Construction Supervision Industry: The Research of the Mediating Effect of Employee Safety Consciousness in Employee Organizational Commitment and Employee Safety Citizen Behavior

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Abstract

On the basis of previous studies, how organizational commitment positively affects the behavior of safe citizens under the mediation of employee safety consciousness has been explored by transferring relevant theories of organizational commitment to the construction supervision industry. The empirical analysis of 462 samples of construction supervision employees in Jiangxi Province demonstrates that: 1. Organizational commitment of employee safety consciousness has a significant positive impact on employee safety citizenship behavior; 2. Employee safety consciousness plays an intermediary role in organizational commitment and safe citizenship behavior. Theoretically, it has enriched the researches on organizational commitment and safe citizenship in the construction industry and has promoted the studies of the mediatingeffect of the two factors. Meanwhile, the conclusions can be used as a reference for construction enterprises how to improve employees' safe citizenship behavior and to reduce safety accidents in terms of practice.

Key words: Construction supervision industry, Organizational commitment, Safety consciousness, Safe citizenship behavior,Mediatingeffect

Introduction

In recent years, as china's infrastructure investment projects continue to increase, due to various reasons, safety accidents in the processes of construction have emerged in endlessly. Only in the first half of 2018, there were 1,732 safety accidents in the construction industry nationwide, with 1,752 deaths, an increase of 7.8% and 1.4% respectively, than the same period of last year. So it is imperative to reduce safety accidents and improve the construction safety of construction workers.

These shocking figures have revealed the problems of weak safety awareness of construction entities and regulators. In the processes of construction, men are

the dominant factor, and the subjective initiative of people directly regulates and affects other factors, which determines whether the accident occurs or not. Most of front-line construction workers are migrant workers with limited education and weak safety consciousness. Project supervision, as a third-party to supervise the quality of construction, is crucial. And the objectivity and safety consciousness of project supervision staff directly determines the quality of construction supervision.

Research motivation

Organizational commitment and organizational citizenship behavior are relatively mature research areas in organizational behavior. And relevant empirical research and scale development are also relatively complete. Most of studies are conducted in state-owned enterprises and public institutions, such as schools, hospitals and so on. When employees in such organizations have a better sense of belonging and a stronger sense of ownership, there will be more corresponding employee civic behaviors, which will help promote job performance and job satisfaction. However, in the field of private enterprises, particularly in the construction industry, there are few studies involved on employee organizational commitment and employee safety citizenship research. Given the particularity of the construction industry, the construction safety accidents have a bearing on the overall situation of the harmonious economic and society development in China. How to avoid construction accidents effectively has become the research direction of many researchers. From the perspective of organizational behavior and human resources, to find out the effective factors that affect safety accidents, and then to puts forward corresponding suggestions and countermeasures is the author's research goal.

Research purpose and question

The purpose of this study is primarily to confirm whether there is a correlation between employee organizational commitment and employee safety citizenship behavior. Secondly, this study will verify the impact of employee organizational commitment on employee safety consciousness. Finally, this study will confirm whether there is a correlation between employee safety consciousness and employee safety citizenship behavior.

Literature review

organizational commitment

Organizational commitment is an employee's attitude toward the organization and the strength of the employee's recognition and participation in an organization. Becker, H.S.

Construction Supervision Industry: The Research of the Mediating Effect of Employee Safety Consciousness in Employee Organizational Commitment and Employee Safety Citizen Behavior

(1960) first proposed organizational commitment: the employee's willingness to participate in the organization's work with the increase of the organization's "unilateral input". Buchanan (1970) pointed out that organizational commitment is more manifested in an employee's emotional dependence on the organization. Porter (1974) summarizes organizational commitments into an individual's attitude toward a firm or a positive psychological orientation. Individuals agree with organizational connotations and values and are willing to invest time and energy into the organization. Salacik (1977) considers it to be the corresponding behavior exhibited by an individual's dependence on the organization. Wiener (1982) proposed that its essence is an "internalized behavioral norm". Individuals are constantly emphasized in the process of socialization, certain moral concepts and behavioral norms, so that individual behaviors match the goals and interests of the organization. They concentrate loyally to the organization's mission. O'Reilly (1986) believes that it reflects the "psychological contract" between employees and enterprises. It is a mixture of three components of compliance, identification and internalization. Meyer & Allen (1991) believes that organizational commitment is a state of mind that reflects the relationship between employees and organizations, which determines whether employees continue to stay in the organization. It consists of three factors: affective commitment, indicating individual recognition of organizational goals and values, and participation. The strength of the organization and the willingness to work for the organization and to stay in the organization; continuance commitment refers to a commitment by individuals to recognize that they will lose their existing value once they leave the organization, and are willing to stay on; normative commitment means the convergence of values between individual and organization and it reflects the sense of responsibility for the organization. Ling Wenshuo, Zhang Zhican, and Fang Luoluo (2001) believe that organizational commitment is an attitude of employees to the organization. It is an indicator to verify employee loyalty to the company and can explain why employees are willing to stay in a company. In the previous study, they proposed that Chinese employees are composed of five factors: affective commitment, normative commitment, ideal commitment, economic commitment, and opportunity commitment. Among them, the ideal commitment: pay attention to individual growth and pursue the realization of ideals. Opportunity commitment: The root cause of staying in this organization is that no other satisfactory organization can be found for the time being.

This study considers organizational commitment to be an indicator of the employee's loyalty to the organization in the construction supervision industry, which explains why employees remain in the organization. In addition to being influenced by economic factors such as organizational regulations and wages and benefits, it is also influenced by cultural and psychological factors such as values, ethics, ideal pursuits, emotional factors, personal abilities, interests and personality traits.

Safety citizenship behavior

Barnard (1938) first proposed that the organization is a combination of employees' free will, and the willingness of employees to cooperate is a key factor in formal organization. Katz & Kahn (1964) believes that the effective operation of an organization depends on three types of behaviors of employees: 1. Employees are attracted by the organization and are willing to stay in the organization to work for the organization; 2. Employees perform tasks within the role in a safe manner; 3. Employees can demonstrate spontaneous and innovative behavior beyond the role itself. Katz, Bateman & Organ (1983) defines the employee's self-issuance as "citizen behavior" and such a behavior is not officially stated meanwhile which is an organizational requirement. Later, Organ (1988) formally proposed the concept of organizational citizenship behavior: the total amount of behavior that has not been clearly or directly confirmed in the formal salary system of the organization but is beneficial to the overall effectiveness of the organization.

Lin Shuji (1992) summarized organizational citizenship behavior as: it is not reflected in the basic work requirements of employees. Employees can act according to their own wishes, various spontaneous behaviors as a whole that have positive contributions to organizational goals. Organ (1994) redefines organizational citizenship behavior: an act that can maintain and improve the social and psychological environment of an organization, thereby unifying the relationship between relationship performance and organizational citizenship behavior. Fan Jingli (1997) proposed a five-dimensional definition of organizational citizenship behavior: identity organization, assisting colleagues, sense of responsibility, maintaining harmony of interpersonal relationships, and protecting organizational resources. Podsakoff (2000) shows the impact of organizational citizenship behavior on organizational performance and he believes that the impact may be from employees' spontaneous behavior, which is a tacit agreement or contract between employees and organizations. Additional requirements or the organization's requirements are not clearly listed in the statement of work, representing a belief in the employee and the organization.

Safe citizenship behavior was first proposed by Hofmann (2003), who discovered this special extra-role behavior when he studied soldiers carrying heavy equipment in the military and extended the concept of organizational citizenship behavior to the security realm, defining Safe Citizenship: In the process of safe production, employees proactively demonstrate behavioral behaviors that are beneficial to organizational safety performance. The proposing behavior proposed by Detert& Burris (2007) is similar to the concept of safe citizen behavior: a speech expression behavior for the purpose of improvement, which is a kind of work-related situation and improvement of program safety in the context of safe production. Du Xuesheng (2010) defines the safe citizenship

behavior of coal enterprises as: a kind of individual behavior of employees is not directly related to the formal reward system, but it can improve the safety performance of coal mine enterprises and departments.

This study defines it as a behavior in the construction supervision industry, which actively helps others to avoid risks and consciously contribute to the working group.

Safety consciousness

Woodson We&Peterson (1981) proposed that safety consciousness
is a state of alert and alertness that people maintain in production activities, and that the idea of "production needs security" is injected in people's minds. Masada (1993) believes that safety consciousness is a state of mind in the production activities, people maintain a modest and cautious attitude, not conceited and courageous to take responsibility, thus regulating their behavior. Zhao Xuguang (2004) puts forward from the philosophical point of view: the safety consciousness is born in people's subjective reflection on the material world. It is the embodiment of comprehensive consciousness, and it is the objective reflection and recognition of various security problems in production labor. know. Lin Zeyan (1999) summarizes the sense of security from a psychological perspective as a state of vigilance maintained by the heart, usually when people feel that the person is vulnerable to injury. From the perspective of production practice, XieLanjie& Li Zengyuan (1999) believe that: safety consciousness is a kind of idea that production must be safe. It is an urgent need for safety production after people suffer accidents in production. It is people who protect in this process. Accumulation and judgment of correct or erroneous experience formed by self-security. Hu Fujing (2001) divides the components of safety consciousness into safety sense, safety knowledge and safety emotions. Xu Xi and Wu Jianguo (2003) investigated the workers in a construction site in Shanghai from three aspects of safety knowledge familiarity, attitude and behavior. The research shows that workers in the construction industry have a poor grasp of safety knowledge and which is represented by more unsafe acts. It is further explained that the key factor affecting employee safety behavior is weak security consciousness. Westaby,J.D.;Lee（2003）define the safety consciousness as the perception and understanding of safety with regard to environment and circumstance. It has been suggested that the level of safety can be improved through promotion of safety consciousness. Roth and Brooks-Gunn（2003）think conscientiousness, which is related to risk prevention ability, can be defined as whether people still follow safety rules in the absence of supervision. Zhang Luzhen (2011) takes the management personnel of construction enterprises as the research object, analyzes the safety consciousness from the

two aspects of connotation and characteristics, and divides the safety consciousness into four levels, namely self-efficacy, safety knowledge, predictive ability and rational sense.

This researcher think safety consciousness which is defined as the perception and understanding of safety with regard to environment and circumstance.

Researche method

Research framework

The research framework is formulated according to the purpose of this study and literature review, as shown in Figure 1.
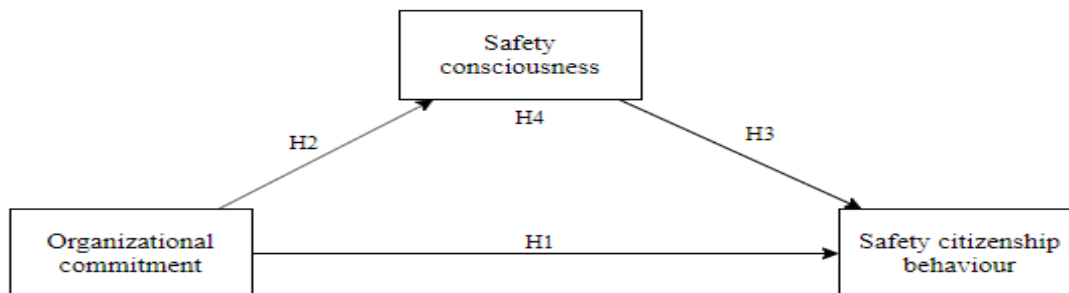
Research Hypotheses

Based on the research goals and research framework, the following hypotheses are proposed as follows:
Hypothesis H1: Organizational commitment of employees in the Construction supervision industry directly affects safety citizenship behavior of employees

Hypothesis H2: Organizational commitment of employees in the Construction supervision industry directly affects employees' Safety consciousness.

Hypothesis H3: Safety consciousness of employees in the Construction supervision industry directly affects employees' Safety citizenship behavior.

Hypothesis H4: Safety consciousness of employees in the Construction supervision industry has an intermediary effect on Organizational commitment and employees' Safety citizenship behavior.

Construction Supervision Industry: The Research of the Mediating Effect of Employee Safety Consciousness in Employee Organizational Commitment and Employee Safety Citizen Behavior

Research tools

Organizational commitment scale. This study uses the three-component model of revised Organizational commitment scale compiled by Meyer&Allen (1991) to measure commitment in the workplace The scale comprises 3 dimensions: Affective Commitment (AC), Normative Commitment (NC), and Continuance Commitment (CC) and 17 items (deleted one item CC5). The dimension shows a good reliability of 0.796, 0.769 and 0.786, and therefore usable.

Employees' safety consciousness scale. This study used the revised safety consciousness scale compiled by Meng, X.; Zhai, H.; Chan, A.H.S (2019) to measure the safety consciousness of employees in Construction supervision industry. The scale comprises 3 dimensions and 11 items, safety skills training and education, conscientiousness, and familiarity with safety regulations. The scale shows a good reliability of 0.745, 0.786, 0.778, and therefore usable.

Employees' safety citizenship behavior scale. This study used the revised safety citizenship behavior scale compiled by Hoffman (2003) to measure the safety citizenship behavior of employees in Construction supervision industry. The scale comprises 4 dimensions and 17 items, including help, civic virtue, stewardship and whistleblowing. The scale shows a good reliability of 0.876, 0.885,0.891,0.834, and therefore usable.

The overall scale questionnaire uses likert-scale of 1-5 score, with 1 indicating strong agreement; 2 meaning consent; 3 meaning no denial; 4 meaning disagree; 5 meaning strongly disagree.

Research Sample

The objects of study are employees in Construction supervision industry in Jiangxi Province. Firstly, a small-scale pre-questionnaire test was conducted, and 180 questionnaires were distributed to collect 154 valid questionnaires to test the validity and reliability of the scale. After formal test, A total of 550 questionnaires were distributed to Jiangxi construction supervision industry, and 462 valid questionnaires were recollected with eliminating invalid questionnaires, among which 246 were males, accounting for 53.2%; 216 females, accounting for 46.8%; 306 ordinary employees, accounted for 66.2%; 156 managers, accounting for 33.8%; 45 of them with master's degree or above, accounting for 9.7%; 42 persons over the age of 6, account for 9.1%;

Resultanddiscussion

Table 1. Discussion on the relevance of each variable

Scale	M	SD	Scale		
			OC	SC	SCB
OC	3.33	.62	1.00	.181*	.416**
SC	4.14	.45	.181*	1.00	.545**
SCB	3.94	.51	.416**	.545**	1.00

Note : * p<.05, ** p<.01 source : compiled by the researcher.

From the above table, we can understand the organizational commitment, safety consciousness and behavior of employees in the construction supervision industry. The average score of organizational commitment is 3.33, indicating that the organizational commitment of employees is generally general; the average score of safety consciousness is 4.14, indicating the overall safety awareness of employees is not high; the average score for safety citizenship behavior is 3.94, indicating that employees' daily safety citizenship behaviors is less.

According to the Pearson correlation coefficient in the above table, all three are related. The employee's organizational commitment OC (r=0.181, p<0.05) is significantly positively correlated with the employee's safety awareness SC; the employee's organizational commitment OC (r=.416) , p<0.01) was significantly positively correlated with employee safety citizenship SCB; employee safety awareness SC (r=0.545, p<0.01) was significantly positively correlated with employee safety citizenship behavior;

Table 2. Regression analysis of mediatingeffectinorganizationalcommitment, safety consciousnessand safety citizenship behavior

| Model	M1		M2		M3	
	SC		SCB		SCB	
	Beta	SE	Beta	SE	Beta	SE
Constant		.196		.206		.322

Construction Supervision Industry: The Research of the Mediating Effect of Employee Safety Consciousness in Employee Organizational Commitment and Employee Safety Citizen Behavior

OC	$.181^{*}$	.003	$.416^{**}$	.061	$.328^{**}$	.053
SC					$.486^{**}$	.073
R^{2}	.033		.373		.501	
Adj R^{2}	.026		.368		.493	
F	5.151^{*}		31.785^{**}		31.785^{**}	
dF	(1, 461)		(1, 461)		(2, 460)	

Note : * p<.05, ** p<.01 source : compiled by the researcher.

According to the multiple linear regression model of safety citizenship behavior (the above table), organizational commitment (β=.328, p<0.05) and safety consciousness (β=.486, p<0.05) have significant positive effects on safety citizenship behavior. This shows that when the employee's organizational commitment is higher and the employee's safety awareness is higher, their safety citizenship behavior will be more, which is conductive to strengthening the supervision of the construction industry and thus helping to reduce the occurrence of construction safety accidents. Given that 1, 2, 3, and 4 are established in sequence, when controlling for other variables, the employee's organizational commitment and safety consciousness accounted for 49.3% of the dependent variable of employee's safe citizen behavior. According to Wen Zhonglin (2004), the significance test of the safety consciousness and mediating effect of independent variable organizational commitment regression coefficient on dependent variable safety citizenship behavior were verified. It is confirmed that both are significant and the safety consciousness of the mediator variable has significantly affected the safety citizen behavior of the dependent variable. Final inspection of organizational commitment and safety consciousness also significantly affects safe citizenship behavior, therefore it is concluded that security consciousness of organization commitment and citizenship behavior have partial intermediary effect, accounting for 0.181*0.486/0.416=21.15% of the total effect, whichmeansthatthe 21.15% influence of the commitment to safety citizenship behavior is mediated by security consciousness.
Figure 1. Organizationalcommitment, Safetyconsciousness, Safetycitizenshipbehavior Modelpathmap.
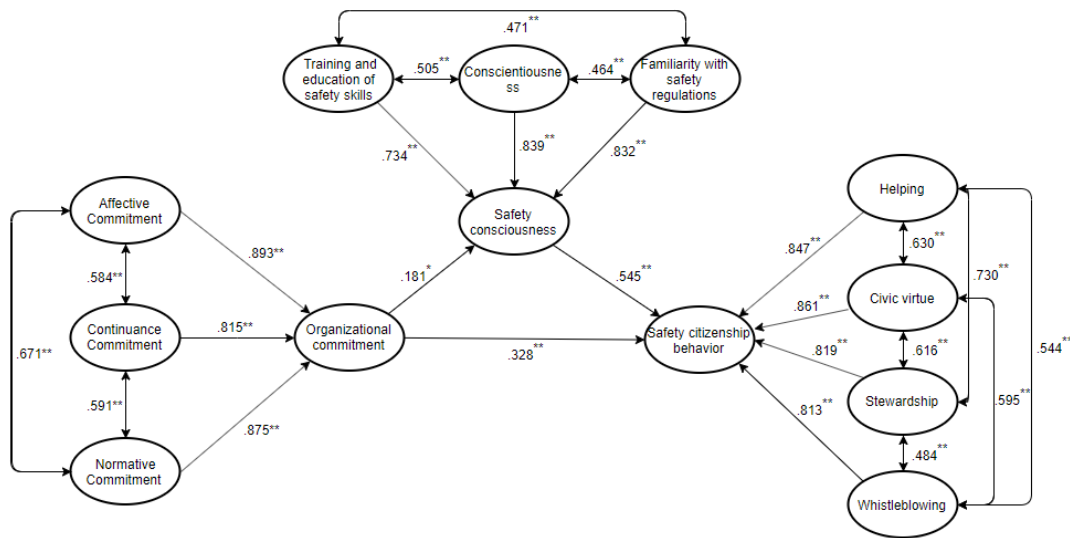
Note : * p<.05, ** p<.01 source : compiled by the researcher.

According to the normalized regression coefficient values between variables, the effect value of each variable can be known. The significance test of each path coefficient in the path analysis model graph reaches the significant level of 0.01. Among them, the emotional commitments in organizational commitments accounted for the highest proportion, and the impact on safety citizenship behavior is 0.893*0.328=0.293, especially the impact on citizen virtue is 0.893*0.328*0.861=0.252. The impactof risk prevention awareness of safetyconsciousnessonthecitizenvirtue is 0.839*0.545*0.861=0.394.

The research results show that in the construction supervision industry, the employee's organizational commitment has a significant impact on the employee's safety citizenship behavior, and the safety consciousness also has a significant impact on the safety citizenship behavior, indicating that the construction supervision industry should provide more benefits and jobs for the employees. Good corporate culture construction can improve employees' sense of belonging to the organization. On the other hand, enterprises must conduct safety education and training, attach importance to accident site education and deepen employees' intuitive feelings about the first scene of construction accidents through simulating the virtual accident site. And increase employee awareness of safety regulations in combination with safety regulations. Focus on process assessment and incorporate safety awareness into salary assessment to motivate employees to work safely. In addition, the supervision of construction environment safety consciousness will be strengthened to reduce the occurrence of man-made accidents in the construction industry. The samples collected in this study are limited to Jiangxi Province, and the limited number of samples may have certain regional cultural restrictions. Meanwhile, the

organizational commitments and safety citizenship adopted are the yardstick of foreign countries, which need to be further studied on the national conditions with Chinese characteristics.

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