal talking and communication about safety, accepting boundaries related to safety (and especially unsafety), and initiation of action in the case that these boundaries tend to be overruled, even if this takes extra time and effort. In these kinds of organizations, management communicates actively that safety is a value, which is reflected in e.g. setting of priorities, integrating it in all operational processes and decisions, and by showing proper role behaviour regarding safety. Safety as a value becomes also visible when it is (explicitly or not) well integrated in operational processes, like maintenance, training, procedures, the agenda of work meetings, the interaction with contractors and investment choices.

It is clear that top managers and supervisors can strengthen safety values by consistent actions. The CEO/manager interviews showed that the most common ways to share the value of safety in the workplace are

- communication (regular meetings, different kinds of information material, joint discussions)
- training
- continuous development of practices and products

Less commonly mentioned ways were, for example, the use of safety bonuses. Also the Delphi study raised the unclear role of reward/compensation systems: there was no consensus if safety as a value is reflected – or is not – in the compensation systems which show the complexity of having safety as a part of a compensation system. The reasons for this can be various. For example, the compensation of safety doesn't need to be formally included in a compensation system; maybe informal rewards can be very effective, too. On the other hand, safety as part of a compensation system may be a great motivator but the complexity also arises when considering the indicators of safety. Moreover, this is dependent on the formal policies of the company or branch. Anyway, the compensation of safety divides opinions.

The Delphi survey reveals that, when safety is considered to be an organizational value, it means that safety can be seen in practical everyday operations. Thus, safety as an organizational value reflects safety culture and safety behaviour at work – on all organization levels. This finding shows us that safety as a value is not only an abstract concept.

It is important to distinguish between values that are really shared and lived-up to, and espoused values, which are mainly communicated verbally and in writing. When there is a difference between the two, employees will not believe the espoused values. Employees look at safety values in more practical way than managers and often do not share the same safety values as managers. This is understandable because employees face the everyday concrete safety issues while working; meanwhile managers have a wider overlook across the entire organization.

Both the literature review and the interviews done in the study show that sharing the value of safety with everyone in the workplace is not easy. According to the interviews, the challenges inside the company were related to:

- employees' attitudes towards safety, complying with the regulations and norms
- the dilemma of the costs of best safety available and the financial situation/decision

This challenge of national/occupational/company based culture was identified in the CEO/manager interviews, as they recognized that the surrounding society, that is (sub)contractors' safety values or quality standards (e.g. in the common workplace, where the habits of different companies do not match) or country culture (e.g. attitudes towards safety, education) affect how safety values are viewed and put into action. To tackle the inconsistency of a company's own safety values and requirements and the values and requirements of a (sub)contractor, some companies offer safety training to their contractors or require, for example, a general occupational safety card. This organization's effort to influence value of safety outside the company can be seen as an act related to corporate social responsibility. The company is seen to be responsible for taking care of human well-being (both their health and safety), families of employees and society.

From a practical point of view it seems that the main dilemmas/problems for organizations is that risk is not recognized and that's why employees continue to work in unsafe ways or situations. To tackle the employees' attitudes towards safety, different approaches were used. The CEOs/managers mentioned for example:

- motivating the less motivated people was seen as the duty of managers/supervisors
- use of fast and flexible work habits in the tasks in which safety is required
- paying attention to planning and scheduling, not accepting haste as an excuse
- "competing" on safety

The dilemma of the costs of best safety available and the financial situation/decision is also recognized widely, both in research literature and in practice. Line managers have to manage the dual goals of productivity/efficiency and safety. If a productivity schema is more salient

and important in the thinking of individual managers, they may over-emphasize productivity and under-emphasize safety [Colley and Neal 2012].

The interviewed CEOs/managers for example recognized that the high ambitions on professionalism and craftsmanship sometimes leads to frustration, e.g. in case of disappointments when things don't work out because of planning/money issues. This can be a trigger for unsafe acts. Also the need to innovate and finding new ways of working can be exciting and unsafe at the same time. Finding the right balance in these issues was seen as a challenge.

From the researchers' point of view, the companies involved in the study were in a different stage in their safety, and in building their safety culture. As one company was building its safe working environment – "the basic things" – some others were modifying their safety culture towards individual involvement: "safety as everyone's core attitude". This difference was shown in what the companies did to share the value of safety among their managers and employees. For example, how the values of the company were formed and discussed with employees: were they given or formulated together with employees?

Sharing and managing values and integrating organizational and individual values are real challenges (e.g. [Paarlberg and Perry 2007]). Some mechanisms have been found that strengthen safety values. For example, supervisor safety practices are associated with stronger safety values [Newnam et al. 2012]. [Colley and Neal 2012] presented that bottlenecks in transferring and reinforcing the safety message may occur because of the communication styles and differing values of supervisors. [Paarlberg and Perry 2007] described that the process of aligning values should be a social process between employees, managers, and even customers and other stakeholders. Values should not be defined by the top management alone, but with the employees.

Often, managers talk about how safety as a value is shown in practice. They are not talking about how the values of their organization are defined. It seems there is no discussion with personnel when setting values; neither is there discussion on what kind of culture or practices are expected based on the values set. When aiming to have safety as a (core) value, organizations could use the knowledge and experiences of mechanisms that help to share and manage values, based on general values research, e.g. defining the values and their practical implications with employees (and other stakeholders); exploiting the middle management as integrators between individual values and organization's practices; resourcing, communicating and rewarding in line with the values defined etc. (e.g. [Paarlberg and Perry 2007]).

One possible way to solve challenges that are connected to value discussion in working life is to bring virtues as developing tools in organizations. Values and virtues are closely related to each other, but unlike values, virtues have to come true also in practice to be alive [Kylliäinen 2012]. Where the values are ideals that are hoped to instruct activities, virtues cannot be talked about until the ideals have come true. Virtues do not replace the values in working life. An organization needs to function both well and right. Values direct the future and instruct the development; all the good things that happen here and now are on the basis of virtues.

There are several safety related values that are important for developing or supporting safety practices and/or safety culture. The most well known are justice [Dekker 2007; Reason 1997], trust and informedness [Reason 1997]. Trust between managers and employees as well as a "just culture" seem to be necessary preconditions for the spread of safety values. Based on the analysis of [Zwetsloot et al. 2013b] on core values, there are three types of values that support safety, namely values related to:

1. "being" – that is, to individuals and their attitudes (interconnectedness, participation and trust)
2. "doing" – that is, actions planned or undertaking (justice and responsibility)
3. "becoming" – that is, the alignment of personal and organizational development (growth and resilience)?

Priorities often depend on the circumstances. Safety as a priority may change when the organisation meets external threats. However, when safety is a shared value, it is part of the identity of the organisation to always operate in a safe manner, even under difficult conditions. A comprehensive view of the value of safety could thus help organizations to improve their **resilience** [Hollnagel et al. 2006], especially when safety is the core value of organization. When both top management and employees had internalized safety as top priority, they saw unanimously the way out of the crisis which they had met. An organization with consensus about safety values is also stronger to meet external threats.

4.4 Zero accident vision and beyond

As mentioned in the literature review, **[Cooper 2001]** has stated that the idea of 'safety is a value' is based on the *"fundamental philosophy that all injuries are preventable and that the goal of zero injuries can be achieved"* and a safe working place is nowadays seen as a fundamental right. Interestingly, concerning the ethical justification of safety as an organizational value, the Delphi study *did not show consensus* on zero accidents being the only justified goal for safety policy. Respectively, there was no consensus on the ideas that all serious accidents can be prevented or that all minor accidents are preventable.

One possible explanation for non-consensus on having zero accidents as the only justified goal is that zero accident can be understood as a numerical goal rather than a philosophy. Numerical goals for safety divide opinions and this may be the case here. Preventing all serious and all minor accidents may as well have the non-consensus because of the general thinking that someday an accident may occur regardless of all the preventive work. However, the Delphi survey showed that safety values were seen as important both on the moral and operative levels. When linking safety as a value to zero vision, safety should not only be seen as a number, a target or an outcome of technical competence, it is more and more seen as a crucial value that is a part of, or even defines, a corporate culture.

Another interesting result was that the panellists did not agree whether it is characteristic – when having safety as an organizational value – that organizations take responsibility for the local community, or people communicate about safety issues outside of work. However, some companies are already promoting and sharing value of safety further than just in their organizations or working hours, by e.g. lending safety equipment to employees, supporting and encouraging people to act safely in their free time. We could ask, is the 'zero accidents' goal enough in the future, or is there a need for a more advanced mindset for safety, extending the concept of safety beyond the zero, covering the shared responsibility for safety and aiming to have safety as a value in every walk of life?

4.5 Limitations of the study

The main focus of the literature review was to generate information for defining the content of interviews and the Delphi study. Therefore, we did not perform a systematic review, but more like an exploratory review. The exploratory review might exclude some publications related to the topic; however, it is considered to be adequate for the purpose of this research.

There are some limitations concerning the generalization of the results of the interviews. For the interviews, we purposely selected the interviewees from companies which are already on their way with the "value of safety" discussions, to be able to get information on the dilemmas as well as practices they have had.

The Delphi study has some limitations. The Delphi study is the best option to create consensus, and come-up with a definition of the value of safety as an organizational value, and of the factors relevant for the (added) value of safety. However, concerning the influencing factors, visibility and ethical justifications, other forms of research design would be more suitable than a Delphi study, which is based on expert opinions. However, such studies could not be very fruitful in the absence of consensus of what it means when safety is a value, or what (added) values safety can have for organizations. Now that there is consensus on these two basic issues, further research on influencing factors, expressions of the value of safety, and ethical justifications can be more fruitfully undertaken. The last three perspectives were explored in this Delphi study, in order to generate a first framework, and so a set of hypotheses on what influencing factors, expressions of safety as a value, and ethical justifications are most relevant for further research. In this study, we used two complementary research methods to address this limitation of the Delphi study.

Secondly, although the involvement of the various types of stakeholders is in itself satisfactory, this is much less the case with their geographical origin: Europeans were very dominant. As values, and their interpretations, are influenced by national cultures, we cannot be sure that panel participants from other continents would have generated the same outcomes.

4.6 Recommendations for future research

There are several interesting issues where future research is needed. Since we have a consensus on what it means when safety is an organizational value, it is important to follow up with research concerning the relationship between 'safety as a value' and safety culture, as well as 'safety as a value' and business ethics. Another interesting question that future research might address is exploring what makes some companies adopt safety as a value, while others do not.

In addition, there were some questions we did not get answer to in this study: What is the role of the local community, since there was no consensus about taking responsibility for the local community? Further research has to find out what the issues are related to being responsible and safe externally, since safety, of course, doesn't stop at the fence of the workplace. Also the relationship between safety at home and safety in the workplace could need a closer look, since this was not always valued equally. The question of whether or not safety as a value should or could be reflected in the compensation systems remains open, as well as the ambition of Zero vision as an ethical justification, since this clearly is an area where safety experts do disagree. A first step might be further clarifications on the concept of 'zero accidents'.

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