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SAFETY TRAINING ON SAFETY PERFORMANCE OF EMPLOYEES: ANALYSIS OF LANKA SUGAR COMPANY (PVT) LTD

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ABSTRACT

The main purpose of this research was to examine the impact of safety training on the safety performance of employees in Lanka Sugar Company (PVT) Ltd. Safety is a critical component of the entire manufacturing organization. Human plays a major role in every organization, different organization using the different method to safeguard employees from hazards. Consider the Sri Lankan context, the dearth of research being done on this topic. The objective of the study is to identify the factors that contribute to safety training and safety performance, to discover the relationship between safety training and safety performance, and to identify the extent to which safety training impacts the safety performance of employees. Conceptual variables are safety knowledge & skill transfer, safety work practices, safety & risk understanding, and safety performance. The data was collected from eight departments of the factory employees. A stratified random sampling method was used and 97 employees responded. Reliability testing was performed to verify the reliability of all elements of the finding aid, and the reliability was 0.768. The hypothesis tested by the correlation coefficient indicated that there was a positive correlation between safety training and safety performance. This research would be useful for the organization and practitioner to enhance safety performance through safety training.

Keywords: Safety training, Safety performance, Safety procedure

INTRODUCTION

Lanka Sugar Company (PVT) Ltd could be a Sri Lankan sugar-producing company, which is listed on the Colombo securities market. The reason for the formulation of this company is that in 1978 a World Bank-funded study was undertaken to identify areas in Sri Lanka that are suitable for sugar cane cultivation to reduce the country's dependency on imported sugar. Based on the findings the most sugar plant of the cluster is found in Buttala within the Monaragala District, Uva province. Pelwatte sugar was incorporated on nineteen Gregorian calendar month 1981 as Pelwatte Sugar Company LTD. It became a public liability company on 10th of December 1982. In 1990, the company modified its name to Pelwatte Sugar Industries Ltd. it had been 1st quoted on the Colombo securities market in 1984. Pelwatte Sugar Industries was formally known as Pelwatte Sugar Company PLC and changed its name to Pelwatte Sugar industries PLC in 1990.

A Lanka Sugar Company (PVT) Ltd, around 3953 employees working in five departments; Agricultural Department, Finance Department, Human Resource Department, Factory Department, and Distillery Department. Human Resource Department consists of nine sections (HR Admin, Legal section, Medical Center,

Training center, Safety unit, Environment & Township, Investigation section, Transport and Security section) among those Safety units has the responsibility to protect every employee's health and safety issues in the company (Annual report, Lanka Sugar company Pelwatte, 2019).

Safety training and safety performance are key variables in manufacturing organizations. Prime duty of organization protects the employees from hazards. Appropriate training and continuous updating of knowledge and skills related to safety issues is one method of reducing workplace hazards (Ford et al., 2008) and maintaining safety performance.

The human being is the main reason for causing danger in an organization. This includes risky behavior, failure to detect signals, lack of proactive & collective safety behavior (Ford et al., 2008). Consider the training period, effective participation is important, it depends on the training of employees and employees' representatives (Health & Safety executive, 2005). In the manufacturing organization, safety is always a major issue (Chockalingam et al., 2012). In addition, Ali et al., 2009 mentioned that developing countries face the most dangerous issues is safety, moreover, authors (Belel et al., 2012) indicated that seems to be weak in enforcing the rules of security in organizations. Most of the occupational accidents were held lack of attention given to safety performance, safety procedures, improvement of methods to prevent accidents and injuries, lack of knowledge & training, lack of supervision, lack of rules implementation (Jiang et al., 2010), and also lack of safety awareness leads to the unsafe behaviors (Kaila, 2011).

In the Sri Lankan context, a dearth of research was conducted on safety training on safety performance. Therefore, it is very important to have effective safety training programs to improve the knowledge of employees and also to get

better safety performance from them. On this basis, the problem with the study is that,

“To what extent does the safety training program impact the safety performance of employees in Lanka Sugar Company (PVT) Ltd”

Objectives of the study

According to the problem statement, the following objectives are formulated.

- To identify the factors that contribute to safety training and performance.
- To find out the relationship between safety training and safety performance.
- To identify what extent to which safety training impacts on the safety performance of employees in an organization.

LITERATURE REVIEW

Occupational safety

Safety means being free from exposure to danger and protection from the occurrences or risk of injury or loss. Safety involves protecting employees from injuries due to work-related accidents (Mondy et al., 1981). The objective of safety management incorporates the following, such as providing a structural management system to eliminate or control risk in operation, setting up a safety management system to oversee the development and implementation, to develop and embed a safety culture in all activities, to ensure that all staff receive adequate and appropriate safety information and to provide the necessary training to build and maintain a meaningful operational safety leadership skill.

Human error is one of the factors of many accidents (Cooper, 1998), the error is also classified into three; based on skill, rule, and knowledge (Rasmussen et al.,

1987), the environment is also part of the occupational accident at work in this way; occupational stressors, organizational culture, overload, poor supervision and hazards housekeeping.

Safety training

Safety training could help employees acquire knowledge, improve their skills and adopt a more positive attitude, as well as make them competent in the performance of their safety and health functions (Health Safety Executive, 1997). It supports employees operate awareness and enhances safety performance (Langford et al., 2000). The factors influencing safety are human behavior, the environment, and the physical environment (Ford et al., 2008). Better and effective safety training is more effective for the organization, at the same time higher safety knowledge leads to higher safety performance (Burke et al., 2011). Further, accidents and injuries are reduced through safety training (Bahn et al., 2014). Dimensions of safety training practices identified by Bahari (2011), such as knowledge & skill transfer, safe work practices, and safety & risk understanding.

One of the categories of learning outcomes is the transfer of knowledge and skill. A number of studies have found empirical support for the relationships between safety training, perceived safety knowledge, and self and supervisor ratings of safety performance (Burke et al., 2002; Burke et al., 2006; Cheung et al., 2007; Griffin et al., 2000; Sinclair et al. 2003). Another factor of safe work practices refers to the specific way or practices in which the work is performed safely, such as following the safety procedures of a particular job or task, slower line speeds, better planning of work or rest scheduling, monitoring of work areas and invoking operating procedures and job expansion (Goldenhar et al., 2001). Unsafe work practices continue to occur in many

organizations and cause work-related injuries, occupational diseases, and fatalities (Dong et al., 2004). The last factor of safety and risk understanding explains if we either eliminate the hazards or control them so they pose no serious risks to our health and safety, then we have a safe workplace any successful safety strategy has this principle as its foundation. Success depends on the following factors; the ability of the organization to identify all of the hazards that are present, the ability of the organization to implement satisfactory control measures whenever necessary, and the level of commitment from all personnel within the organization to accept the rules, regulations and safe work practices and procedures that have been established.

Safety performance

Safety performance is perhaps best defined by the extent to which an individual engages in behaviors that increase the safety of the individual and the organization and avoids behaviors that decrease the safety of self and the organization (Ford et al., 2008). Improved safety performance is determined by the active participation of employees (Walters et al., 2000). It has measured the accident rate (Idoro, 2011). Several attempts have been made to measure safety performance and the results revealed that safety performance consists of two dimensions, safety compliance and safety participation (Zohar, et al., 2008). Safety compliance refers to the state of being in accordance with established safety standards and regulations, or the process of becoming so. Further, compliance is regulated by safety compliance companies or organizations, as well as government legislation, and is monitored and enforced by these bodies to ensure compliance with the established standards. Businesses or companies in all industries must comply with safety regulations that are relevant to their

industry. Safety participation mentioned by Occupational Safety & Health Association (OSHA) defines worker participation as “involvement in establishing, operating, evaluating, and improving the health and safety program.” Going a step further, OSHA provides the following criteria for what worker participation in an EHS program should look like. Workers should:

- Be encouraged to participate and feel comfortable reporting health and safety issues
- Have access to all information needed to effectively participate in the EHS program
- Have the opportunity to participate in all stages of program design and implementation
- Not experience retaliation if/when they report health and safety concerns

Relationship between safety training and safety performance

Training plays the most vital component to improve safety performance (Khdair, et al., 2011). The reason for integrating management practices with safety performance is as it supports human factors in the control of human error, and achieve to maximum standard of safety, it appears the role of management practices which are also an important factor in achieving safety performance (Grote et al., 2003; Tavares. 2009; Khdair, et al., 2011).

When considering safety performance and workplace injuries, as there is a significant linear relationship between managerial practices and workplace injuries (Ali et al., 2009; Vredenburgh, 2002; Khdair et al., 2011). Further, behavior-based safety training also assists in reduce the number of unsafe conditions in the organization (Kaila, 2011). And also, he has mentioned that the management has started to believe that engineering controls alone do not provide

an adequate safe workplace unless behavioral safety is practiced and unsafe behaviors need to be controlled in order to ensure total safety at workplaces. If proper procedures and knowledge for safety are provided to the workers the human error can be reduced and workplace injuries can be controlled (Gordon et al., 2005; Khdair, et al., 2011).

The study supported the important constructs of safety training practice in affecting safety performance in the workplace. The dimensions of knowledge and skills transfer, safe work practices, and safety and risk understanding can effectively improve health and safety performance in the workplace. The results of this research highlight the importance of organizations providing suitable and adequate safety training practices efforts to equip employees with safety-related knowledge and skills, as well as behavior to ensure desired safety performance (Jing Lun Chua et al., 2019).

Safety training practices enable employees to perform their daily tasks safely and competently (Sari, 2009; Antonio et al., 2013; Bahari, 2013; Harrington et al., 2013; Walker, 2005). For this reason, safety training practices function as a major practice to reduce incidents in the workplace, with the ultimate goal of increasing safety performance (Wameedh et al., 2011; Health and Safety Executive, 2011; Burke et al., 2011; Choudry et al., 2008). Safety training has been identified as one of the most important safety management practices capable of influencing high-performance safety outcomes across industries (Manu et al., 2017; Marín et al., 2017; Rose & Rae, 2017). Based on the above concepts, the hypothesis has been formulated as follows:

H1: There is a significant relationship between safety training and safety performance.

METHODOLOGY

Conceptual Framework

A conceptual framework helps in a research study to collaborate ideas, philosophy, and variables that are relevant and suitable for visualizing the problems envisage in a study through suitable research questions and literature (Smith, 2004). Therefore, in light of this study, a model showing the impact of safety training (independent variable) on safety performance (dependent variable) of employees in Lanka Sugar Company Ltd.



Figure-1 Conceptual Framework

Source-Literature Review

Operationalization

The operationalization has explained in the below table.

Table 1 Operationalization

Variable	Dimension	Measurement
Safety Training	Knowledge & Skill Transfer	Questionnaire
	Safe Work Practices	
	Safety & Risk understanding	
Safety Performance	Safety Compliance	Questionnaire
	Safety Participation	

Source - Literature review

The dimensions of the operationalization variables are given below.

Safety Training

The term safety training has been used to refer to a planned activity related to safety and health with specific goals and application that is undertaken by a person primarily so that they can apply new skills and knowledge. Safety training includes formal off-the-job training, instruction to individuals and groups, and on-the-job coaching and counseling (HSE, 1997). In a specific example, types of safety training include first aid training, fire-fighting training, manual handling training, forklift training, and chemical handling training.

Safety Performance

Safety performance is a subsystem of organizational performance (Wu et al., 2008; Tharaldsen et al., 2010). Wameedh et al. (2011) proposed that there are many factors that can influence safety performance, for instance, organizational (safety leadership, safety training practices), and psychological factors (safety climate). Recent evidence (Chen et al., 2012; Choudhry et al., 2009; Yang et al., 2010) suggests that safety performance should be measured by using proactive and reactive indicators. Reactive indicators are incident rates and compensation costs, whereas proactive indicators are safety behavior and hazard identification (Chen et al., 2012; Wu et al., 2008; Powell, 2009).

Knowledge & Skill Transfer

Baldwin and Ford (1988) suggested that transfer of training referred to the extent to which learners, including employees, apply knowledge, skills & attitudes (KSAs) learned from the training into the workplace. To extend the ideas of Baldwin and Ford, Bahari (2013) proposed that the degree of transfer is in fact influenced by employees' perception of safety training, positive perception ensures positive training transfer, and vice versa.

Safety Work Practices

Meanwhile, the safety-related information provided during safety training enables employees to gain the information of safety best practices that allow them to perform their jobs safely, in order to achieve safety outcomes (Goetsch, 2010).

Safe & Risk Understanding

Safety training has also enabled employees to understand safety and risk issues, which enables them to identify the hazards and prevent accidents (Bahari, 2013).

Safety Compliance

The traditional dimensions proposed by Borman and Motowidlo (1993) suggested the use of task performance, which dealt with safety compliance (task performance) Tharaldsen et al., (2010), as well as Kwon et al., (2013), reported that safety compliance refers to compliance towards rules and regulations.

Safety Participation

The traditional dimensions proposed by Borman and Motowidlo (1993) suggested the used of contextual performance; which addressed as safety participation (contextual performance). Tharaldsen et al. (2010) as well as Kwon et al., (2013), reported that safety participation can be defined as engagement towards safety issues.

Research design

Research design is a way to collect and analyze the data required to find a solution (Sekaran, 2003). This is a deductive quantitative approach; the hypothesis has been tested and derived the conclusion on it. Moreover, a cross-sectional study is used to address a range of research questions where the focus is on the current state of the phenomenon of interest and

according to Sekaran et al., (2010), the data is collected only once, perhaps over a period of days or weeks or months, in order to answer a research question. The data for the study were collected within a particular time period and there was no subsequent extension of the research contemplated.

Unit of analysis

Sekaran (2003) stated that the unit of analysis refers to the level of aggregation of the data collected in the subsequent data analysis stage. The unit of analysis of this study is the individual employee who works at Lanka Sugar Company (PVT) Ltd. The unit of analysis was at the group level; the employees were classified as factory admin, engineering, electrical, process quality-assuring unit, production, building, landscape, and quality control.

Population & Sampling

The population refers to the entire group of people, events, things or interests that the researcher wishes to investigate (Sekaran et al., 2010). The total staff of Lanka Sugar Company (PVT) Ltd staff is 3953, while that of the factory department was 566 (Master file, 2020). The target population of this study is workers from the factory department of Lanka Sugar Company (PVT) Ltd. Sample selected based on the stratified random sampling method.

Table-2 Sample selection

S/N	Section	Total	Sample
01	Factory Admin	24	04
02	Engineering	217	38
03	Production	149	26
04	Process Quality Assuring Unit	30	05
05	Quality Control	53	09
06	Electrical	37	07
07	Building	46	08
08	Landscape	10	03
Total		566	100

(Source: Employee Master file, Lanka Sugar Company Pelwatte 2020)

The researcher used a five-point Likert scale. The Likert scale is a standard and frequently used measurement in survey questionnaires.

Five-Point Likert Scale

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

The questionnaires were distributed to respondents of employees by hand by the researchers. Once the questionnaires were completed, the respondents were returned to the researcher. 120 questionnaires were distributed to employees, only 97 duly completed questionnaires were returned.

DATA ANALYSIS

Discuss the demographic information, in the gender category, 21% of women and 76% of men responded to the questionnaire, among which most of the employees belong to 30-39 and 40-49 age group. They studied below O / L, O / L, advanced level and etc. Consider the work experience that most 6-10 years have found. The results of the survey showed that most of the respondents participated in the training on safety, emergency measures, and first aid. Others involve in-house training, lockout and tag out, and the forklift training program. The training period had varied depending on the work section.

Analysis of Reliability

Reliability is an indicator for measuring internal consistency in a research instrument (Zikmund *et al*, 2010). It displays the level of item consistency based on collected data and analysis (Saunders *et al.*, 2007).

The following table explains the reliability.

Table-3 Reliability Test

Cronbach's Alpha	No of Items
.768	28

Source-Survey data

Table -3 indicates that the measure of reliability in this study was 0.768. All 28 items considered in this study are acceptable. This measurement confirmed that the data was highly reliable to use and then continued with the analysis.

Correlation analysis

The correlation measures the direction and strength of the linear relationship between two quantitative variables. It is an analysis which done to trace the mutual influence of the variables on one another (Sekaran *et al.*, 2010).

Table-4 Correlations

Pearson Correlation Analysis

Analysis	Pearson Correlation	Sig. (2-tailed)
Knowledge & Skill transfer	.463**	.000
Safety work practices	.446**	.000
Safety & Risk understanding	.660**	.000

Source-Survey data

*Correlation is significant at the 0.05 level (2-tailed)

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

The above table shows the Pearson correlation value of safety training variables; knowledge and skill transfer have the 0.463 Pearson correlation at the 0.01 level (2-tailed), safe work practices have the 0.446 Pearson correlation at the 0.01 level (2-tailed) and safety & risk understanding have the 0.660 Pearson

correlation at the 0.01 level (2-tailed). According to the correlation analysis, all three variables have a positive relationship with safety performance.

Table -5 Correlations between Safety Training & Safety Performance

Items	Safety Training
Safety Performance	.460**
Sig. (2-tailed)	0.000

Source-Survey data

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

In relation to the results of the statistical test, person correlation coefficient between two variables is 0.460. The r value is greater than +0.25 and less than +0.75. This shows that there is a moderate positive relationship between safety training and safety performance. This, it can be statistically claimed that there is a significant relationship between these two variables, because of p-value equal to 0.000 and less than alpha value 0.01(p<0.01).

Regression Analysis

Table 6: Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.735 ^a	.541	.523	.376

Predictors: (Constant), Safety & Risk understanding, Knowledge & Skill Transfer, Safety work practices

The above regression table reveals the effect of safety training on the safety performance of Lanka Sugar Company Ltd. The model summary provides the R and R² values. The R-value represents the simple correlation and is 0.735 (the “R” Column), which indicates a high degree of correlation. The R² of 0.541 predicts that about 54.1% of the variation in the safety performance at the Lanka Sugar Company Ltd can be explained by the safety training while 45.9% remains unexplained by the

regression model. Also, the R-value of 0.735 in the table indicates that a moderate and positive relationship exists between safety training and safety performance at Lanka Sugar Company Ltd.

The coefficient of determination of R², 0.541 means that 54.1% of the variability in safety performance is explained by the selected factors. Furthermore, knowledge & skill transfer, safety work practices, and safety & risk understanding have a significant influence on safety performance.

ANOVA

Table-07 ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	12.495	3	4.165	29.454	.000 ^a
Residual	10.606	75	.141		
Total	23.101	78			

a. Predictors: (Constant), Safety & Risk Understanding, Knowledge & Skill Transfer, Safe work practices

b. Dependent Variable: Safety Performance

The ANOVA table indicates that the

regression model predicts the dependent variable significantly. At the “Regression” row “Sig.” column the F-sig. (p-value) is 0.000, which is less than α (0.05), and it indicates that, overall, the regression model statistically significantly predicts the outcome variable (it is a good fit for the data). There exists a significant effect between safety training and safety performance at Lanka Sugar Company Ltd.

Testing of Hypothesis

According to the correlation and multiple regression model, it can be concluded that there is a moderate positive

relationship between the safety training and safety performance since the R-value was 0.735 and the Pearson Correlation value was 0.460, which helps to authenticate the correlation results of the hypothesis. And also, as the level of significance is less than the alpha value (in this case 0.000), there is enough evidence to reject the null hypothesis. It can be concluded that there is sufficient evidence to say that there is a significant positive relationship between safety training and safety performance. Therefore, the null hypothesis previously stated is hereby rejected, while the alternative hypothesis is accepted.

DISCUSSION

Consider the first objective, identified factors are an influence on safety, such as knowledge & skill transfer, safe work practices, and safety & risk understanding. In line with safety performance factors are safety compliance and safety participation. In the second objective, based on the results of the study, the correlation coefficient between safety training and safety performance is $r = 0.460$ with the significant value of 0.000 at a 95% confidence level. It is clear that there is a moderate positive correlation between safety training and safety performance. The hypothesis of this study is accepted. The final objective, all three variables contribute to the safety performance at the percentage of 54.1%. It depends on the industry type and size, it consists of safety techniques, prevention methods, safety programs & activities, etc.

CONCLUSIONS

In the perspective of manufacturing organizations, an accident is an unexpected event in the workplace. Generally, can observe these are accidents, such as injuries (hand, leg, eye, head), back pain, chest pain, electric shocks, skin

burn and etc. Meanwhile, safety is a dynamic factor in determining productivity and organizational growth. Consider that if employees are faced with an accident, consequences are loss of time, loss of money, damage to the goodwill of the organization, reduced productivity and etc. There is a negative relationship between accidents and productivity, it ultimately tends to reduce the quality of production. Therefore, the organization maintains the proper training and enhances employee performance.

In this research, all three variables (knowledge & skill transfer, safe work practices, and safety & risk understanding) influence on safety performance. Examine correlation analysis, knowledge & skill transfer (0.463) and safe work practices (0.446) have a moderate relationship with safety performance. Further, given the limitation of this research, the researcher selected only the workers of the factory department, it only has eight sections (Factory admin, engineering, production, process quality-assuring unit, quality control, electrical, building and landscape), particularly selected employees of the operational level. Moreover, the study only considers variable safety training, which influences safety performance. It doesn't take into account external factors affecting the work of the sugar company.

RECOMMENDATIONS

In the overall analysis, take into account the transfer of knowledge & skills and the safe work practices to be improved. The following suggestions would expand the safe working conditions of organizations. Establishing the safety standard is one of the methods of eliminating or minimizing accidents in the workplace. To reduce the number of accidents, the organization can implement regular monitoring of standard operating procedures, factory inspection, and audit. Strengthen the safety committee

within the organization and request them to submit the weekly or monthly report to check on progress. Motivate employees to follow rules and regulations and use safety equipment to protect themselves. If the organization needs it, they can develop changes in work procedures and revise work goals, in order to make the workplace safe. Further, organizations implement a systematic and comprehensive safety training program for all employees. Moreover, need analysis is important to identify the employees' needs for training. On the basis of needs can be sent the employees inbound and outbound training. Provides training to employees to acquire specific knowledge and skills related to handling types of machinery and safety awareness. In addition, the continuous updating of new standards and systems as well. This study was carried out with Lanka Sugar Company (PVT) Ltd. It is suggested that future studies should extend to different organizations that are highly exposed to safety issues.

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