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Systematic impact of institutional pressures on safety climate in the construction industry

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ABSTRACT

This paper explores how three types of institutional pressure (i.e., coercive, mimetic and normative pressures) systematically impact on the safety climate of construction projects. These impacts are empirically tested by survey data collected from 186 questionnaires of construction companies operating in Shanghai, China. The results, obtained by partial least squares analysis, show that organizational management commitment to safety and employee involvement is positively related to all three institutional pressures, while the perception of responsibility for safety and health is significantly influenced by coercive and mimetic pressure. However, coercive and normative pressures have no significant effect on the applicability of safety rules and work practices, revealing the importance of external organizational pressures in improving project safety climate from a systematic view. The findings also provide insights into the use of institutional forces to facilitate the improvement of safety climate in the construction industry.

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1. Introduction

The construction industry has been accident-prone and long criticized for its relatively poor safety performance (Jannadi and Bu-Khamsin, 2002). Despite the focus on individual behaviors that directly contribute to accidents (Fleming and Lardner, 2002), many scholars, such as Griffin and Neal (2000), advocate attaching an equal value to inherent, safety-related organizational factors. As a leading indicator of organizational safety (Hon et al., 2013), safety climate continues to be the focus of many studies because of its positive and significant influence on occupational safety behavior (Fang et al., 2006; Probst et al., 2008) and accident prevention (Siu et al., 2004).

Safety climate, defined as the employees shared perceptions of their work environment (Zohar, 1980), can reflect the current state of the underlying safety culture and highlight areas for overall safety improvement (Mearns et al., 2001, 2003). Due to the significant potential benefits of an improved safety climate, several

studies have been conducted to identify the factors that influence its quality. Although the direct contributors to safety climate have not been addressed (Guldenmund, 2000), much research in this area has been devoted to examining how demographic characteristics influence workers' safety perception, which is recognized as a central component of safety climate. For example, employees who are older, married, or who have more family members to support, have a greater positive awareness of safety issues (Fang et al., 2006). Education level and safety-related knowledge are also positively correlated with the workers' safety awareness and attitudes (Siu et al., 2000).

Prior research indicates that safety climate in the construction industry is not only affected by individual elements, but can also be dependent on internal organizational attributes (Mohamed and Chinda, 2011), such as leadership style (Chinda and Mohamed, 2008), group cohesion and orientation (Burt et al., 2008), and the safety response of supervisors (Lingard et al., 2010). Further studies also suggest that there is a reciprocal relationship between the safety climate of construction project participant organizations (Fang and Wu, 2013), and the strategies of external organizations. External organizations such as the government, for example, can stimulate positive improvements in safety climate (Zhou et al., 2011). The government and the market are two equally important forces driving a positive safety climate, especially in China.

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Under their ‘harmonious society’ philosophy, Chinese government departments and industry associations not only advocate the importance of safety, but also have established mandatory rules and codes regulating safety behaviors. Therefore, safety performance has greatly improved in recent years. Meanwhile, more and more organizations are cooperating in safety training, including the co-hosting of events such as safety seminars and safety competitions. These activities are believed to be having a positive impact on the Chinese construction industry. However, there is currently little empirical evidence to help understand how different types of external pressures systematically affect the safety climate in construction projects.

Drawing upon institutional theory (DiMaggio, 1983), which considers external pressures in its explanation of multiple organizational behaviors and conditions, this study develops and empirically tests a simple model to explain how three types of institutional pressures (i.e., coercive, mimetic, and normative pressures) systematically influence safety climate in Chinese construction projects.

2. Theoretical foundation and hypothesis development

2.1. Institutional perspectives on safety climate

Institutional theory views organizations as *open systems* that are subject to the influences of particular environments. It emphasizes the critical role of the institutional environment in driving organizational decisions, behaviors and changes with the aim of gaining social legitimacy (DiMaggio, 1983; Scott, 2008). This is in contrast to the efficiency-seeking logic of transaction cost economics (Williamson, 1985). Indeed, many previous studies have proved that institutional theory can provide powerful explanations of several organizational behaviors, such as innovation acceptance and strategic change (Bhakoo and Choi, 2013; Cao et al., 2014; Teo et al., 2003). Based on these successful applications of institutional theory, this study posits that the institutional approach offers systematic insights into the varying levels of safety climate between construction industry organizations.

As an important organizational concept, safety climate is regarded as the product of collective sense-making in which members assess their organizational safety environment (Lingard et al., 2010; Zohar and Luria, 2004). It reflects the extent to which an organization prioritizes and pays attention to safety (Hon et al., 2013). This sense-making process can be influenced by both individual personalities and organizational characteristics (Guldenmund, 2000; Sunindijo and Zou, 2012). Although safety climate is positively related to safety behavior and safety performance (Cigularov et al., 2010), its benefits cannot always counteract the difficulties faced in developing a safer climate, which demands the efforts of all organization members and must be accompanied by organizational structural changes (Fung et al., 2005; Kheni et al., 2010). For this reason, the cultivation of a safety climate has been somewhat ignored by organizations due to related practical concerns, such as the implications on cost and project schedule (Hinze et al., 1998; Tam et al., 2004).

In construction projects, the participation of multiple stakeholders increases the complexity of the sense-making process because the safety climates in these participant organizations are iterated (Fang and Wu, 2013). For example, project participants may conform to government requirements, refer to the practices of similar organizations and heed the guidance of consultancy groups or other professionals to acquire institutional legitimacy. Certainly, this situation applies in China where the government is powerful and safety performance is relatively weak.

2.2. Institutional pressures

According to institutional theory, organizations have the tendency to follow socially accepted norms and behaviors in order to be structurally congruent with their specific institutional environment (DiMaggio, 1983). It is argued that institutional pressures can originate from both formal rules (regulations and mandates) and informal constraints (norms, conventions and beliefs) and the way in which organizations respond to these pressures will determine their institutional legitimacy (Scott, 2008). According to DiMaggio's (1983) research, there are three basic types of pressures shaping organizational behaviors: namely coercive, mimetic, and normative pressures.

2.2.1. Coercive pressures

Coercive pressures are defined as “formal and informal pressures exerted on organizations by other organizations upon which they are dependent” (DiMaggio and Powell 1983, p. 150). In emerging economies such as China that are undergoing the transition from a centrally-planned to a market-based system, government agencies and industry associations still frequently interfere with daily design and construction activities (Xu et al., 2005). In the context of this study, coercive pressures primarily stem from regulatory agencies and industry associations.

Specifically, in China, many government departments, such as the Ministry of Housing and Urban-Rural Development and the State Administration of Work Safety, are responsible for formulating safety regulations and supervising safety performance; and organizations, such as the Construction Safety Branch of the China Construction Industry Association, often develop more detailed project safety requirements. For example, the coercive strategies developed by government departments and industry associations include the Green Card Program (Labor Legislation, 2013) and the Pay for Safety Scheme (Construction Industry Council, 2012). Safety associations have been founded in a number of Chinese cities in the past decade. They are primarily responsible for the safety inspection of construction projects. Only projects that have passed the safety inspection process can begin construction (Shanghai Construction Safety Association, 2015). These authoritative activities, whether in the form of public regulations or project-specific requirements, can significantly influence the safety climate level of project participant organizations. Therefore, the following hypothesis is proposed:

H1. The level of coercive pressures is positively associated with the level of safety climate.

2.2.2. Mimetic pressures

Mimetic pressures are those that drive organizations to imitate the successful conduct of other structurally equivalent organizations (DiMaggio, 1983). The root cause of the mimetic pressures is uncertainty. When the environment creates uncertainty, or the risky situation is poorly understood, organizations tend to benchmark their behaviors against those of peer organizations, and mimic those that appear legitimate and progressive (DiMaggio, 1983). Since every construction project is unique to some extent – due to differences in project scope, complexity, tasks and participants (Chan and Chan, 2004; Dubois and Gadde, 2002) – there is no universal safety strategy for all projects. Moreover, as incidents in construction projects are accidental and unexpected in nature, there is increased uncertainty over the effectiveness of safety management. This high level of uncertainty can cause project participant organizations to be more easily influenced by the conduct of peer organizations, or by peer projects with similar project characteristics and institutional environments. As the primary safety risk bearers of construction projects, clients/owners are

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