

Safety Measures and Its Impact on Employees in Manufacturing Industry

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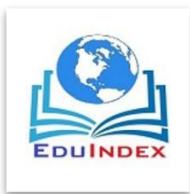
ABSTRACT

In today's scenario, there are various factors that influence a factories safety climate. The predominant reasons for industrial injuries are due to poor maintenance, lack of emergency provisions, risk of oxygen depletion, absence of guards in machineries, inadequate safety training, poor waste management, heavy moment of forklifts, not wearing personal protective equipment, exposure to hazardous chemicals, carelessness, etc. The significance of safety has increased tremendously in recent era because of growing industrial accident rates. A safe working environment minimizes the occurrence of accidents or injury happening, improves productivity, increases financial benefits, protects firms from legal issues, enhances its reputation, improves employee morale and decreases absenteeism. Safety management plays a vital role in a manufacturing sector. There is an impending need to analyse the major and most common factors related to safety such as factory safety climate, employee safety measures and provisions in case of emergency and to analyse the importance given to reduce the chances of accidents in the workplace and ensure safety.

Keywords: Factory safety climate; Employee safety measures; Emergency provisions

INTRODUCTION

Work safety is crucial for every employee in the industry as all the workers wish to work in a safe atmosphere. Health and safety are the key factor for all the industries in order to promote the wellness of both employees and employers. It is an obligation and ethical responsibility of the organization to look after the employee's safety. Every person who



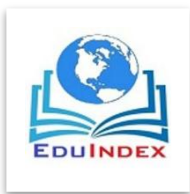
leaves his home for his work in the morning should come back to his home in evening in good health. All the industries do have safety risk, but the management should devote their time to think and strategize the things that what safety precautions are required in their company to make sure that their workers are safe enough for all the time.

Manufacturing operations, processes and amenities can at times have greater safety risk associated than other industries. Safety is a vital aspect for every industry because an injury free workplace increases the morale of workers employed in any dangerous situations. Safety in manufacturing industry is essential to prevent or decrease the risk of injury, illness and death. Recognising these facts, industries involving various hazards and risks industries prepare their own safety policy, safety manual and have a separate department for safety so as to create proper awareness and provide the know-how-about the safety. It is not only sufficient to care of safety but other two inter-related aspects, viz., health (well-being of employees) and environment are also given equal importance and considerations. All these three elements i.e., safety, health and environment (also known as SHE) are inter-related and affect each other. For instance, if health of employee is not given due regards, it may lead to accidents. If industry pollutes the environment around workplace, it will affect health of employees which may ultimately affect production. It is only if health and environment are in control than safety can be ensured.

Safety is one of the biggest issues and it is completely the responsibility of the managers and the business owners to make sure that their employees are working in safe environment or not. The management should make sure that they keep on motivating and boosting the employees to make them active in the working process. If appropriate safety measures are taken, emergency procedures are stated and all employees are trained for their responsibilities, the safety risks on the factory shop floor are decreased immensely.

REVIEW OF LITERATURE

Cheyne et al. (2002) scrutinized the liaison among various components in organizational safety climate. They examined issue regarding individual's safety, physical working environments safety, employee's attitude towards the organization and workplace hazards perception. Later, they associated these components with self-appraised safety levels.



Swuste et al. (2010) plotted the past literature review on safety summary, job-related safety and established the root cause of job-related accidents into two ways, i.e., external and internal. The external stimuli for accidents were threatening machines, extended working hours, high pressure to work and excessive speed production. Whereas, the internal cause for accidents was the worker's ability to manage hazardous circumstances.

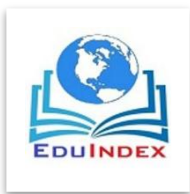
Logasakthi et al. (2013) investigated with respect to industry, region, time, country, social value and degree of industrialization, the concept of labour safety, health and welfare are flexible. The organization enhances performance in the working environment by providing necessary safety, health and welfares to all levels of employee.

The manufacturing industry contributes to a greater number of work-related injuries and illness. The reason behind this is due to lack of information regarding occupational hazards, safety practices and attitude among employers and workers (safe work Australia).

Hon et al. (2014) studied the comparison between the safety level climate among managers, supervisors and workers in the repair, maintenance, minor alteration and addition sector. The influence of safety climate on these factors was explained. The results showed that there were reduced injuries at workplace when workers followed safety rules and regulations, maintained positive workforce and safety attitude. Lowest accidents were in supervisor's factor.

Gunaseelan. V et al (2017, December) emphasized on the importance safety management structure/system plays in an organization. The system deals with ensuring safety atmosphere, safety achievement and safety conduct throughout the firm. The firm's success depends on its safety atmosphere. Impoverished safety provisions have led to injuries, accidents, violations, compliance, etc. safety conduct is most import in a production facility. An employee with good safety conduct tends to abide by the rules and regulations of safety. Achieving performance in safety helps in reducing the number of accidents and malpractices. In the end, employee's health and safety is considered as the most important factor in a production unit.

Kandola. R et al (2018, July) studied the impact of firm's safety ambience (culture) on team's safety results. The firm's safety ambience is considered to be dependent on safety conveyance and supervision. Based on the analysis, the results conveyed the influence on



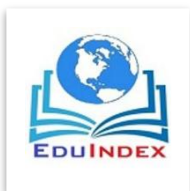
firm's safety ambience on safety conveyance and supervision. Proper measures taken to maintain required climate will lead to successful management and supervision of safety. The study also showed the positive influence of safety ambience on mental welfare, reduced accidents and injuries. However, this study revealed the influence of supervisors' behaviour on employee's safety perception.

Carcano & Poot (2014) explored workers' perceptions of safety practices in their habitual work environment and safety practices were captured using an instrument included education and training, work motivation, workplace integration, family and social integration, safety awareness integration and accidents. Findings show that workers have received less education and possess an incomplete culture of safety awareness and lack of precaution is the main reason of accidents.

Guldenmund (2000) reviewed the literature on safety climate and safety culture and found that both were different according to a general framework based on Schein (1992 Schein) organizational culture. This framework differentiates three levels at which organizational culture can be studied on basis espoused values, assumptions and art effects. Safety climate might be measured an alternative safety performance indicator and research should focus on its scientific validity.

Neal et al. (2000) investigated the influence of general organizational climate on safety climate and performance for this many hypothesis were tested. A sample of 525 employees from 32 work group in Australian hospital. And the results demonstrated that general organizational climate influenced the perceptions of safety climate and these perceptions influence safety performance through their effects on motivation and knowledge.

Melia et al. (2008) spotted supervisors, workers, organization and co-workers were four vital agents in safety assurance. They also identified five main variables that influence safety climate. The variables were response to organizational safety, response to supervisor's safety, response to co-worker's safety, perceived risk of accidents and response to workers safety. Based on this, the authors investigated the emotional chain of safety's influence between anticipated probability of accidents and safety responses.



Gardner et al. (1999) study revealed that injury was experienced by more than 50% of respondents. High ratio of injury and accidents were experienced by printing press and grinding machine. Most common factor that led to accidents were inadequate and failure to guard and fence the machineries, failure to abide by safety work procedures and poor design and working conditions of machineries.

Clarke (2006) analysed the attitude about safety among supervisors, workers and managers. He also examined their relationship with unreliable accidents and behaviour in the production and manufacturing plants. Based on the factor analysis, three factored were identified. In which, the first factor was connected to worker's reaction to safety, second factor was the battle between safety and production and last factor was the concern of managers towards safety. The major predictor and forecaster of unreliable accidents and behaviour was perception about the working environment. There was difference in perception among various levels in organization's hierarchy. Even after all, the safety outcome was unpredictable.

RESEARCH METHODOLOGY

RESEARCH DESIGN

The research design adopted for the study is descriptive research design. The main goal of this type of research is to study frequencies, factor analysis, ANOVA, Independent T test and other statistical calculations. The data collection done through primary and secondary collection method, a structured questionnaire used to collect data from 122 respondents. In this study probability sampling is used as the sampling framework. The probability sampling used in this study is Simple Random Sampling. The tools used in this research are reliability test, correlation and regression analysis.

DATA ANALYSIS AND INTERPRETATION

RELIABILITY ANALYSIS

Table 1: Reliability Statistics

Cronbach's Alpha	N of Items
.946	19

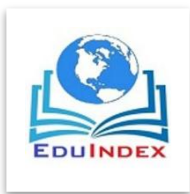


Table 1 above is the Reliability Statistics table which provides the value for Cronbach alpha which is 0.946 and reflects high reliability for this specific sample.

CORRELATION ANALYSIS

In this study the correlation between the factors of safety measures (Factory safe climate, Employee safety measures and Emergency provision) and the safety measures and its impact on employee is analysed.

1.Factory safety climate Vs Employee safety measures Hypothesis

H₀: There is no significant relationship between factory safety climate and employee safety measures.

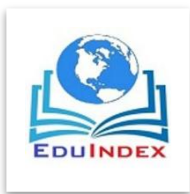
H₁: There is significant relationship between factory safety climate and employee safety measures.

Table 2: Correlation between factory safety climate and employee safety measures

		Factory safety climate	Employee safety measures
Factory safety climate	Pearson Correlation	1	.802**
	Sig. (2-tailed)		0
	N	122	122
Employee safety measures	Pearson Correlation	.802**	1
	Sig. (2-tailed)	0	
	N	122	122

**. Correlation is significant at the 0.01 level (2-tailed).

Based on the analysis, the significance value is 0.0 (<0.05). Hence, there is significant relationship between factory safety climate and employee safety measures.



2. Factory safety climate Vs Emergency

provision Hypothesis

H₀: There is no significant relationship between factory safety climate and emergency provision.

H₁: There is significant relationship between factory safety climate and emergency provision

Table 3: Correlation between factory safety climate and emergency provision

		Factory safety climate	Emergency provision
Factory safety climate	Pearson Correlation	1	.701**
	Sig. (2-tailed)		0
	N	122	122
Emergency provision	Pearson Correlation	.701**	1
	Sig. (2-tailed)	0	
	N	122	122

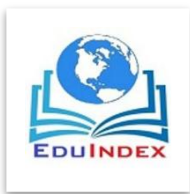
** . Correlation is significant at the 0.01 level (2-tailed).

Based on the analysis, the significance value is 0.0 (<0.05). Hence, there is significant relationship between factory safety climate and emergency provision.

REGRESSION ANALYSIS

Regression describes how an independent variable is numerically related to the dependent variable. However, correlation is used to represent the linear relationship between two variables. Regression is a statistical measurement used in various disciplines which attempts to determine the strength of the relationship between one dependent variable and a series of other changing variables (known as independent variables).

The Coefficients table provides us with the necessary information to predict dependent variable from independent variable, as well as determine whether independent variable contributes statistically significantly to the model (by looking at



the "Sig." column). Furthermore, we can use the values in the "B" column under the "Unstandardized Coefficients" column.

1. Factory Safety Climate Vs Employee safety

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.802 ^a	.643	.640	2.903	.643	215.81 ₀	1	120	.000

a. Predictors: (Constant), Factory safety climate

As the significance value is less than 0.05 in the model summary, the data is fit for regression analysis. The R value represents the simple correlation and is 0.802 which indicates a moderately high degree of correlation. The R^2 value indicates how much impact the independent variable has on the dependent variable. In this case, the independent variables have an impact of 64.3% on the dependent variable.

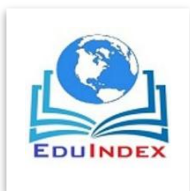
Table 5: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	5.97	1.535		3.89	0		
	Factory safety climate	0.701	0.048	0.802	14.69	0	1	1

a. Dependent Variable: Employee safety measures

As the significant value is less than 0.05, there is a significant relationship between factory safety climate and employee safety measures.

Employee safety measures = 5.97 + (0.701*factory safety climate)



2. Factory Climate Safety Vs Emergency provisions

Table 6: Model

Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.701 ^a	.491	.487	2.025	.491	115.878	1	120	.000

a. Predictors: (Constant), Factory safety climate

As the significance value is less than 0.05 in the model summary, the data is fit for regression analysis. The R value represents the simple correlation and is 0.701 which indicates a moderate degree of correlation. The R^2 value indicates how much impact the independent variable has on the dependent variable. In this case, the independent variables have an impact of 49.1% on the dependent variable.

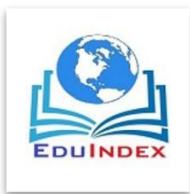
Table 7: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	4.712	1.071		4.401	.000		
Factory safety climate	.358	.033	.701	10.765	.000	1.000	1.000

a. Dependent Variable: Emergency provision

As the significant value is less than 0.05, there is a significant relationship between factory safety climate and emergency provisions.

Employee provisions = 4.712 + (0.358 *factory safety climate)



FINDINGS AND SUGGESTIONS

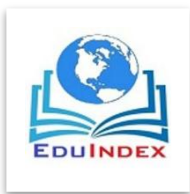
- ☐ From factor analysis, the 19 safety variables are grouped into three dimension such as factory safety climate, employee safety measures and emergency provisions.
- ☐ The correlation test shows that there is a significant relationship between factory safety climate and employee safety measures
- ☐ From the model summary, it is found that the data is suitable for regression analysis. The results indicate that the factory safety climate has 64.3% impact on employee safety measures.
- ☐ The correlation test shows that there is a significant relationship between factory safety climate and emergency provision
- ☐ From the model summary, it is found that the data is suitable for regression analysis. The results indicate that the factory safety climate has 49.1% impact on emergency provisions.

SUGGESTIONS

- ☐ It is recommended that the management should give awareness to the employees regarding the availability of first -aid box.
- ☐ The results of the respondents show that there is less concern for employees' safety in comparison with business success. Henceforth, it is suggested that the management should have equal for employee's safety and business success in order to balance the safety climate.
- ☐ It is recommended that the employees are checked on a routine basis to observe their health and safety in order to ensure continual improvement.
- ☐ It is recommended that the employees are given training for emergency situations to use fire extinguish, to handle the risk associated with their job and to impart basic knowledge on first aid treatment. It is suggested that the management must provide necessary awareness and training to locate and handle emergency exits.

CONCLUSION

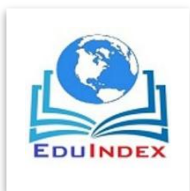
When suitable safety measures are taken, emergency procedures are understood and all employees are trained for their specific responsibilities, the safety risks on the factory shop floor are decreased immensely. Nowadays, serious attention is being paid in this matter,



because it has been clearly understood that these accidents cause heavy losses. From the thorough analysis of the results, it is interpreted that the factory safety climate has influence on employee safety measures and emergency provisions. Thus, it is recommended that rectifying the factory safety climate parameters at first will eventually led to changes in overall safety climate.

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