Exploring the Antecedents of Safety Performance for Malaysian Construction Industry: A Conceptual Framework

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ABSTRACT

This conceptual paper intends to present as a proposition of a framework to understand the antecedents of safety performance behaviors. The elements of performance which refer to the tangible behaviors exhibited by individuals at work, safety participation and safety compliance, are crucial in maintaining safe workplace for construction industry. This article illustrates potential antecedents in determining safety performance behaviors as effect of safety leadership attributes and safety climate components based on the Wu et al. (2008) model and current literature in this field. The article contributes to a better understanding of safety situation in the construction industry through the relationships among safety leadership behaviors, safety climate components and safety performance behaviors. This paper ends with a suggestion of the conceptual framework to study the antecedents of safety performance in the context of Malaysian construction industries.

Keywords: Malaysian construction industry, safety leadership behaviors, safety climate, safety performance

INTRODUCTION

Globally, extent and rapidity of technological transformation and increasing production demand effects physiognomies of organizations and employment respectively. Also, there is upraising in unjustified arrangements in short termed works, economizing and subcontracting or nonconventional working hours as well as higher proportion of aged, female or migrating workers what impact on the form and feature of work-related risks along with their administration. Moreover, the fluctuation in the socioeconomic stability in workplace dynamics and worldwide economic crunch unquestionably contribute reshaping the world and conceivably effect on safety and health situations at workplace (International Labor Office, 2009).

On the other hand, every occupation has its own inborn aspects of threat. Besides, human enactment is feasibly associated with safety; while, human errors are one of the possible prominent source of industrial accidents, in particular, in high-risk working area (Llory, 1992; Jacobs & Haber, 1994; Bottani, Monica, & Vignali, 2009; Ismail, Doostdar, & Harun, 2012). In relation to this, among about 88% of the preventable accidents are observed to be caused from inadequacy of safe behavior at workplace. On the other hand, seemingly, safe working behavior is capable of hindering errors from human; in so doing, the risks of occurrence of incidents are moderated through forming safe practices of work (Heinrich, 1931; Cheng, Ryan, & Kelly, 2012).

Construction industry flourished at a massive scale in recent years in order to accommodate constantly growing global population. And, the unremitting demand of habitat, workplaces, infrastructures, and other establishments lead to further growth of construction market as a significant contributor of national economy everywhere (Awwad, Souki, & Jabbour, 2016).Thus, both developing and developed countries recognize the importance of construction sectors in social and economic developments and their sustainability. Moreover, construction industries are diversified widely to employ skilled and non-skilled workforce largely; thus, influencing various aspects of life and living in a broad spectrum (Khan, Liew, & Ghazali, 2014).

However, by nature, construction work process is relatively unique in terms of work conditions or work sites. Decentralization of work groups at construction industries reasons complexity to identify and to manage unsafe behaviors as well. Hence, distinctive behavioral control approach is required to deal with the working sites for working safely (Fang, 2012; Raheem & Hinze, 2014; Wang, Zou, & Li, 2016). Conversely, regardless of the substantial participation in economic growth, the construction industry is still involved with inexplicably high number of injuries and deaths globally; wherein, about 6–10% employment is provided for industrialized nations which are causing for 20–40% of the serious accidents overall (Raheem & Hinze, 2014).

Since independence, at the age of primitive technology and labor dominant skill-based industry, Malaysia signifies the role of construction (Kamal, Haron, Ulang, & Baharum, 2012). During 1991-2010, the construction sector supports the nation with 4.09 % share of Malaysian *Gross Domestic Product* (GDP) on an average. And, the industry grows with the rate of 4.74 % as well as absorbing 8.56 % of the workforce into employment (Khan et al., 2014). On the other hand, similar to many other countries, Malaysia construction industries unquestionably remain as one of the segments where the wellbeing of the workforce stays risky due to its noteworthy injury and fatality rate (Abdullah & Wern, 2011).

Mostly, in general, present-day interventions in safety management for safety at construction projects are principally based on legislative conformity and error detection and prevention. Even though, the risk management measures are demonstrated to be beneficial, the initiatives fail to be finally triumphant in decelerating accident rates further as these interventions deficit priority in social and team dynamics for the construction works (Koh &Rowlinson, 2012). Therefore, it is vital to understand human responses in different social and organizational phenomena in elevating safety situation at the construction industry. This paper presents a conceptual framework associating elements as antecedents that are acknowledged in cognizing safety performance under the light of recent literature.

The Construction Industry and Safety in Malaysia

In any national economy, ranging from underdeveloped to developed nation, the contribution of construction industries to its growth is quite exceptional worldwide. Equally, in Malaysia, construction industry plays a significant role in national development through economic progression (Ghazali, Yaman, & Mohammad, 2014; Olanrewaju & Abdul-Aziz, 2015). For instance, Later, in the year 2015, the *GDP* in *Malaysia* becomes above of RM1.06 trillion, wherein, construction sector contributes 4.4% of the national economy. Even though the economy faces challenges in 2015 due to the rapid drop of oil price globally leading to a gradual decline of worth for Ringgit, the economy of the country expands by 5.0% while construction sector grows by 8% (CIDB, 2016).

Also, Malaysian construction industry that is grouped into four key clusters (residential structure, nonresidential structure, Engineering and special trades), remains dominant in accommodating a higher volume of workforce. For instance, in 2012, the industry employed about 1,028,000 individuals, representing approximately 8 % of the total number of employed nationally for that time, which is, the fourth major employment area after agriculture, manufacturing, and services (Olanrewaju & Abdul-Aziz, 2015).

However, the construction industry in Malaysia apparently persists as maximum risk-prone work area with increasing rate of accidents. And, attaining the objective of nullifying accidents throughout the construction industry is less likely to be a very imminent achievement (Ghazali, Yaman, & Mohammad, 2014; Kang, Fazlie, Goh, Song, & Zhang, 2015). Furthermore, in Malaysia, between the years 2005–2009, impact from the motion of equipment or objects is regarded as the main source of accidents in construction industries causing 8997 accidents, while followed by other sources namely falls causing 1042 accidents per year for that period. Additionally, on an average, non-categorized reasons (for example, structure breakdown, electrocution, burn and asphyxiating, blast, drowning and toxic pollution) are the third most significant source responsible for 490 accidents followed by being caught between objects with the annual occurrence of 371 counts. Lastly, overexertion or vigorous movements lead 137 accidents yearly for that period (Chong & Low, 2014).

Safety Performance and Human Behavior

Human beings choose different reactions to obtain a specific outcome, as revealed by Skinner (1969), wherein the activator, actions and consequence constructs are linked as a chain. In addition, both activator and results contribute to shaping the behavior of an individual. However, Krause (1997) reveals that, activators (or antecedent) act to provide signals to the conduct and effects (or consequences) exert thorough influence on behavior as well as decide the likelihood of occurrence of that behavior (Tuncel, Lotikar, Salem, & Daraiseh, 2006). Moreover, in general, safety-related behavior, refers to a choice of responses from the individuals to conserve a safe workplace through integration of individual's action in harmony with the practice and policy for secured working in addition to individual efforts to maintain and raise the level of protection at workplace (Kapp, 2012).

On the other hand, any of the employee tendency of being inconsiderate to safety regulations, methods, instructions, and particular attribute of the work process that likely affect the safety of the system or individual is considered as unsafe behavior. And, unsafe behavior is acknowledged

as the typical reason contributing accidents at workplace predominantly in developing countries worldwide (Fam, Nikoomaram, & Soltanian, 2012; Mohammadfam, Ghasemi, Kalatpour, & Moghimbeigi, 2017). However, numerous reasons are specified that have a primary and ancillary effect on the responses from the employee, in due course, on occurrences of accidents discursively (Mohammadfam et al., 2017).

Primarily, organizational climate dominantly influences on overall performance as individual behavior is the consequence of a group behavioral characteristics, at the same time as, the excellence of leadership possibly affects the climate (Wu et al., 2008). Safe environment of work guarantees that work-related risks are successfully managed, significant accidents are evaded, disturbance in business in curtailed, employees at work stays safe, and work process faces negligible interruption. Consequently, employee self-esteem and productivity and overall industrial performance in developed (Workplace Safety and Health Council, 2012, p. 6). Besides, work group dynamics is affected by leadership approach, harmony in impersonal interaction, extent of blame practices; eventually, employee safety consciousness and habitude are significantly influenced (Hsu, Lee, Wu, & Takano, 2010).

Thus, in a persistent manner, establishing a safe environments is observed to be more of a cultural challenge rather than merely technical (Garlapati, Siddiqui, & Al-Shatt, 2013). In particular, workplace accident is a continual challenge in the construction industry, wherein, the safety behavior of employee at work imperatively leads to accidents in this industry. Therefore, managing safety behavior is one of the primary factors to establish safe working environment at construction industries (Zhang & Fang, 2013; Zhou, Goh, & Li, 2015; Goh & Ali, 2016).

Safety Performance Behaviors

Campbell (1999) defines performance by sets of behaviors or activities which are appropriate in attaining organizational objectives, while, performance is measurable as an extent of contribution in achieving those goals. Again, these sets or behaviors or actions are differentiated from effectiveness which refers to the effect of the behaviors on an outcome. Furthermore, Motowidlo, Borman, and Schmit (1997) explain performance as a behavioral construct which is multi-dimensional and episodic, whereas, Borman and Motowidlo (1997) distinguish two sets of behavior namely task performance and contextual performance that contributes to achievements of objectives (Curral, 2014). On the other hand, task performance refers to the expertise of an individual that leads to carrying out actions contributing organizational aims in technical core, whereas, contextual performance has a contribution to organizational objectives by strengthening social, organizational, and psychological background wherein technical core must function (Sonnentag & Frese, 2002).

On the other hand, behaviors associated with safety can be constructed likewise the work behaviors concepts representing work performance. Consequently, the performance components are explained as the tangible behaviors that individual exhibit while at work (Griffin & Neal, 2000). Moreover, the elements of performance, generally as task performance and contextual performance as mentioned by Borman and Motowidlo (1997), illustrate the actual behavior of individual while at work; whereas, by definition these two aspects of performance behavior termed as safety compliance and safety participation respectively(Griffin & Neal, 2000). Besides, the determinants of safety performance characterize the elements that are directly accountable for individual distinctions in compliance and participation (Neal, Griffin, & Hart, 2000).

In connection to that, safety participation covers those sets of behaviors that lead to enhancing safety extent within an environment namely, voluntary involvement, assistance to work group members and take part in safety-related initiatives in controlling accidents (Neal & Griffin, 2006). Conversely, safety compliance is explained as the degree of accordance in safety associated principles, measures, legal responsibility and prerequisites (Kvalheim & Dahl, 2016). It is worthwhile to note that, different forms of leadership behaviors contribute in developing different safety related behaviors within employee. Particularly, behavioral attributes of safety leadership predict both categories of safety performance behaviors, that is, safety compliance (in-role behavior) and safety participation (extra-role behavior) (Clarke, 2013; Wu et al., 2016). Furthermore, there is always a necessity to create the right environment for nurturing safety to achieve an optimal level of safety performance (O'Dea & Flin, 2001).

Safety Leadership Behaviors

Leadership can be explained as a socially influencing process which is acted on by characters in recognized positions to exercise power in an organization. Even though leadership is not limited to individuals at organizational levels with authority, it also covers individuals that pass on influence widely around them in an organization (Kelloway & Barling, 2010). Moreover, different effectual behavior from the leaders at workplace possibly outline different safety behavior of individuals at work group as well as improvement in safety related outcome. On the other hand, as observed by Kelloway, Mullen and Francis (2006), inappropriate or unreceptive leadership might adversely impact on individuals' safety behavior what eventually elevate the risks at work (Lu et al., 2016). Thus, the perception of safety leadership, as the structural component of managerial leadership, affords additional explication of various distinctive individual behaviors of every safety leader and the reasons behind the

existing levels safety performance or organizational performance equally (Pater, 2001; Wu, 2005b).

Cooper (1998) reveals caring and controlling as two vital aspects of leadership behaviors, wherein, caring behavior includes leaders' attention to wellbeing of the employee and harmonious relationship, on the other hand, controlling behavior indicates goal setting, define role and responsibilities, outline policy and procedure and sustaining performance. As mentioned by Krause (1997) and Wu et al. (2008), the behaviors of the leaders are classified into two classes: transformational and transactional. The transformational leadership behaviors object potential enhancements through interpersonal relationships, while a transactional leadership emphasize on recompense as a mean to achieve performance (Lu & Yang, 2010).

In association with safety leadership, the transformational form of safety leadership behavior focuses on an intrinsic style of motivation that persuades the employee to comply willingly with the responsibility to the leader as well as to the organization. Conversely, the transactional form of safety leadership behavior emphasizes the extrinsic characteristics of motivation wherein compliance is managed through illustrating apprehension of penalty or fear of punishment or expectancy of incentives (Pilbeam, Doherty, Davidson, & Denyer, 2016).

Apart from these, diagnostically, safety leadership practices are bundled into three areas, as mentioned by Wu et al., (2008), they are safety controlling, safety coaching or safety caring. In particular, safety coaching focuses on future direction of safety behavior, safety caring centers the concern for others and safety controlling on confirming task is safely done currently. By safety coaching behavior a leader projects role modeling, safety education, and team participation. And, through safety caring behavior a leader exhibits safety concerns and communicate for safety information sharing. By safety controlling behavior, a leader defines safety roles, monitor performance and give responses as feedback (Pilbeam, Davidson, Doherty, & Denyer, 2016a).

Additionally, safety inspiration conveyed from leaders essentially enables the employees to become further agreeable to involve their time and attention into safety-related actions in recognizing the vision. Distinctively, employees are expected to influence others to attain safety objectives (Griffin & Hu, 2013). Hence, employee participation in safety initiatives are predicted by safety-focused inspirational behaviors of the leaders (Griffin & Hu, 2013).

Safety Climate

The term organizational climate can be derived as the shared perception and the understanding involved with the policies, practices, and procedures employees experience as well as and the behaviors they view getting rewarded and that are supported and expected (Schneider, Ehrhart, & Macey, 2013). On the other hand, safety climate can be interpreted as an interpretation of organizational climate while, from various theoretical contexts, safety climate can be derived as "a summary of molar perceptions that employees share about their work environments" (Zohar, 1980, p. 96).

Zhou, Fang, and Wang (2008), the study of pointed five characteristics as elementary safety climate indicators, namely safety management systems and procedures, management commitments, safety attitudes, workmate's influences, and employee's involvement (Li, Ji, Yuan, & Han, 2017). In connection to this, among the constituents of safety climate, the essentially are management safety commitment, social support, work pressure; and all these elements are associated with safety performance (Guo et al., 2016).

Moreover, management safety commitment reflects the assurance of the management to consider the priority of safety and disseminate and respond safety related issues in an effective manner (Neal & Griffin, 2004). Also, social support, the safety climate element lying at a micro level of the organization, presents the cooperation that an employee receives in safety aspects from supervisor and peers (Guo et al., 2016). And, work pressure put forth by the upper level leads employee act unsafe way to execute work, similarly, sometimes work pressure turns more priority over safety considerations by superiors. Therefore, to meet extended load, employee adopt ways of work completion avoiding proper safe practice (Guo et al., 2016).

Effect of Safety Leadership and Safety Climate on Safety Performance

The fineness of leadership persuades the wellness of a working environment, eventually impact on organizational performance considerably. Moreover, the effect of group behavioral norm, that is, the result of interactions between the organization and its members, leads an organizational climate to influence the behavior of its member. In brief, both the safety leadership and safety climate significantly interpret the extent of safety performance (Wu et al., 2008).

Now, both safety participation and safety compliance are directly dependent on the extent of leaders' effort in developing employee awareness, knowledge, motivation or skill (Fernández-Muñiz, Montes-Peón, & Vázquez-Ordás, 2014; Wu et al., 2016). Moreover, transformational leadership behavior is found to be most appropriate to encourage employee safety participation, whereas dynamic transactional leadership behavior is in supporting safety compliance (Clarke, 2013). In exacting, safety inspiration is predominantly associated with establishing related to safety participation among the work group members; on the other hand, safety monitoring notably contributes in grooming safety compliance in

particular (Griffin & Hu, 2013; Hoffmeister, Gibbons, Johnson, Cigularov, Chen, & Rosecrance, 2014).

Now, it is the leader who guides to settle climate in an organization; because, from the followers' perspective, it is the responses of the leader to the followers that contribute in understanding which of the procedure, norms or actions to be appraised or gain support (Shen, Ju, Koh, Rowlinson, & Bridge, 2017; Shen, Koh, Rowlinson, & Bridge, 2015). Referring to, Yukl (2006), leadership involves the development of influence by which the leaders expand the followers' recognition of organizational goals, courses of action and ultimately accumulate their individual and group efforts to attain the shared objectives (Shen, Ju, Koh, Rowlinson, & Bridge, 2017). Apart from communicating organizational and inspiring vision, transformational leadership regarding motivation enable an employee to involve socially supportive behaviors like assist coworkers, sharing resources and advising the needful (Liaw, Chi, & Chuang, 2010). Moreover, both the aspects of leadership behaviors develop trust; and, the trust leads the employee to exhibit extra-role interactions (MacKenzie, Podsakoff, & Rich, 2001). Also, both transactional and transformational leadership influences upwardly, consequently gain ethical, legal and economic corporate social responsibility from higher management (Luu, 2014).

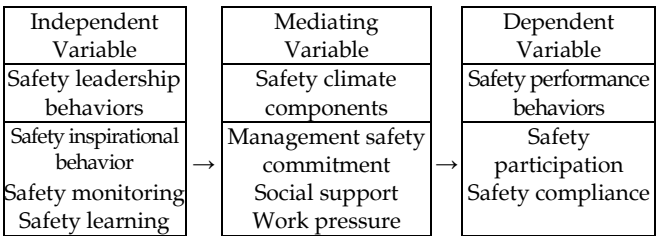
On the other hand, perceived safety climate composed of management commitment, supervisor support, co-worker support, employee participation, and competence level are found to have both direct and indirect effect to unsafe working behavior (Seo, 2005). Again, positive safety climate has a significant correlation with higher degree of safety performance, especially in safety participation (Clarke, 2006). Likewise, management commitment straightforwardly predicts safety compliance directly, whereas, safety communication and feedback predicts safety compliance indirectly (Vinodkumar & Bhasi, 2010). Moreover, grander harmonious relationship substantially influences on safety practice and awareness of the employee through influencing team collaboration (Hsu et al., 2010). Conversely, work pressure has a substantial and inverse influence on both safety participation and safety compliance (Guo et al., 2016). (Hsu, Lee, Wu, & Takano, 2010)

Conceptual Framework

A conceptual framework as at Figure 1.1 introduces research variable as well as explains connections among these variables. Additionally, a conceptual framework is associated with the problem statement; and, it prepares the platform of the particular research questions that lead the investigations (McGaghie, Bordage, & Shea, 2001). The conceptual framework is originated from existing theories and predicts sets of responses what is afterward tested for sufficiency as a resource in explaining the research outcome. In other words, before data collection or analysis, conceptual framework details anticipated results (Saunders et al., 2009).

Wu et al.'s (2008) affirm, in broader facet, the concepts of safety leadership, safety climate, and safety performances are connected. Again, safety leadership has a positive relationship with safety climate; while, the factors of safety leadership affects that of safety climate (Xuesheng & Wenbiao, 2012). Moreover, Safety leadership is positively related to safety performance (Wu et al., 2011). Whereas, safety climate predicts safety performance just like organizational climate possibly influence organizational performance for an organization (Griffin & Neal, 2000). Also, as of Zohar (2010), the concept of safety climate starts to develop at the individual levels while it settles as collective perception through proficiency and representativeness of the leaders (Pinion, Brewer, Douphrate, Whitehead, & DelliFraine, 2017). Among the safety leadership behavioral traits, safety inspirational behavior, safety monitoring, and safety learning affect safety performance behavioral characteristics (Griffin & Hu, 2013).

Figure 1: Conceptual frameworks for attributes of safety leadership, safety climate components, and safety performance behaviors.



Source: Wu et al., (2008), Griffin & Hu (2013) and; Guo et al., (2016).

On the other hand, safety climate is critically composed of management safety commitment social support and work pressure (Guo et al., 2016). The factors that decisively affect the nature or outcome of safety performance are also represented as the factors undeviatingly responsible for individual differences regarding safety compliance as well as safety participation (Neal, Griffin, & Hart, 2000). In other words, safety performance is supposed to be indicated conveniently as safety participation and safety compliance (Guo et al., 2016; Vinodkumar & Bhasi, 2010; Griffin & Hu, 2013).

The framework specifies selected leadership behaviors and safety climate components as conductive to safety performance and outlines the mechanisms whereby positive safety performance might be achieved. At macro-organizational level, the relationships among safety leadership, safety climate and safety performance as presented by Wu et al. (2008) is the basis of this conceptual framework. The conceptual

framework proposes that safety performance is subjected to safety leadership characteristics and safety climate components. However, the relationship influence of safety leadership on safety climate is mediated by safety climate.

The framework also defines safety leadership characteristics and safety climate components as illustrated by Griffin and Hu (2013) and Guo et al., (2016) respectively. Griffin and Hu (2013) assert that safety learning, safety inspiring and safety monitoring are the vital leadership behaviors, while, they influence on safety participation and safety compliance. On the other hand, Guo et al. (2016) argue that management safety commitment, social support, and production pressure are the core elements of safety climate and they impact on safety performance.

Conclusion

The previous discussion has projected some precursors assumed to explain safety performance behaviors. The following initiative is to scientific authentication of the extent to which safety performance behaviors are explained by the proposed framework for the given context. A pertinent model is likely to enhance understanding the safety behaviors, consequently, a developed work ambient.

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