

Analysis of the Safety Culture(A Case Study in a Publicly-Listed Company in Indonesia)

Yopie Rissa

Swiss German University, Indonesia

yopie.rissa@yahoo.com

Abstract: the objective of this research is to observe, assess and understand how each and every Safety Culture elements work together in shaping overall Safety Culture in an organization. This is to define how each element works in the existing safety approach to build the overall Safety Culture of an organization, and taking that information to determine which specific elements require improvement and approach modification. Managing safety in business is one of major part of risk management, people and asset protections which is part of global future trend, and furthermore as a foundation to business sustainability.

The major challenge in managing safety for most of organizations is to modify the culture of their people to follow the progressing needs of the organizations. This research attempts to define the forming elements of Safety Culture, and determine measurable and controllable factors of each of those elements. It is expected to help organizations to focus their efforts on these factors and have periodic review on the progress. In order to prove that Safety Culture has correlation with Safety Performance, this research used quantitative approach in a public-listed company, obtains the primary data through questionnaires distributed to 893 employees from different level, and analyze it using SPSS statistic tool. Few observations and discussions are also being part of the research. Finding of this research is that the Safety Culture has a strong correlation with Safety Performance in an organization.

The analysis also found that in the existing condition of this public-listed company, all four elements of Safety Culture are showing positive significant correlation. The element provides the most significant impact to Safety Culture is Safety Management Systems. Although all elements of Safety Culture found to have impact on Safety Culture, Management Commitment to Safety provides less impact compare to others. This is one of opportunity for improvement for this public-listed company to focus its attention and effort.

Keywords: Safety Culture, Safety Performance, Safety Management Systems, Management Commitment to Safety, Personal Responsibility to Safety, Employee Support for Safety

1. Introduction

1.1. Safety for Business

Every company, especially those focusing in the manufacturing and industrial fields, are exposed to certain operational risks and hazards inherent from the nature of their type of operations. Having people and systems in a process collectively brings higher risks and hazards, compare to if each of those elements is standing alone. Therefore, managing the risks and hazards in companies occupying people, systems, and process, becomes much more important. While the extent of management attention and effort on this matter is differ from one to another company depending on their perceived level of acceptable risks, business pressures, and regulatory demands.

1.1.1. Industrial Safety in Indonesia

Jamsostek, an Indonesian state-owned company providing insurance for workforce in Indonesia, reported that there is a trend of increment on workforce insurance claims in the last five years, and the workplace accident in Indonesia is high. The report shows that there were 103,000 cases during 2012

which caused 9 fatalities in each day (ANTARA News, 2013). The analysis made by International Labor Organization (ILO) in 2012 predicts that there are 20 fatalities for every 100,000 workforce happens in Indonesia. each day in Indonesia. ILO also suggested that the financial loss due to workplace accident is approximately 4% of GDP in developing countries.

In the effort to reduce the workplace accident, Indonesian government issued number of regulations related to health, safety, and environment. Undang-Undang Nomor 1 Tahun 1970 about workforce safety is the first regulation made by the government of Republic of Indonesia, which before then, it was only the regulation made by Dutch colony in Indonesia named Veiligheidsreglement on 1910 (PRESIDEN REPUBLIK INDONESIA, 1970).

2. Literature Review

This chapter talks about elements that construct the Safety Culture, and control factors as the sub-construct to Safety Culture under each of the elements. These elements and control factors are constructed to the Safety Culture by considering earlier reviews and studies in this area. The Safety Culture elements are dependent variables that depend on the control factors as independent variables. These independent variables are the key areas that can be approached to improve the overall Safety Culture in an organization.

2.1. Safety Culture

The term Safety Culture came into its official use for the first time on a report by International Atomic Energy Agency in 1986 following the major incident in Chernobyl nuclear powerplant. The report introduced and explained how the condition for disaster is laid by operator violations and organizational errors (Yule S. , 2003). 'Public Inquiry reports have since implicated poor safety culture within operating companies as a determinant of several high-profile accidents since, such as the explosion on the Piper-Alpha oil platform in the North Sea (Cullen, 1990); the fire at King's Cross underground station (Fennell, 1988); the sinking of the Herald of Free Enterprise passenger ferry (Sheen, 1987), and the passenger train crash at Clapham Junction (Hidden, 1989). The relevance of safety culture to safe operation is not disputed (Cox & Flin, 1998)' (Yule S. , 2003, p. 2).

There are number of definitions of Safety Culture offered by different researchers that makes no definitive definition. It is mainly because of different researchers emphasize different prominent variables of Safety Culture. From the study made by Yule concluded that there are two of the dominant definitions of Safety Culture, which are from IAEA and the UK Health and Safety Commission (Yule S. , 2003). The definition of Safety Culture from those institutions are as follow:

1. IAEA defines the Safety Culture as; 'assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance' (International Nuclear Safety Advisory Group, 1991, p. 1)
2. The HSE's Advisory Committee on the Safety of Nuclear Installations (ACSNI: HSC, 1993) defines the Safety Culture as; 'the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's health and safety management. Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficacy of preventative measure' (Human Engineering, 2005, p. 3)

2.2. Safety Culture Constructs

Obviously, different studies and methodologies came with various Safety Culture elements and control factors. INSAG described Safety Culture as the desired responses at the organizational levels of policy, management, and individual level. It describes that policy level establishes the framework for the organization in safety. Management shapes the working environment and influence attitudes conducive to achieving the Safety Performance. And at individual level, a questioning attitude, rigorous and prudent approach, and good communication are emphasized (International Nuclear Safety Advisory Group, 1991).

On his study, Frazier described that ‘a list of potential constructs associated with the measurement of Safety Culture were predicted to be (a) Management Concern, (b) Personal Responsibility, (c) Peer Support for Safety, (d) Safety Management Systems’ (Frazier, 2011, p. 10). It has similarity with Williams explanation that ‘when assessing an organization’s Safety Culture, several factors should be addressed, including management support for safety, employee support for safety, personal responsibility for safety and safety management systems’ (Williams, 2008, p. 44).

Thus, by using those studies above, while having previous reviews of other researches in this area of study as part of consideration, the elements of Safety Culture is constructed as follow:

- Management Commitment to Safety
- Safety Management Systems
- Personal Responsibility for Safety
- Employee Support for Safety

2.2.1. Management Commitment to Safety

Different terms are used to describe this element including Leadership Commitment, Management Concern, and Leaders Commitment. There is an evidence of positive Safety Culture values that can be achieved by an organization if top management leads safety efforts by communicating and exhibiting the importance of safety (Dollard & Bakker, 2010). And the feeling of responsibility for safety (of workforce) is evidently to have a positive relationship with the perceptions of management commitment (Yule, Flin, & Murdy, 2007).

‘Safety culture surveys should distinguish between the individual’s supervisor and senior management’ (Frazier, 2011, p. 10). And since the operation and production schedule and priorities are set up and decided by management and supervisors, this area also placed within the management commitment as a factor or sub-construct. ‘Management should encourage safe behavior along with their operation goals, not in lieu of safety performance. The two should not be viewed as mutually exclusive. Otherwise, employees view production and performance as a higher priority than safety, and unsafe behavior may be reinforced and repeated’ (Frazier, 2011, p. 11).

Therefore, the factors within the Management Commitment to Safety in this study consists of:

- **Supervisor Concern;** the level of supervisors’ concern for safety perceived by their subordinates. This is whether and how supervisors communicate and provide corrective feedback whenever possible, and how supervisors concern on people safety instead of the injury statistic.
- **Senior Management Concern;** the employees’ perception on whether or not the senior leadership and senior executives put primary concern on safety. How senior managers demonstrate their commitment to safety and influence employees.
- **Work Load and Balance;** the employees’ perception on how leadership value safety among other production and operational priorities, especially when safety is compromised. How work load is managed and employees work on a fit and safe condition is ensured.

2.2.2. Safety Management Systems

Another element in Safety Culture construct is the Safety Management Systems. In order to have a clear organizational standard on how safety should be managed and implemented, a well-documented safety management systems should be developed. These safety management systems provide organizational goal setting, planning, and performance measurements. Examining safety from a cultural perspective presents more of a holistic perspective of the safety management systems (Chenhall, 2010). Official inquiry following the fire on the North Sea Piper Alpha oil platform in 1987 which caused 167 men died found numerous defects in the safety management systems which had not been spotted in company auditing (Hopkins, 2001). The safety management systems construct should contain six important aspects: safety policy, incentives for employee participation, training, communication, planning, and control (Fernández-Muñiz, Montes-Peón, & Vázquez, 2007).

A survey involving 25,574 workers of five multinational companies in five different industries figured out that the construct of safety management systems to be less complex than other literatures suggest. It consists of communication, training and rules, discipline and investigation, and reward and

recognition (Frazier, 2011). Therefore, referring to those theories and several other previous studies, it can be concluded a safety management systems considered effective if it can provide sufficient guidance for implementation of safety program. And in this study consist of:

Safety Policy, Procedures, and Rules; Employee perception on safety policy and procedures as a common theme among the variables of safety culture research (Guldenmund, 2000). Thus, the availability and applicability of these tools for employee is a factor to be assessed.

Safety Audits and Inspections; ‘Safety auditing is a way of improving the organization’s overall safety performance, that the result of safety audit can be used for further refine the company’s safety strategy’ (Cooper D. , Improving Safety Culture: A Practical Guide, 1998, p. 146). So, besides periodic safety audit and inspection, the scope of observation and the communication on follow up of findings are also important parts of overall program.

Rewards and Recognition; ‘An innovative safety culture is flexible and is characterized by changes made in job design, rewards systems, and work procedures to improve safety based on employee feedback and incident and accident reporting’ (Chenhall, 2010, p. 42). Thus, the reward and recognition system should be established as a part of overall management systems, and involving employees.

Training and Communication; ‘Formal training will reflect a flavour of the underlying culture but much of the information needed by the individual to understand and become part of the culture will be inferred through observation and informal discussions with the workforce’ (Yule S. , 2003, p. 3). Therefore, along with established system for training employees in safety, there should be regular communication with employees in both verbal and through media.

Employee Involvement; ‘Optimizing safety culture requires active employee engagement for safety. As a result, most organizations are seeking ways to increase employee involvement in safety efforts’ (Williams, 2008, p. 45). Number of literatures described that a good safety management systems provides guidance of program for employee engagement on safety. This will provide opportunities for employee to contribute in safety efforts.

Accident Investigation; Accident investigation system’s goal is to provide information for the organization to be able to take a prompt preventive and remedial action, comply with regulations, implement safety policy, and the information can be used to assist decision-making, planning and resource allocation (Cooper D. , Improving Safety Culture: A Practical Guide, 1998).

2.2.3. Personal Responsibility for Safety

‘Any safety improvement initiative which relies almost exclusively on line management’s efforts is less likely to be as successful as one that empowers and enables the workforce itself’ (Cooper D. , Improving Safety Culture: A Practical Guide, 1998, p. 233). ‘Personal responsibility means workers are accountable for their own safety, and management is accountable for reducing their worker’s risky behavior, as is part of their job description’ (Frazier, 2011, p. 11).

Referring to several theories, personal responsibility for safety in this study consists of:

Safe Behavior; ‘In many cases, the natural consequences for risky behavior outweigh the natural consequences for safe behavior’ (Williams, 2008, p. 41).

Managers and Supervisors Support; Theories and researches described that line management is a major influential factor for employee to take responsibility for safety. ‘Line management facilitate this process by providing the necessary resources and support to encourage employee ownership, while stressing that no individual will be identified or disciplined as a result of monitoring. In this way, a blame-free pro-active safety culture is created that is so vital for long-tem success’ (Cooper D. , Improving Safety Culture: A Practical Guide, 1998, p. 233).

Incident Reporting; Incident reporting, which give information to assess the frequency of reporting incidents and near misses, is part of personal responsibility (Frazier, 2011). A number of literatures explain that individuals are responsible to prepare reports of their own incidents. ‘For employees to willingly participate in incident reporting and analysis, a systems approach is necessary which

supports a fact-finding perspective, a proactive stance, and an appreciation of continuous improvement’ (French & Geller, 2008, p. 4).

2.2.4. *Employee Support for Safety*

This is focusing on how employees support each other to create a safe workplace. It also covers how the positive environment of open communication and trust built up, and employees are positively take feedback from their peers. An organization can give opportunities for employee to help in Safety Performance improvement through several activities including observing peers and giving feedback (French & Geller, 2008).

When employees are encouraged to observe and give feedback to their peers on safety, they also need to be open and trust their peers when they receive feedback. Thus, employee support for safety in this study consists of:

Observe and Caution; This is the part where employee positioned as an observer. ‘Whenever risky behavior occurs on the job, a co-worker often is in the best position to see it. Whether it is a power plant engineer without ear protection or a crane operator who is talking on his cell phone or an accountant walking down stairs with his arms full, his/her behavior is most likely to be observed by a colleague. Yet, these observations often fail to result in constructive peer-to-peer feedback and, consequently, in safer behavior (Frances, 2011, p. 38).

Respectful Feedback; A positive and trust atmosphere should be exist in an organization to ensure that employees are encourage to give feedback to their peers when they see at-risk behavior. Employees are reluctant to give feedback to their peers is because they want to avoid argument. ‘For many people, feedback is just as likely to result in unwanted conflict as improved behavior. This lack of communication is unfortunate because without feedback, risky behavior is likely to continue’ (Frances, 2011).

2.3. *Safety Performance*

Workplace safety incident’s impact on companies’ operations mainly divided into direct and indirect impact. The indirect impact is believed to be between 8 and 36 times of the magnitude of the direct impact, depending on industry and occupation (Moore, 2009). The scope of direct and indirect impact include items listed in Table 1.

Table 1: Direct and Indirect Impact of Safety Incident

Direct impacts of incident include	Indirect impacts of incident include
Loss of key staff	Increased absenteeism
Disruption to business activity	Increased staff turnover
Damage to product and/or equipment	Corporate image
Increased workers compensation liability	Reputation in supply chain
Fines, penalties, and legal liabilities	Decreased job satisfaction / morale

Source: Moore, 2009

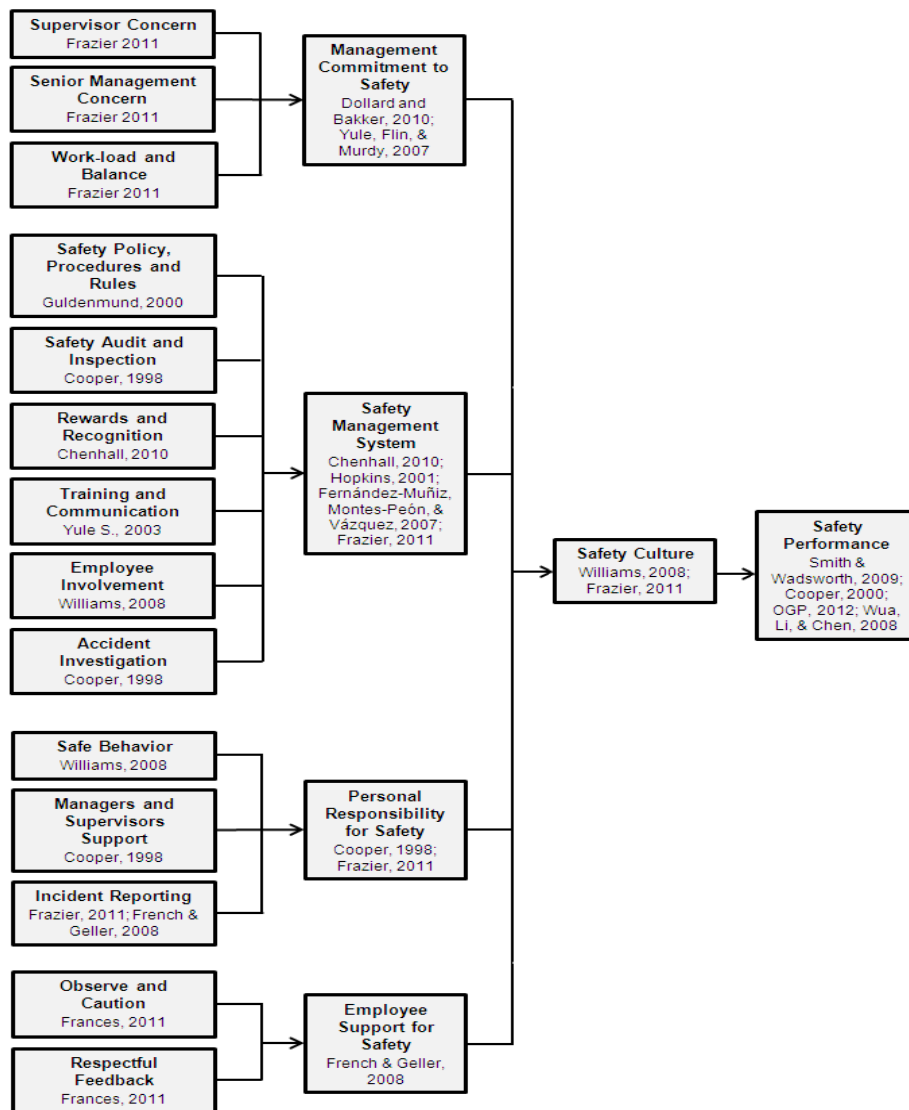
There is no ultimate and definitive factors of economic costs of poor Safety Performance. Different type of industries might incur different economic costs from poor Safety Performance (Cigna, 2008). A research conducted by a corporate governance watchdog, Regnan and Goldman Sachs JBWere, discovered that well equipped with workplace health and safety systems companies outperformed the benchmark S&P/ASX 200 by 38.4%. And companies that have its boards and management monitor the workplace health and safety beat the index by 30.4%, and companies that have workplace health and safety policies outperformed the index by 24.9%. The research was conducted to monitor the performance of these companies during November 2004 to October 2007 (Gettler, 2007). By this notable impact of poor safety management which includes its direct and indirect risk as described above, it triggers the escalating rate of insurance premiums.

To improve performance, it is important to understand where the starting point is, and where we want to go. To define and measure Safety Performance is just as difficult as measuring Safety Culture. In a traditional way, self-reported and/or officially recorded accident data is used to measure performance. However, it might be not effective since accident can relatively be a rare event, and not everyone take the initiative and discipline in reporting safety related incidents (Smith & Wadsworth, 2009).

Poor Safety Culture has been associated with bad Safety Performance. Only few studies have explored an association between Safety Culture and Safety Performance (Smith & Wadsworth, 2009). ‘Both corporate Safety Culture and competent OSH advice make significant, independent contributions to corporate safety performance’ (Smith & Wadsworth, 2009, p. 66). Safety Culture, as part of the overall culture in an organization, affects the attitudes and beliefs of members in the organization in terms of Health and Safety Performance (Cooper D. , Towards a Model of Safety Culture, 2000). The relationship between Safety Culture and Safety Performance can be assessed using the employee’s perception approach through a set of questionnaire (Wua, Li, & Chen, 2008).

2.4. Conceptual Framework

The conceptual framework describes the relationship between variables is constructed in Figure 1. There are fourteen control factors determined in this research which are considered as independent variables which are built into four different elements which are considered as dependent variables which construct the Safety Culture.



Source: Author (modified from various resources)

Figure 1. Conceptual Framework of Safety Culture

A dependent variable is the variable of primary interest to the researcher; it is the main variable that lends itself for investigation as a viable factor. Through the analysis of the dependent variable, it is possible to find answers or solutions to the problem. An independent variable is one that influences the dependent variable in either a positive or negative way. A mediating variable is one that surfaces between the time the independent variables start operating to influence the dependent variable and the time their impact is felt on it (Sekaran & Bougie, 2011).

3. Conclusion and Recommendation

The model described above was tested and implemented through an assessment at PT XYZ in 2013. It proves that the Safety Culture in PT XYZ significantly affects its Safety Performance. The rest of the elements and control factors are proven to provide impact on the Safety Culture. The quantitative survey was followed by discussions and interview with selected employee which also resulted in aligned conclusions.

The information here from can be used as a foundation to understand variables that affect Safety Culture in an organization. The conceptual framework establishes the elements that construct Safety Culture, and provide information on control factors of each elements. The result of assessment can be also used to do targeted and focused approach on Safety Culture improvement towards a strong Safety Performance and risk management.

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