A Review on Conceptualization and Dimensions of Safety Culture

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ABSTRACT

Recent development in industrialization and global economy has contributed to the increased number of workplace injuries and accidents. Safety culture has been seen as a central medium to curb the worrying trend of workplace accidents. The term of safety culture has emerged from the Chernobyl nuclear disaster in 1986 and the concept has been widely used until today. However, the conceptualization of safety culture suffers from several major drawbacks such as no definite understanding of how safety culture being defined and measured. This paper hypothesized that higher levels of safety culture in the workplace will display lower numbers of accidents. Due to this concern, this paper seeks to provide a clear conceptualization of safety culture, dimensions used to measure it and common research methodology used in the previous safety research.

KEYWORDS: Safety Culture, Workplace Accidents, Safety

1. Introduction

Safety culture is a term that first appears after the Chernobyl nuclear disaster in 1986 (Cox and Flin, 1998, Cooper, 2002, García-Herrero et al., 2013). The importance of safety culture as well as the impact of the managerial and human factors on accidents was highlighted in the report of Chernobyl disaster, rather than merely technical failures (Flin et al., 2000). Thus, numerous studies have attempted to investigate and define the term “safety culture”; trying to discuss its dimensions as well as the method to analyze since it has been widely recognized from 1986 (Pidgeon, 1998; Carroll, 1998; Clarke, 1998; Cooper, 2002; Cai, 2005; Bentley and Tappin, 2010; Edwards et al., 2013). This paper will proceed by reviewing the literature in aspect of safety culture, look into its definitions and dimensions; discuss about the methodology adopted by existing studies and lastly discuss the impact of safety culture on reducing the number of accidents in the organization.

Nowadays, safety culture has been recognized and become prevalent as the key aspect which closely linked to safety management in many industries (Håvold, 2010; Mearns et al., 2013). To lower the number of safety failure, Edwards and Jabs (2009) believed that the employees should create safety culture by speaking out their concerns and challenge
authorities in the organization. However, it cannot be assumed that proactive communication about safety issues can always exist within the organization (Ismail et al., 2012a).

2. Definitions, Dimensions and Method to Measure Safety Culture

Except of Chernobyl nuclear reactor accident, a series of major disaster such as King Cross fire, Piper Alpha explosion, Clapham junction train crash were due to the lack of safety culture in the organization (Gadd and Collins, 2002). Unfortunately, the scarcity of safety culture has led to 235 men killed in those accidents.

There is a large volume of published studies describing the concept of safety culture (Teo and Feng, 2009; Filho et al., 2010; Wu et al., 2010; Mariscal et al., 2012; Edwards et al., 2013; Fang and Wu, 2013; Pumar-Méndez et al., 2014; Atchley et al., 2014). However, the concept of safety culture is still remaining vague and implicit yet it does not have a universal definition for it (Frazier et al., 2013; Boughaba et al., 2014; Reiman et al., 2014). In other word, there is no mutual way to define and measure safety culture (Guldenmund, 2000; Hale, 2000; García-Herrero et al., 2013).

Meanwhile, the concept of safety culture and safety climate has discovered having a considerable overlap in terms of definition (Fruhen et al., 2013). Guldenmund (2000) has reviewed existing studies and listed out 18 different definitions of safety culture as well as for safety climate which he claimed that both concepts have not much consensus in term of cause, content and consequences (Håvold, 2010). Table 1.1 has listed down seven definitions of safety culture that proposed by different researchers from 1991 until 2014.

<table>
<thead>
<tr>
<th>References</th>
<th>Definition</th>
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<td>Cox &amp; Cox (1991)</td>
<td>Attitudes, beliefs, perceptions and values that employees share in relation to safety, has gain acceptance due to its critical role for accident prevention.</td>
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<td>Cox &amp; Flin (1998)</td>
<td>System which indicates to the workforce what is important and legitimate for their action in relation to safety culture.</td>
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<td>Wu et al. (2010)</td>
<td>Employees’ imaging of safety conditions in the workplace; which images then affect organizational safety activities.</td>
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<tr>
<td>Mannan et al. (2013)</td>
<td>Organization shared attitudes, values, norms and beliefs about safety, including attitudes about danger, risks, and the proper conduct of hazardous operation.</td>
</tr>
<tr>
<td>Frazier et al. (2013)</td>
<td>The values, attitudes, beliefs, risk-perceptions and behaviours as they relate to employee safety.</td>
</tr>
<tr>
<td>dos Santos Grecco et al. (2014)</td>
<td>Personal attitudes and habits of thought and to the style of organization</td>
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Morrow et al. (2014) Employees’ beliefs about the importance of safety are shaped by the safety culture of the organization, which then influences their attitudes toward safety, perceived norms over safe working behaviours for working safely, and perceptions of control over safe working behaviour.

The multifaceted nature of safety culture brings the lack of consent about how it is define and to measure (Mearns et al., 2013). In order to conceptualize the term of safety culture, many researchers had proposed different kind of attributes and measuring method of safety culture in their studies. Wu et al. (2010) believed that safety culture consists of three dimensions which are employee safety participation, perceived risk and emergency response. However, Mannan et al. (2013) conducted a case study on creating a Best-in-Class safety culture framework, from there they indentified four attributes of safety culture in their study; there are leadership, culture and value, goals, policies and initiatives, and organization and structure.

In the research done by García-Herrero et al. (2013) and Frazier et al. (2013) both using quantitative analysis had addressed their own dimensions of safety culture. García-Herrero et al. (2013) had proposed five attributes of safety culture in their research which are safety is a clearly recognized value, accountability for safety is clear, safety is integrated into all the activities in the organization, leadership for safety is clear, and safety is learning driven. Meanwhile, Frazier et al. (2013) had identified three dimensions of safety culture which include in their 92-items questionnaire; management concern, personal responsibility, and peer support for safety.

In recent year, the argument on the development of safety culture’s dimension is still carrying on. Dos Santos Grecco et al. (2014) in their exploratory case study has proposed that safety culture consists of six dimensions that include top-level commitment to safety, organizational learning, organizational flexibility, awareness, just culture, and emergency preparedness. Meanwhile, Morrow et al. (2014) believed that, management, commitment to safety, willingness to raise safety concern, decision making, supervisor’s responsibility for safety, questioning attitude, safety communication, personal responsibility for safety, prioritizing safety, and safety training, total ten should be the dimensions of safety culture.

3. Conclusion

According to Ismail et al. (2012b), organization with positive safety culture becomes a reflective on safety practices by bringing the workforce together to learn how to work more safely at the workplace. In short, fostering a positive safety culture has become a strong and critical fundamental of improving safety performance within the organization (Fang and Wu, 2013). This paper hypothesized that higher levels of safety culture in the workplace will display lower numbers of accidents rate at the workplace.

![Figure 1.1: Safety culture framework](image)
References


Reiman, T. and Rollenhagen, C. (2014). Does the concept of safety culture help or hinder systems thinking in safety? Accident Analysis & Prevention, 68(0), 5-15.