

**Research Article**

**The relationship between safety stressors and safety performance considering the moderating role of supervisor support in the construction industry in Guilan province**

**Maryam Pourreza Mahmoud Abad<sup>1</sup> and Maryam Ooshaksaraie<sup>2</sup>**

<sup>1</sup>Department of Accounting & Management, Rasht Branch,  
Islamic Azad University, Rasht, Iran (Pourreza.maryam@yahoo.com)

<sup>2</sup>Department of Industrial Management, Rasht Branch,  
Islamic Azad University, Rasht, Iran

<sup>2</sup>Corresponding Author: Ooshaksaraie@iaurasht.ac.ir

**ABSTRACT**

Nowadays safety and assessing performance of organizations has significant importance regarding increase of degree of events and job damages and this action is due to relationship between safety performance and events and occupational damages. Therefore by considering the role of stressors and support of supervisor as affecting factor on safety performance we can take important steps at decreasing events and occupational damages. According to the current research the main goal of this research is considering safety stressors and safety performance considering the moderating role of supervisor support in construction industry of Guilan province. This research regarding the type of research is descriptive and regarding the goal it is applied. Statistical society of this research includes all companies making massive house in Guilan province. Regarding that statistical society is limited and accessible number of sample volume in this research is equal to statistical society of research and are 92 companies that census method has been used. Data collection is through standard questionnaire that data after collection by SPSS software have been analyzed in two sections of descriptive and inferential statistics. Result of testing hypothesis denotes meaningful relationship between safety performance and dimensions of stressors by using moderating variable of supervisor support and at the end some suggestions have been presented for improving safety performance regarding result of hypothesis.

**Keywords:** Safety performance, Stressors, Supervisor support, Massive house constructing companies, Guilan province

**INTRODUCTION**

Nowadays safety subject and assessing performance of organizations due to increase the degree of accidents and occupational damages that has reaches from 19099 people to 22559 people during 1991-2010 (Statistical center of Iran, 2014) has got special importance and this action is due to relationship between safety performance and job damages (Sampson et al, 2014). Safety performance is called implementing immunity at workplace. Concentration of safety performance is on attempt for improving safety at workplace (Christian et al, 2009). Safety performance is called comprehensive performance of safety

management system of the organization at safety system. Performance of safety has been defined as a proper physical and mental presenting factor of people that entrepreneur should provide for all staff at workplace. Also safety performance is defined as behaviors or assessed activities that people show in all that affect safety problems (Christian et al, 2009). In this research safety performance is divided into two dimensions of: "safety compliance" and "safety participation". Safety compliance points out mandatory behaviors that generally should do them. For example using equipment of individual preservation (e.g., eye

glasses, strip of saving falling down or wearing gloves); whereas safety participation points out behaviors that are often voluntarily and optional in safety activities; (e.g., encouraging colleague for participation in sport activities such as working turn, pointing potential dangers and remembering colleague for sing equipment of personal preservation in attempts for improving safety at workplace) (DeArmond et al,2011). Lazarus in a research that done in 1984 concluded that one factor affecting safety performance, is controlling stressing factors such as job ambiguity, job conflict, workload, job complexity in the organization (Lepin et al, 2005). Stressing factors is called factors making stress and reactions accompanied by stress in a person (Sampson et al, 2014). These stressing factors create conditions that cause damage, these damages are: stress, tiredness, distress and job erosion and affect safety performance (Lepine et al, 2005). Stress is the mood that is created due to an environmental change that is counted as a damage, challenge or threat for dynamic balance of a person. In this mode an unbalance is made between ability of a person for meeting needs and demands of a new situation really or depicted (Smeltzer et al, 2007). occupational stress is seemed as unbalance between needs of working place and personal ability for compatibility (Isikhan, 2004). In this research action theory is used as a framework for helping this perception that why these two dimensions of stressing factors of occupational safety (safety obstacles and safety uncertainty) and safety performance may relate each other. According to this theory if the processing information is disrupted and need mental attempt then working condition causes reactions by stress in person (Sampson et al, 2014). Action theory divides working condition into three groups based on the point that how they affect activities that this divisions includes regulations uncertainty, regulations obstacles, overtaxing regulations. Regulation uncertainty points out stressing events that a person don't know how achieve a goal , how activities can be useful and what feedback are

reliable (Sampson et al, 2014). Role ambiguity (e.g., when information is ambiguous or insufficient) and role conflict (e.g., when information of role is from different conflicted resources) are classified in the area of regulation uncertainty and role conflict (e.g., when role information is different from different conflicted sources). Regulation obstacles is occupation condition that causes interference and prevention at fallowing goal and regulation activities that interpersonal limitation and conflicts are classified in the area of regulation obstacles (Judeh, 2011). Third class of stressing factors is overtaxing regulation. Overtaxing regulation points out condition that need a person with much speed (Gittleman et al, 2010). Supervisor support is human interaction in which recreational, social and verbal resources is exchanged between supervisors and workers. Supervisors' support is a mood in a person based on which the employed person feels the organization know him an important, significant and useful person and need immediate service (Rhoades & Eisenberger, 2002), also supervisor support affect performance through decreasing pressures as a strong source and increases affective commitment toward organization (Meyer et al, 2002). Positive Job-Related Communication and Non-Job-Related Communication are two dimensions of supervisor support that are considered in this research (Sampson et al, 2014). According to the latest presented statistics number of damaged people resulted from work at construction industry during 1991 to 2010 has reached from 1071 people to 4502 people (Statistical Center of Iran, 2014). These events and damages can provide financial losses for the organizations, so safety supervisors and occupation health are interested to improve security of workplace through which decrease body and financial events (Christian t al, 2009). in current developed world that all affairs relies on developed complicated and dangerous technology it is felt painful events resulted from work causes non-compensational losses. Every year billions of events happen in the world that some of them

leads to death and some other cause complete or partial disability. Constructional operation regarding dimension and variety of activities and dangers is located at the top of event-creating activities. In most cases events resulted from work causes partial disability that may continue for months and have unfavorable effect at personal life of people and cause financial damages to person and the society (Nabhani, 2006). These damages can be due to safety stressors like anxiety, job distress or inobservance of safety while working. Therefore decreasing stressors, supervisor support, positive job-related communication, non-job-related communication, and using proper safety equipment and observing safety rules while working can decrease these events significantly (Sampson et al, 2014). Therefore regarding consideration of causal relation between variables of research and explaining problem in statistical society the main questions of research have been identified as below:

Do safety stressors have relationship with safety performance in construction industry in Guilan province?

Does supervisor support can moderate relationship between safety stressors factor and safety performance at construction industry of Guilan province?

## **Literature Review**

### **Safety performance**

Safety of staff is a very important problem that entrepreneur should seem. Events at workplace causes loosing and disability of much number of staff and creates extensive cost of losses. These events not only cause staff lose their health but faces families and society with social and economic problems (Lin et al, 2008). Safety performance enables human resource managers to obtain feedback on the efficiency and effectiveness of safety programs of organizations as well as doing affairs correctly and doing necessary reforms. Safety performance makes the possibility to consider manners systematically at

distinct and planned time and control for being certain about safety policies and occupational health. In doing these affairs organizations should develop integrated assessment and supply required data of managers for improving safety performance, health and creating a positive safety culture. Safety performance is called safety implementation at workplace. Concentration of safety performance is trying to improve safety at work (Sampson et al, 2014). Dimension of safety in the organization means safety compliance and safety participation. Safety compliance points out concentrated behaviors on satisfying minimum standards in work (e.g., safety methods, wearing protective equipment by staff and doing work through safety method). Safety participation points out behaviors that approves goals of organization in this field (e.g., helping colleagues, enhancing safety plans at workplace). Participation at voluntarily safety activities , proving innovation and attempt for development of immunity whereas safety compliance includes behaviors that increase personal safety of staff at workplace (Neal et al, 2000).

### **Safety stressors**

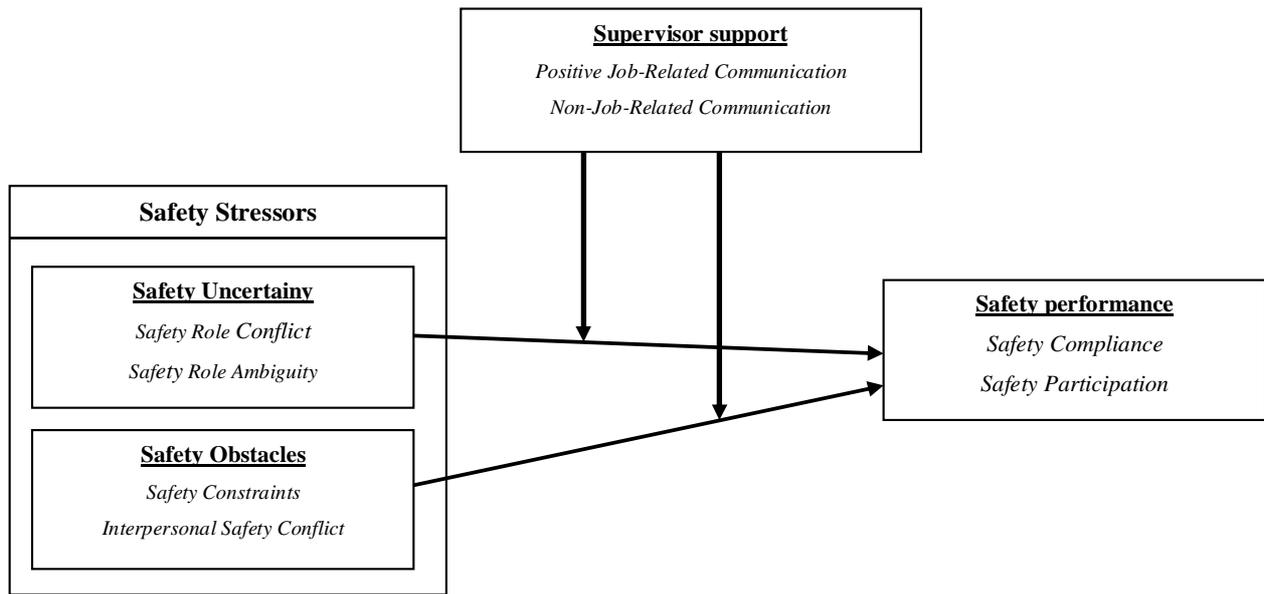
Occupational stress is one fundamental factor of decreasing utilization at organizations and creating physical and mental consequences in staff. Excessive Occupational stress happens when a person don't find capability of doing duties that needs high level of skill and knowledge (Desa et al, 2014). Lepin et al in 2005 by doing analysis claimed that stressors are positively related to general job performance through motivation. Stressors lead to positive emotions and excitements and accelerate personal development. People assess stressors as stimulating and meaningful factors and tend to invest their attempt and time for meeting challenging needs. Kavanaugh et al in 2000 reported that stressors increase occupational satisfaction and decrease behaviors of occupational searching because staff know such stressors as an opportunity or situation for personal development (karatepe et al, 2014). Some researchers define stressors as needs or

working conditions; although they are stressors, they have positive potential profits. Stressors usually point out needs such as much work, working area and responsibility. Work results, such as job satisfaction, job search and intention of leaving job voluntarily and optionally should be distinctly related to stressors. Lepin et al in 2004 deduced that people know stressors in a positive and changeable way and so more probably confront with their stress and through more devotion of attempt to learning show more motivation for learning and doing affairs. Also some researchers found out that there is a meaningful indirect effect of stressors on job performance of staff through stimulating of motivation (Widmer et al).

### **Supervisor support**

Supervisor support is humanity interaction in which recreational, emotional, social and verbal references are exchanged among supervisors and workers. Positive job-related communication and non-job related communications are two dimensions of supervisor support that is considered in this research (Sampson et al, 2014). Supervisors' support is a mood in a person based on which employed person feels organization know him an important, significant and useful person and has immediate need to its services (Eisenberger & Rhoades, 2002). Based on hypothesis of organizational support of staff give personality to the organization and create exchanging relation with it that its power and effect on behavioral and theoretical reactions is different. Also supervisors' support affects performance through reducing stressors as a powerful source and increase affective commitment (Meyer et al, 2002). Researches have shown that high levels of supervisors' support is accompanied by a collection of positive consequences like increasing affective factors, job involvement and decreasing backbite, leaving voluntary jobs and mental pressures. Perception of supporting supervisors affects organizational identity of staff (Edward & Peccei, 2010). Staffs

who perceive high levels of supervisors' support have higher commitment than those who feel their organizations don't give importance and will have more preparation for doing meta-role or citizenship behaviors. In fact perceived support of supervisors will have effect on stimulation of staff and increase staff expectations and so organization is obliged to pay more reward for doing more work regarding organizational goal. Therefore this action causes staff increase their performance regarding organizational goals and through more presence and activity and leaving their job decreases. Bumer and Patrick (2009) confirm that when staff perceive high degree of supervisors' support they force themselves to have more participation at achieving organizational goals. Increasing perception of supervisor support on the one hand causes increase of organizational commitment, job satisfaction, performance and tendency to remaining of staff in the organization and on the other hand cause decrease of degree of job pressures and behaviors of resignation (like tendency to leaving service) (Baranik et al, 2010). Supervisor support feeling decreases job pressures of staff and reduces tendency to leaving services. Primary pressures by using framework of social exchange showed that staff who perceive high level of supervisor support more probably feel duty to compensate organizational support commitment and specifically affective commitment to the organization and favorable behaviors. Beside analysis on research related to perceived organizational support by Rhodes and Eisenberger (2005) showed that three groups of behaviors that are perceived by favorable staff have positive relationship with organizational support. These three groups are: fairly behaviors, supervisor support, reward and working condition. Another meta-analysis showed that organizational support has positive relationship with organizational commitment, job satisfaction, functional duty and field performance and has negative relationship with leaving job (Riggle et al, 2009).



**Figure 1:** Summary of hypotheses.

### Methodology

Current research is counted applied research regarding classification of research based on goal. Regarding classification of research based on the way of data collection it is descriptive research that considers features of sample and then generalizes these features to statistical society. Descriptive research is classified into some classes that this research is surveying. According to the receiving list of guild forum of Guilan province, statistical society of this research includes all companies constructing massive houses in Guilan province.

Regarding that statistical society is limited and available number of sample volume of this research is equal with statistical society and are 92 companies that census method has been used. In this research researcher by using expertized questions of standard questionnaire and based on 5-item likert spectrum (1= very low to 5= very high) assessed variables of research. Two dimensions of the variable of safety performance, safety compliance with 4 questions and participation in safety with 6 questions with the goal of measuring degree of compliance (e.g., using proper personal preserved equipment) and

safety participation (helping others for doing affairs safely) were assessed by responses between very low to very high (DeArmond et al, 2011). Stressor variable was assessed by two dimensions of safety obstacle (safety constrain and interpersonal safety conflicts) and safety uncertainty (safety role conflict and safety role ambiguity) with the goal of measuring concept of safety. Ambiguity of role was assessed by 4 questions and conflict of safety role with 9 questions and by designing questions for assessing existing condition at workplace and safety limitation with 11 questions for assessing degree of difficulty of doing work in secure form at workplace and interpersonal safety conflicts with 4 questions for considering existing events at workplace (Sampson et al, 2014). Variable of supervisor support was assessed with two dimensions of Positive Job-Related communication and Non-Job-Related communication that Non-Job-Related communication with 4 questions and Positive Job-Related communication with 8 questions were assessed with the goal of measuring degree of supervisors communication with related worker (Beeher et al, 1990).

### Validity and reliability of questionnaire

In order to be certain about result of measurement and in simple word claim that data resulted from measurement are reliable, measurement should have two features of

reliability and validity. In this research by using cronbach alpha reasonable compatibility have been assessed between questions of questionnaire. For considering content validity, research questionnaire were given to supervisor and some other professors of management and in some sessions their considering reforms was implemented on structure and content of questionnaire. After translation and localization of questionnaire and confirming it by professors of management, researcher is going to determine degree of reliability of questionnaire. Therefore firstly a primary sample including 30 questionnaires was pre-tested and then by using obtained data of these questionnaires and through SPSS degree of reliance coefficient was calculated for this tool by cronbach alpha. Amount of cronbach alpha for all variables of research model was above 0.7. Exact amount of these coefficient has been mentioned in tables(1):

**Table 1:** Reliability of research variables

Variables	Cronbach alpha coefficient
Safety performance	0.855
Stressors	0.889
Supervisor support	0.902

### Kolmogorov-smirnov test

This test is used for considering identified claims about distribution of data of a quantitative variable. Result of test includes an output that in the order of number of data, parameters in considering distribution like (mean, standard deviation at normal distribution) absolute standard deviation ,present the highest positive deviation, the highest negative deviation and amount of sig. the most important raw of this table is raw of significance.

Regarding that sig for all variables of research is bigger than 5%, so distribution of all variables of research fallows normal distribution.

**Table 2:** Kolmogorov-smirnov test for research variables

	Z Statistics	Sig
Safety Obstacles	0.705	0.703
Safety uncertainty	0.981	0.291
Safety performance	1.319	0.062
Supervisor support	1.374	0.056

### Testing hypothesis

H1: Safety uncertainty has relationship with safety performance in construction industry.

Variables	R	R <sup>2</sup>	β	Sig	D-W	Conclusion
Safety uncertainty and safety performance in construction industry	-0.323	0.104	-0.323	0.003	2.347	approved

**Table 3:** regression between safety uncertainty and safety performance in construction industry

Regarding table(3) it is observed that amount of sig= 0.003<0.05,so with 95% certainty H<sub>0</sub> hypothesis is rejected and H<sub>1</sub> hypothesis is approved and this relationship is meaningful. Also based on these tables it can be said that degree of β with relations of variable of safety uncertainty at construction industry is -0.323 that denotes diverse (negative) effect between two variables of safety uncertainty with safety performance in construction industry. Therefore hypothesis “safety uncertainty has relationship with safety performance in construction industry” is confirmed.

H2: Safety obstacle has relationship with safety performance in construction industry.

**Table 4:** Regression between safety obstacle and safety performance at construction industry

Variables	R	R <sup>2</sup>	β	Sig	D-W	Conclusion
Safety Obstacles and safety performance in construction industry	-0.295	0.087	-0.295	0.007	2.451	Approved

Regarding table (4) it is observed that amount of sig is sig=0.007<0.05 so with 95% certainty H<sub>0</sub> is rejected and H<sub>1</sub> is approved and this relationship is meaningful. Also based on these tables we can say that degree of β with relation of safety obstacle with safety performance in construction industry is -0.295 that denotes

diverse effect (negative) between two variables of safety obstacle and safety performance in construction industry. Therefore hypothesis “ safety obstacle has relationship with safety performance in construction industry” is confirmed.

H3: supervisor support moderated the relation between safety obstacle and safety performance.

**Table 5:** Multiple regression test between safety obstacle and safety performance regarding supervisor support

		R	R <sup>2</sup>	Sig.	R <sup>2</sup> Change	β	Sig. of β	D-W
First model	Safety Obstacles	0.295	0.087	0.007	0.079	-0.295	0.007	2.33
Second model	Safety Obstacles	0.408	0.166	0.001		-0.139	0.237	
	Supervisor support					0.322	0.006	

Regarding table (5) it is observed that at the first step model included variables of safety obstacles and safety performance that amount of sig of obtained model is less than 0.05 that is obtained linear regression model was meaningful and we can say that safety obstacles has meaningful effect on safety performance that degree of this effect is -0.295. By entering variable of supervisor support second model is achieved ‘as it is regarded this model is meaningful and linear’ enter of variable of supervisor support in the model cause creation of change at the degree of variables relationship as degree of effectiveness of variable of safety uncertainty on safety performance from -0.295 reaches to -0.139 and also degree of changes of determination coefficient is about 7.9% and changes of determination coefficient is meaningful. Consideration of meaningful levels of β coefficient in second model it is observed that supervisor support has meaningful level less than 0.05 and meaningful level of β for variable of safety obstacles isn’t meaningful. It means that supervisor support is a moderater between two variables of safety obstacles and safety performance. Also positive coefficient of supervisor support shows by increase of supervisor support reverse relationship between safety obstacles and safety performance decreases.

H4: Supervisors support moderated the relationship between safety uncertainty and safety performance.

**Table 6:** Multiple regression test between safety uncertainty and safety performance regarding supervisor support

		R	R <sup>2</sup>	Sig.	R <sup>2</sup> Change	β	Sig. of β	D-W
First model	Safety uncertainty	0.323	0.104	0.003	0.072	-0.323	0.007	2.12
Second model	Safety uncertainty	0.419	0.176	0.000		-0.177	0.129	
	Supervisor support					0.304	0.01	

Regarding table (6) it is observed that at the first step model includes variables of safety uncertainty and safety performance that amount of obtained sig is less than 0.05 that is obtained regression model was meaningful and we can say that safety uncertainty has meaningful effect on safety performance that degree of this effect is -0.323. By entering variable of supervisor support second model is achieved as it is regarded this model is meaningful and linear; entering variable of supervisor support in the model causes creation of change at degree of relationship of variables as degree of effectiveness of variable of safety uncertainty on safety performance from -0.323 reaches to -0.177 and degree of changes of determination coefficient is 7.2% and changes of determination coefficient is meaningful.

Consideration of significance of β coefficient in second model it is observed that supervisor support has sig less than 0.05 and β sig for variable of safety uncertainty is not meaningful. It means that supervisor support is a moderater between two variables of safety uncertainty and safety performance. Also positive coefficient of supervisor support shows by increase of supervisor support reverse relationship between safety uncertainty and safety performance decreases.

### CONCLUSION AND SUGGESTION

Regarding consideration of research hypothesis, researcher has presented some suggestions as below:

-By identifying safety performance at the organization as dominating form and by doing

actions for preventing safety deficiency for enhancing safety level and health of staff (like fining individuals who break safety) and staff role information clarity, we can enhance safety degree to considerable extent.

-By having strong system for supervision of safety at this industry and by removing limitations and conflicts of interpersonal safety we can provide job condition with high safety for following organizational goals.

-Supervisors can significantly raise the level of safety performance by meeting the safety needs of staff and offering rewards who comply in safety and participate in it.

-Supervisors can encourage staff to observing safety by holding educational classes for staff and explanation of deficiencies of not observing safety at workplace. Also presence of entrepreneur at conferences and educational seminars related to safety performance enhance their awareness about problems related to safety observance and take important step at decreasing events and job damages.

#### **Limitations and future suggestions**

This research like any other research is not out of limitation, so researcher tried to present some suggestions regarding limitation. The first limitation related to this subject is that in this research researcher has only searched construction industry in Guilan province so result can't be generalized, so it is advised variable of type of industry should enter research model as control variable. On the other hand in this research researcher should only consider the role of safety stressor and safety performance by moderating supervisor support and moderating factors like role of workers in this relation hasn't been pointed out, so researcher interested to this subject is advised to consider new variable and other dimensions of variables of this research in relationship between role of safety stressors and safety performance considering the moderating role of supervisor support. Finally the last limitation related to this factor in this research

considered researcher from safety performance from two dimensions of (safety Compliance and safety Participation) and didn't considered other dimensions, so researcher interested to this subject is advised to consider variable of safety performance from another dimension like leadership of observable management, investigation and implementing tools.

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