

Workplace Health and Safety Parameters and their Relations: A Systematic Review

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Abstract

The objective of this paper to review some important case studies to figure out the relationship between the safety of an organization and the safety climate. Safety climate of an organization always demonstrate the level of safety of an organization. Improvement the safety level is indispensable for the proper growth of an organization. Safety level can improve by reducing the risk taking behavior of an employee, by the improvement in safety performance of employees, by the proper registration of injuries and by developing the positive safety climate. Positive safety climate proves as the panacea for the improvement of safety level of an organization.

Keywords- Work Environment, Worker's Health and Safety, Safety Training, Small and Large Scale Industries, Management, Safety Behavior

I. INTRODUCTION

Every organization wants to represent itself as the world class contestant. Welfare of worker is the most important factor in it, because workers are the physical structure of every organization. Only safe workplace can be become world class workplace. The fundamental factor for loss of finance and life or can be both are job-related accidents. As per ILO, about 4% world GDP cost by job-related accident and injuries. The Piper Alpha, Bhopal gas tragedy and Chernobyl are some unforgettable calamities, which has become the reason of thousands of deaths. By old practices, individual attributes like behavior, attitude and traits were focused by safety researches. But on the other hand, some major disaster happened due to failed management practices. According to the estimation, work-related diseases and accident result over 2.3 million fatalities in a year. In the year of 2010, data shows over 350,000 fatal occupational accidents and fatal work-related diseases were over 10.9 million. So, if we figure out about 6300 people die every day due to these cases. Safety of an organization depends upon many factors. Management Commitment, Safety Training, Safety communication, Safety knowledge and Compliance, Work pressure and Workplace Layout are the major factors that directly effect the level of safety in an organization. There is very complex relation between all these factors, because all factors are interdependent. There are many researches have been done to understand the relation between the factors and lot of work has done to improve the safety level of organizations. In this paper we will review some major studies to understand the relation of all these factors.

II. LITERATURE REVIEW

A. Impact of Safety Climate on Occupational Safety

[1]Griffin & Neal figured out that to improve the safety level, the major element are motivation about safety and knowledge of safety. Safety behavior of workers can be improved by knowledge and attentiveness towards the work safety. Workers should be motivated to take part in safety related events.

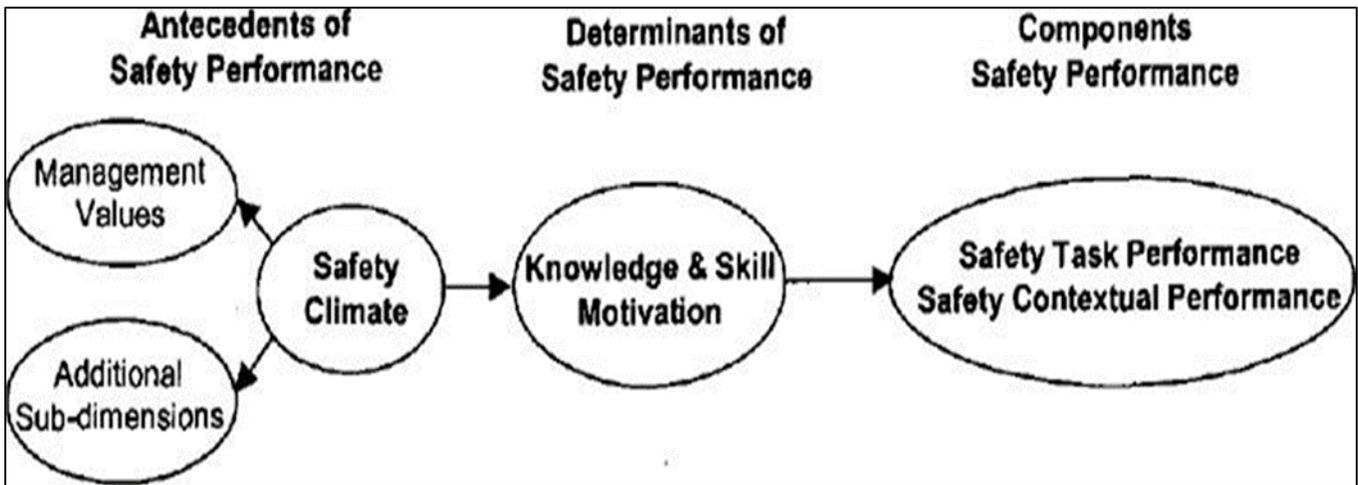


Fig. 1 (a): Theorized model of safety performance

By using (SEM) they found the relationship between safety performance, knowledge, motivation, and safety climate

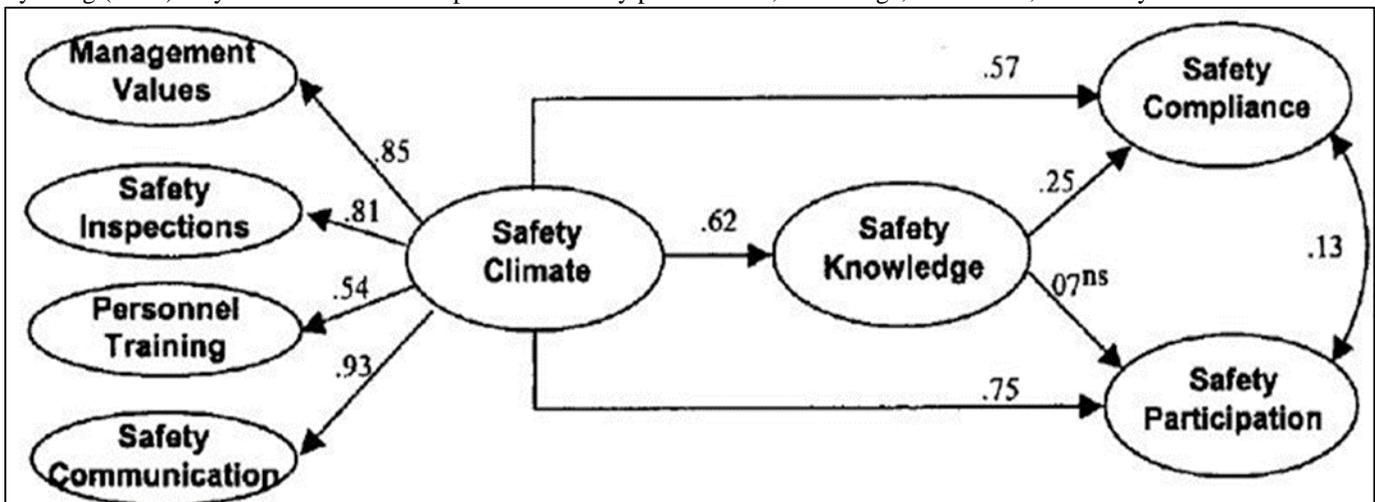


Fig. 1 (b): Actual model



Fig. 1 (c): Model shows relation b/w, its determinants, safety climate and safety Performance

Result show that to enhance the safety performance organizations should focus to improve the knowledge and motivation of workers.

[2]U. Varonen, M. Mattila studied the correlation of safety level of the workplace and safety practices of the companies. They figure out that the correlation between the safety level and the safety climate was stronger. They concluded that the better

safety climate and the rate of accidents are directly proportional and better safety climate of an organization is inversely proportional to rate of accidents.

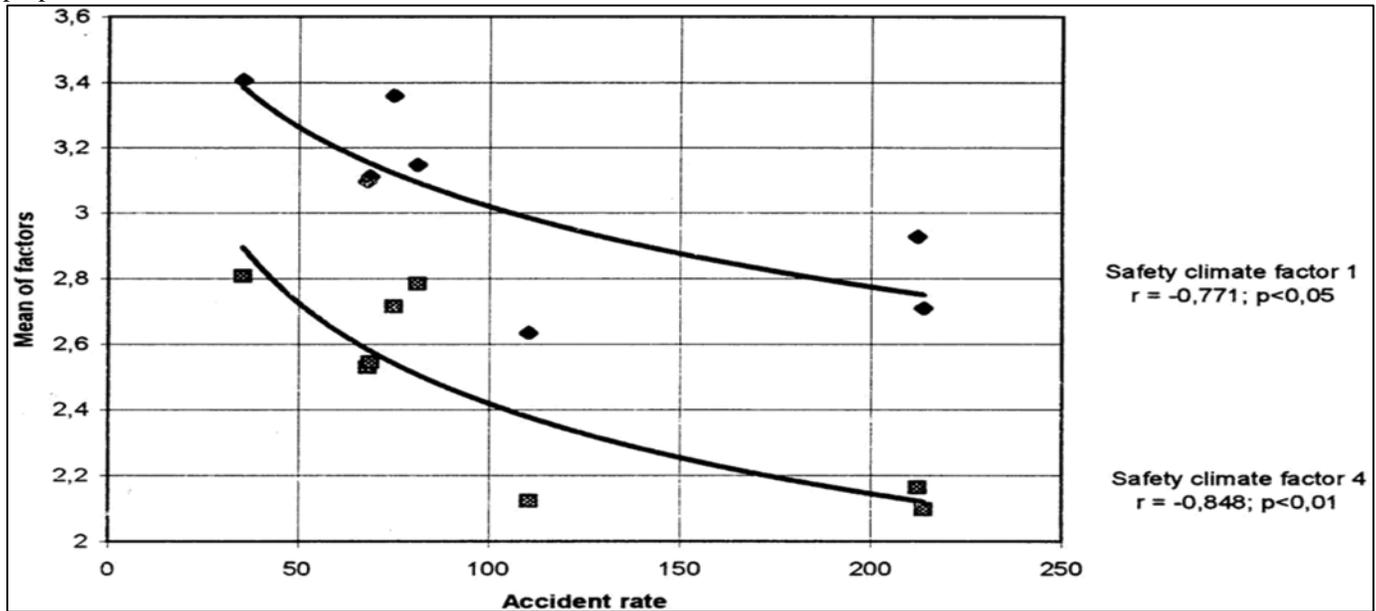


Fig. 2 (a): Relationship between means of two factors and Accident rate

[3] Neal et al. conducted their research on large hospital Australia and figured out that general organization effected safety climate of the organization and finally it effects the worker’s performance. The final results provide the suggestion that safety climate has more strong relation with safety performance than the general organization climate.

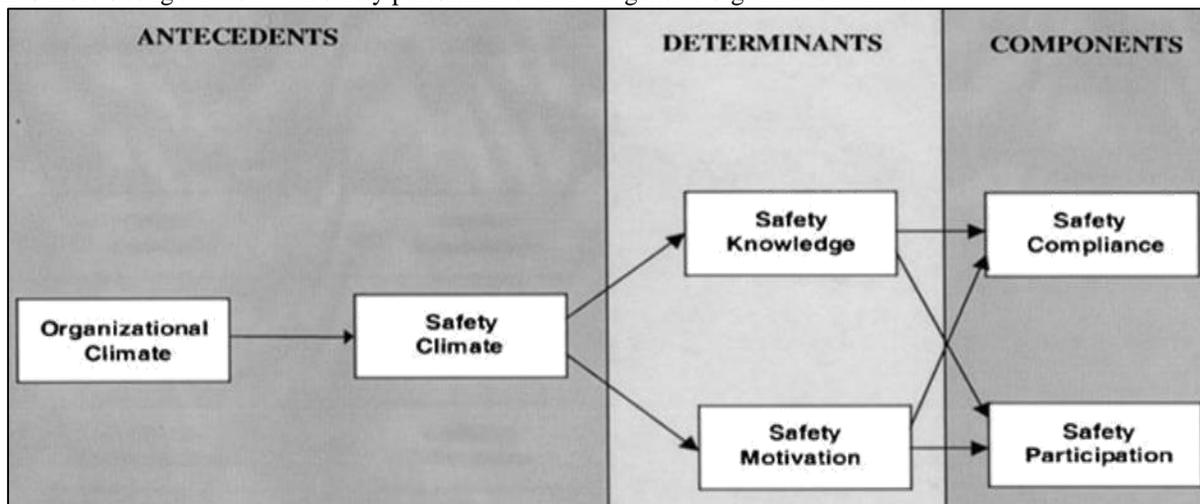


Fig. 3 (a): Hypothesized model of construct

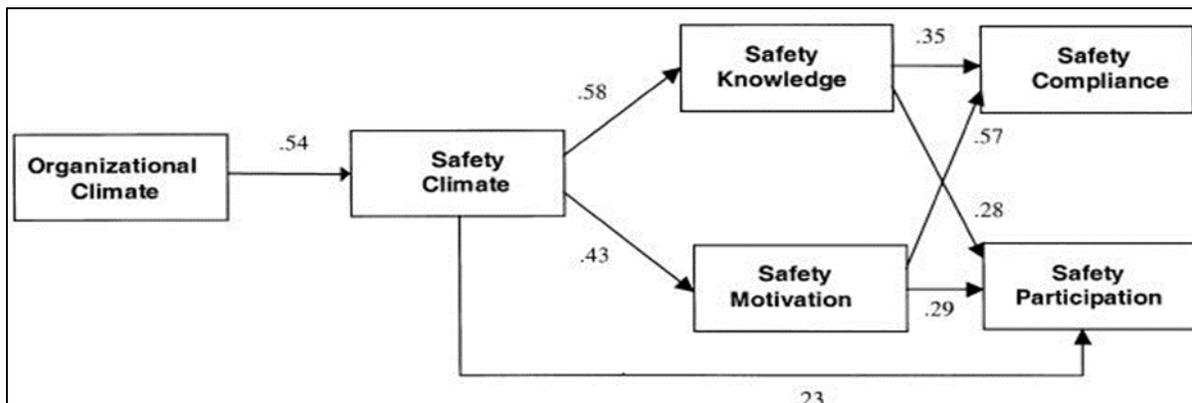


Fig. 3 (b): Final model from structural equation modeling (SEM) analysis

This model shows that through specific climate for safety, safety performance and general organizational climate related to each other. It gives suggestion that to meliorate safety behavior of worker organizations should figure out better ways to improve safety climate.

[4]D.M. Dejoy et al. concluded that there is strong relationship between safety related policies and programs, Organizational support towards safety, safety related communication and their effect is direct.

Table 1: Hierarchical Regression analysis

Hierarchical regression analyses – predicting safety climate					
Step and predictor	Step 1	Step 2	Step 3	Step 4	
Step 1					
Age	.031**	.010	– .010	.004	
Gender	.023	.029	.018	– .010	
Tenure	– .105***	– .053*	– .015	– .003	
Hours worked	.002	.004 [†]	.004*	.003	
R ²	.013				
Step 2					
Environmental conditions		– .304***	– .165***	– .074***	
R ²		.169			
Δ R ²		.156			
Step 3					
Safety polices and programs			.516***	.328***	
R ²			.448		
Δ R ²			.280		
Step 4					
Organizational support				.150***	
Coworker support				.069***	
Participation – others				– .008	
Participation – supervisor				.024	
Communication				.241***	
R ²				.551	
Δ R ²				.103	
Reported coefficients are unstandardized. Constants (intercepts) have been omitted.					
* p < .05.					
** p < .01.					
*** p < .001.					
† p < .10.					

The outcome figure out the negative relationship b/w environment exposures and safety at work (b=-.42). Support by organization, safety related strategies and programs are positively and significantly related to occupational safety.

[5] Andrew Neal & Mark A. Griffin studied safety climate, worker behavior and motivation on two points for five years. They figured out, change in safety climate effects the safety motivation of worker. Further it changes the worker’s behavior. Secured, motivated and modified behavior of worker reduces the number of accidents.

[6] T.M Probst et al. conducted their study on the underreporting of organizational injuries and accidents. They found that found that according to the report submitted to OSHA, the rate of injuries was merely 3.11 per 100 workers. The actual injuries that were not reported were about 10.30 per 100 workers. Underreported injuries of an organization, reduces the constructive safety climate.

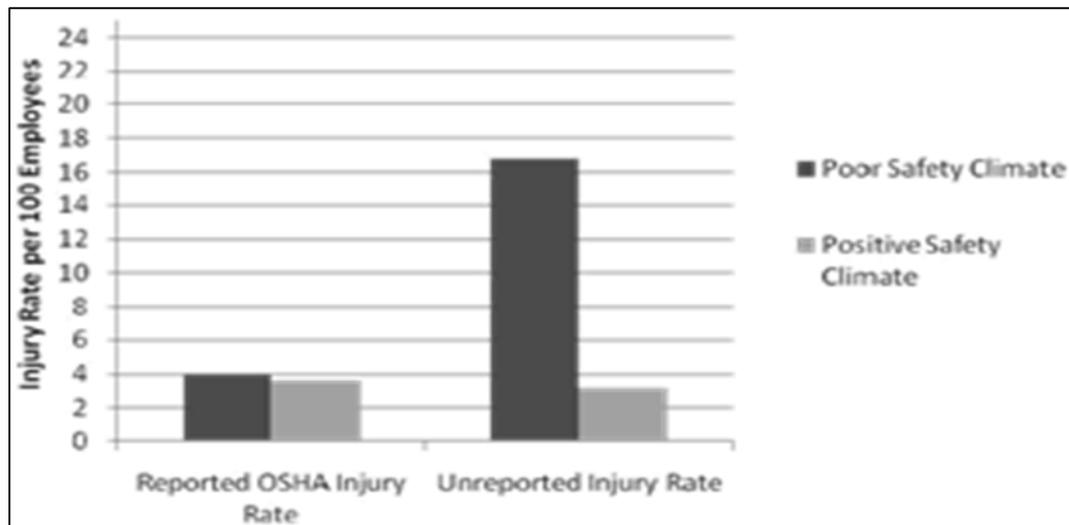


Fig. 6 (a): Unreported injury rate

[7] M. N. Vinodkumar, M. Bhasi utilized exploratory factor analysis, examines eight factor of safety climate. They also established significant negative correlation between safety climate in chemical industry and workplace accidents.

Fig. 8 (a): Comparison of number of accidents in poor safety climate and positive safety climate

[8] X. Liu et al. created the link between various dimensions, behavior, and workplace injuries for manufacturing industry. They figured out that ascribe of safety climate are commitment of management, support of co-worker, safety supervision, and given training to workers. They constitute that the safety behavior of worker intercedes the relationship between safety climate and occupational injuries.

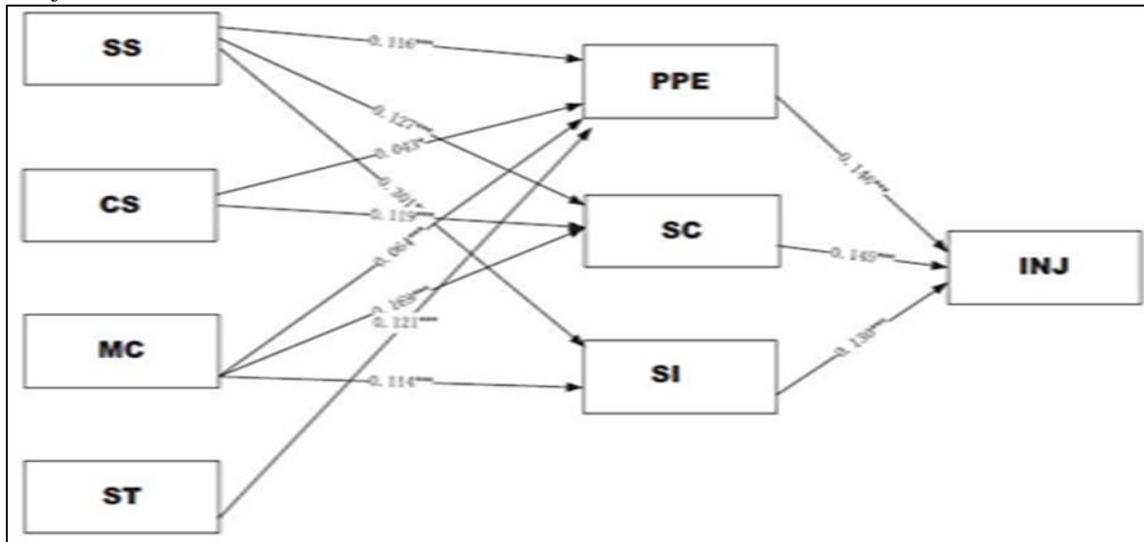


Fig. 10 (a): Relationship b/w various factors in a manufacturing industry

III. CONCLUSION

The aim of this paper was to study some previous researches to figure out the relationship between safety climate and organizational safety. As per previous studies, there are various factors that effect the safety climate in an organization. Knowledge and motivation are the most important factors in the safety climate that effect the most. Level of safety can be improved by the participation of workers in safety programs. Safety performance is directly proportional to the safety climate of an organization and inversely proportional to the injuries and risk taking behavior of workers. Underreporting is the biggest barrier to figure out the root of accidents and injuries.

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