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Influence of Hiring , Selection Process and Safety Training on Lightning Safety Performance in Iranian Manufacturing Companies

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***Abstract*— there are a high number of studies in the area of safety performance in organizational level, but scarce research exists in lightning safety performance and its antecedents. This study has identified factors of safety training and hiring and selection process which are hypothesized to enhance lightning safety performance and examined the degree to which they have contribution in lightning safety performance in Iranian companies. Results confirmed that the predictors of hiring and selection process and safety training are positively contributed to lightning safety performance in Iranian manufacturing companies.**

Keywords- Hiring and selection, Safety training, Lightning safety performance

I. INTRODUCTION

Well-being and safety issues have become a major concern of managers in the workplace. Once safety recognized as an important value and integrated into all adopted practices in a company, there is a high potential for a strong occupational safety system in an organization [1]. Past research has evidenced that management practices are important in helping to enhance work-place safety of companies [2]. Besides, it is confirmed that there is a positive relationship between management human resource (HR) practices and organizational performance [3]. In this case, there is scarce research on specific area of lightning safety performance [4]. Lightning safety performance is a metric for tangible outcomes of lightning in organizations such as number of injuries or accidents due to lightning per year [5].

The objective of this study is to examine the role of human resource practices of safety training and hiring and selection process on lightning safety performance of Iranian companies.

II. HIRING AND SELECTION PROCESS (HSP)

Hiring and selection are one of the first and most important HR practices during the recruitment procedure. Research confirms that a well-organized selection process helps to enhance overall performance of a system [6-8]. In the selection phase, generally the applicants' competences and personality are checked. It is evidenced that personality of workers such as intelligence, extroversion and aggression is related to their safety behaviors [2, 9, 10] . Besides, employees' physical capabilities is important and critical that need to be considered during selection process to choose individuals who are able to work securely [11]. Another important criterion in the selection process is to select the individuals with adequate working experiences that helps to reduce the number of accidents in the workplace [12].

III. SAFETY TRAINING (ST)

A number of techniques have been identified to increase workplace safety. A study conducted in the U.S. stated that to achieve a higher safety performance, needs to conduct an intense safety training [13, 14] . Hallowell, 2012 found that the most effective technique used by companies to delivery of safety knowledge to the workers, are such as training sessions and informal safety communications [13]. It is apparent that training helps to develop workers' capabilities and skills to recognize threats, and thus they suffer fewer work-related damages [2]. In addition, training would be more effective if it develop more than the simple transfer of knowledge related to how to do job safely. On the other words, workers need also be empowered to use new expertise by following training [2].
In general, literature supports the idea that one of the main factors in improving and sustaining safety performance of companies is safety training [13].

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IV. LIGHTNING SAFETY PERFORMANCE (LSP)

Lightning safety performance stands for an organizational metric for lightning safety outcomes such as the number of people injured or killed and/or equipment damaged by lightning [4]. Study on incidents caused by lightning shows that a lot of people are killed or injured by lightning each year and a great number of equipment are damaged by direct and indirect effects of lightning [15]. A number of research have been conducted to assess lightning safety performance of organizations and they normally consider on reporting mechanism for protection equipment, implementation of lightning safety guidelines and instructions in the system, having a right communication between employees and managers also having a proper level of organizational commitment to lightning safety issue beside of technical issues [4, 16-19].

V. RESEARCH FRAMEWORK

A quantitative research using questionnaire method was carried out to identify the relationship between the mentioned factors of hiring and selection process and safety training with lightning safety performance. For all the examined factors, quantitative scales from previous empirical literature practicable to use in a survey, were used. Prior to conduct the survey a number of interviews done with some HR managers in order to validate the measures. In this study it is hypothesized that there is a positive relationship between safety training (ST) and lightning safety performance (LSP). Besides, it is hypothesized that there is a positive relationship between hiring and selection process (HSP) and lightning safety performance (LSP). The LSP scale was developed in center of electromagnetic and lightning protection research (CELP) of Malaysia using the lightning safety items from C.Gomes et al. (2012), and a lightning protection measure developed by U.S. army [4, 17, 20, 21] and items of HR factors were adopted from Lai et al. (2011). Responses to the questions were measured on a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The questionnaires were distributed via postage to a sample of 300 Iranian manufacturing companies. The sampled companies were located in the regions that were identified with higher lightning density in Iran, including Qazvin, Tehran, Mazandaran, Alborz and some parts in North and West North of Iran. The questionnaires were sent to be answered by key informers such as CEOs or HR managers. Of the 126 returned surveys, 16 were not usable due to missing data on some variables that reduced the sample to 110 questionnaires. The profile of the respondents is presented in Table 1.

VI. DATA ANALYSES

Standard descriptive statistics were used to describe and summarize the data. Multiple linear regression analysis was conducted to evaluate the effects of hiring and selection, intensive and rewards and safety training on lightning safety performance using SPSS software. Regression analysis is used to predict the value of one variable (the dependent variable) on the basis of other variables (the independent variables). Preliminary analyses were conducted to confirm no violation from the assumptions of normality, linearity, multicollinerity and homocedascity.

VII. STATISTICAL RESULTS

Organizations in last sample were from a range of businesses comprising chemical and automotive. Consistent with the results, majority of respondents were medium level managers such as safety coordinators and supervisors from different divisions who were involved with safety issues. Demographic results indicate that the majority of the participants have been involved in lightning safety practices at least for 5 years. This shows that they have adequate familiarity with safety topics as well as lightning safety practices. The characteristics of participants are presented in Table 1.

A correlation analysis has applied in order to measure if any linear relationship exist between the identified factors and lightning safety performance. Correlation analyses indicates that the mentioned HR factors are significantly correlated to lightning safety performance. Results are presented in Table2.

A multiple linear regression analysis was conducted to evaluate the influence of hiring and selection process (HSP), and safety training (ST) on lightning safety performance (LSP). Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinerity and homocedascity.

As can be seen in Table 3, R2 which is the squared value of multiple correlation coefficient R, indicates the proportion of Y variance (dependent variable) explained by or accounted for by its linear relationship with X (predictor). Therefore, based on the Table 3, approximately 21.5% of variance in lightning safety performance (LSP) was accounted by hiring and selection process (HSP) and safety training (ST).

Based on the Table 4, results of ANOVA, the p-value determine whether the regression model overall predicts the dependent variable significantly well. For that reason, as presented in Table 4, small p-value (less than 0.05) shows that the regression model overall predicts lightning safety performance significantly well.

From Table 5, the unstandardized coefficient is used in the regression equation when making prediction. The t-value determines whether the IVs have significant effect on the DV. Variance Inflation Factor (VIF) indicates that if the IVs have strong linear relationship with other IVs (multicollinearity problem detection). VIF value between 5 to 10 or larger than 10, suggest multicolinearity problem. Thus, in this model as all the VIF values of the variables are in the range, there is no multicollinearity problem detected. As shown in Table 5, safety training and hiring and selection process are both significant predictors of lightning safety performance. The regression equation predicting lightning safety performance is: LSP = 1.865 + (.164) HSP + (.219) ST. Similarly, the correlation

between hiring selection process (β = .242, p <0.05), safety training (β =.319, p<0.05) and lightning safety performance were statistically significant.

Results showed that the influence of safety training on lightning safety performance is stronger than the influence of hiring and selection process.

To sum up, the results of regression analyses indicates that dependent variables of HSP and ST were positively associated with lightning safety performance in Iranian manufacturing companies.

Table 1. Characteristics of participants

Description	Total (n=110)	
	n	%
Designation		
Senior management	33	30
Middle management	77	70
Years of working experience		
1-10	67	60.9
11-20	18	16.4
21-30	22	20
>31	3	2.7
Years of involving in lightning safety practices		
1-5	65	59
>6	45	41

Table 2. Correlation coefficients of HR practices and lightning safety performance

Correlations

		HSP	ST	LSP
LSP	Pearson Correlation	.355**	.405**	1
	Sig. (2-tailed)	0.000	0.000	
	N	110	110	110

Table 3. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.463[a]	.215	.200	.37184	.734

a. Predictors: (Constant), ST, HSP, IR

b. Dependent Variable: LSP

Table 4. Results of ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.043	2	2.022	14.621	.000[b]
	Residual	14.794	107	.138		
	Total	18.837	109			

a. Dependent Variable: LSP

b. Predictors: (Constant), ST, HSP, IR

Table 5. Coefficient of predictors

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.865	.219		8.503	.000		
	HSP	.164	.062	.242	2.636	.010	.873	1.145
	ST	.219	.063	.319	3.474	.001	.873	1.145

a. Dependent Variable: LSP

VIII. CONCLUSION

This study has examined the role of identified HR factors of safety training and hiring and selection process on lightning safety performance among the Iranian manufacturing companies. The results of this study confirmed that these identified HR practices significantly and positively contributed to lightning safety performance of those companies.

IX. DISCUSSION

This study is important for those who research the effectiveness of HR practices on safety performance of companies, as it studied the human resource-related factors contributing to the new area of lightning safety performance in which there is scarce empirical research in this matter. Besides, it uncovered that beside the technical issues specific HR practices such as safety training and hiring and selection process have significant impact on improving lightning safety performance of manufacturing companies. These results are in line with the study conducted by Kuimet et al. in 2015and Lai et al. in 2011 [1,2], according to which HR practices like training, communication, employees involvement and selection process are significantly related to safety performance of companies. This study has some limitation that need to be addressed. The study used self-rating questionnaires which is a subjective measurement method that respondents may be biased in their rating and more objective measures are needed to be used. Moreover, this study believed that the model should hold for other individual and organizational antecedents of lightning safety performance.

Manufacturing firms are recommended to consider and formulating lightning safety policies based on HR practices that are found to be effective to improve safety management on manufacturing settings. Nevertheless, it should be noted that based on past research, HR practices for lightning safety should fit the organization's culture and local industry practices as well as safety regulations.

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