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Employee engagement, boredom and frontline construction workers feeling safe in their workplace

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ABSTRACT

Systems thinking is a philosophy currently prevalent within construction safety literature that is applied to understand and improve safety in sociotechnical systems. Among systems, the site-project organizational system is of particular interest to this paper. Using focus group and survey feedback research to learn about how safety incidents effect levels of construction workers engagement this paper reveals how a safety incident provides an opportunity to create a potential quality (productivity) upgrade within an organization. The research approach involved a qualitative study involving 27 frontline supervisors and a follow-up survey completed by 207 frontline workers in the Australian Asphalt and Pavement Industry. The focus group interviews supported the articulation of the concepts of tacit safety, explicit safety, situational awareness, foresight ability, practical intelligence and crew synergy. Our findings indicate that having regular shift changes and other job site workers being fatigued are influential on perceptions of tacit safety. An individual's foresight ability was found to be the most potent predictor of worker perceptions of work engagement. The paper explains that relatively small improvements in worker perceptions of safety can bring about significant improvements in employee engagement and productivity.

1. Introduction

Systems thinking emerged as a trans-discipline, in the 1950s, in large part as a reaction to the reductionism of the traditional scientific method and the failure of that reductionism to cope with the complexity inherent in the biological and social domains (Jackson, 2003). Scientific methods and management theories which advocate control and predictability, aim at separating variables to understand specific cause–effect relations. In stark contrast to this 'analytical thinking' approach, systems thinking considers the system's global behaviour and performance as a combined effect of all its variables and – most of all – of their mutual relations (Conti, 2010). In doing so, systems thinking sees systems holistically, emphasizing the circular nature of complex systems, i.e. cause and effect are not distinguishable (Goh et al., 2010). As systems thinking evolved, increasing attention was given to its use to tackle practical real-world problems because of its generality.

From the systems perspective, interdependence among the different systems is the main factor in determining the entire system's characteristics, behaviour and performance. Such relations normally give rise to unique properties known as emergent properties (Conti, 2010). In the safety context, safety can be considered as emergent phenomenon resulting from dynamic interactions among people, technology, regulations, etc., making a systems view imperative if the aim is to evaluate or develop the entire system (Reiman and Rollenhagen, 2011). Leveson (2011a,b) argue that preventing accidents requires using accident models that include social, organizational, as well as technical aspects of safety. Dekker (2010) describes the systems approach as seeing sociotechnical complexity not as constituted of parts and their interactions, but as web of dynamic, evolving relationships and transactions. This notion is recently echoed by Reiman and Rollenhagen (2014), stating that safety will not be fully managed by managing its constituent parts in isolation.

The cost of these safety-related outcomes is substantial, as it is estimated that workplace fatalities, injuries, and illnesses result in economic losses amounting from four to five per cent of gross domestic product (World Health Organization, 2008). In 2007, this amounted to economic losses in the United States of over $550 billion (Bureau of Economic Analysis, 2008). In 2000, there were approximately two million work-related deaths (World Health Organization, 2008). It is clear from the above that there is a need to instil more systems thinking into safety. However, safety is not a subject itself; it is an attribute of a person or

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process. Likewise, managing for safety is not an independent activity, it is part of management with specific targets at different levels. Rasmussen (1997) identified a number of levels in safety-related sociotechnical systems including: work (task), staff, management, organization, regulatory and government levels; each of which is co-responsible for production and safety. Rasmussen's risk management framework is underpinned by the idea that sociotechnical systems comprise various levels; actions and decisions across these levels interact with one another and contribute to the control of hazardous process (Goode et al., 2014).

The importance of viewing multi-dimensional and multi-level systems as a whole, and the importance of preventing isolation in the system is addressed in this paper by employing a mixed-methods approach that involved first speaking with senior managers across the industry. It was clear a key focus for leaders of this industry to continually look at ways to reduce the number of deaths and injuries occurring across their workforce. With their support and the support of the Industry Association the analysis moved to frontline supervisors. Frontline supervisors were interviewed about safety on their work-sites and this led to the development of a survey that was completed by 207 frontline workers in the industry. The aims of this research project were to explore, from the perception of the actors in the project-organizational system their world view of the factors that impact their perceptions of safety at work.

2. Construction safety

In Australia, the total economic cost of work-related injuries and illnesses for the 2008–2009 financial year is estimated to be $60.6 billion dollars, representing 4.8 per cent of Gross Domestic Product (Safe Work Australia, 2012). The construction industry has the characteristic of small scale accidents with high frequency, and diverse hazard sources (Zhou et al., 2015). Improving productivity and safety of construction projects is among the priorities of the construction industry (Beavers et al., 2006). As construction site operations are both complex and emergent, the management of such operations requires not only a well-developed safety management system, but more crucially, the simultaneous and continuous existence of collective norms that emphasize safety (Torner and Pousette, 2009). Due to this fact, there has been an increasing attention, over the past two decades, to address the interactions among these various sociotechnical sub-systems through the conceptualization of safety culture and safety climate constructs. Both constructs have been widely accepted by many industries including the construction industry. However, they have also been criticized as catch-all concepts that mix psychological and human factors issues that are devoid of contextual consideration (Reiman and Oedewald, 2007). In this study we refer to Glendon's safety climate instrument. This instrument is well validated in the safety literature (Fin et al., 2000; Cooper and Phillips, 2004; Hecker and Goldenhar, 2014).

Safety culture, for example, was described as an inherently normative concept having dimensions that are typically qualitatively very different from one another and can hardly be considered a coherent single variable among the other variables of the sociotechnical system (Reiman and Rollenhagen, 2014). Moreover, Myers et al. (2014) argue that the safety culture concept has lost some of its precision and analytic power. They suggest that understanding of culture can be further improved through delineating the ideological – the socially constructed abstract systems of meaning, norms, beliefs and values (which they refer to as culture) – from concrete behaviours, social relations and other properties of work-places (e.g., organizational structures) and of society itself.

Systems thinking is a philosophy currently prevalent within construction safety literature that is applied to understand and improve performance and safety in sociotechnical systems. The literature reports a number of theoretical and empirical studies promoting application of systems thinking concepts on construction safety management systems and processes (Mohamed and Chinda, 2011).

Among systems, site-project organizational systems is of particular interest to this paper. In this paper systems thinking is applied and emphasizes the recursive nature of the site-project organization systems approach. Internal relations within this system are strongly influenced by the kind of social relations that take place in the surrounding social environment. In terms of organizing for site-project safety, the dynamics and complexity imply that workers continuously experience change in the form of adaptations in response to short-term productivity and cost objectives. In these situations, it is possible that safety defences degenerate as a result of the production pressures and changes. To keep the construction operation system within the safe limit, and maintain system adaptation, human inputs are essential as it is through humans that recognition, communication, socialization, and improvisation of unexpected events, changes, and disruptions that system safety is achieved (Mitropoulos and Memarian, 2012). In this sense, human operators (site workers and supervisors) and their interactions are the catalysts in managing site-project safety.

2.1. Feeling safe at work

Learning from incidents is a fundamental approach in accident prevention. Too often, we fail to learn from the past and make inadequate changes in response to losses (Leveson, 2011a,b). One of the reasons an organization may not learn from a safety loss is that, in many cases, it is an exercise in diligence by paperwork rather than taking personal responsibility or duty of care. There are reported cases (e.g., Hopkins, 2009) where in the event of an accident the organization is quick to attribute blame to the frontline supervisor who had not completed the correct paperwork. This approach is likely to obviate the organization's legal responsibility while doing relatively little to create a safer world view for their workers. From a systems perspective this creates an emphasis where the locus of control and responsibility for safety is passed to forms and processes.

Kahn (1990) and May et al. (2004) suggest trust and fairness along with other antecedents help promote a sense of psychological safety (feeling safe) at work. In many organizations, supervisors are charged with the responsibility of minimizing safety. However, this is largely achieved by requiring frontline workers to participate in a system that is considered technically safe. Thus, the hardware often employed creates an engineered environment considered to be as safe as world's best practice allows.

In many organizational realities, even though the right 'boxes' are ticked accidents still occur and employees are likely to feel that their personal safety is less than optimal. This paper aims to explore, from the perception of the actors in the system their world view of about the factors that impact their perceptions of safety at work. This is articulated in the following research question (RQ):

RQ1: What factors contribute to an AAPI worker feeling safe in their workplace?

In this paper we also explore the relationship between feeling safe at work and feeling bored at work. Boredom at work is appears to be a fairly common phenomenon and is linked to many negative outcomes for individuals and organizations (Whiteoak, 2014). Boredom at work is impacted by an individual's perception of the challenge and interest they find in their work. Boredom at work can occur due to an inadequately stimulating environment because of

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