

# Relationship Between Industrial Ergonomics and Employee Performances: Evidence from a Leading Garment Manufacturing Organization in Sri Lanka.

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## **Introduction**

Today most of the business units in the apparel sector pay their greater attention to industrial ergonomics, and also it has received massive attention among academicians and practitioners in equal measures. In simply industrial ergonomics is a sub-branch of the science of ergonomics. The science that cares about the way of doing the human's work in the workplace is required. The elements of this science are human behaviour, abilities, situation, the condition of work and environment. Maximizing the comfort, safety and health of workers, productivity and the efficiency are the goals of application of this science (Osha, 2000). Ergonomics is a science, concerned with the fit 'between people and their work. It puts people first, taking account of their capabilities and limitations. Ergonomics aims to make sure that tasks, equipment, information and the environment fit each worker (Britain, 2014).

In apparel sector most of the injuries are the results of ergonomichazardsthat affect workers' physical health and ultimately his/her ability to perform well. As a labour intensive organization, the organizational success is affected by the quality and quantity of employees' performance. An employees' performance can also be described as a person's ability to perform also including the opportunity and willingness to perform as well. The meaning of willingness to perform means that the desire of the employees in putting as much effort towards their job (Eysenck, 2012). According to Borman (2004), some main application needs to be applied to improve employees' performance. Ergonomics shows a significant part of the prosperity of a worker and in the reduction of errors, especially in the design of office, its environment, and tools (Govindaraju, 2001). When considering the Slimline division in Pannala, their employees are currently standing in front of the machines for 8 hours. This is called static posture. Working with different type of sewing, moulding, cutting, bonding machines. And also Employees have to stay in the environment with noise, vibrating, lighting and some other different working conditions. The major problem regarding this is to identify whether those factors affect to the employee performances or not. Accordingly, this study was

done with the intention of identifying the relationship between industrial ergonomics and employee performance.

Principal components analysis of an industrial ergonomics inventory identified five broad variables of task repetition, static posture, better illumination, optimum noise level and dust free environment. Task repetition refers to performing a task or series of motions over and over again with little variation. Once a job or task goes beyond the worker's physical limitations, injuries will result. It's an important principle of ergonomics (Vasbinder, 1993). Such injuries often referred to as repetitive motion injuries or cumulative trauma disorders have a cumulative effect on the body. The human body was designed for movements. Simply static posture refers to the body parts aligned and maintained in the certain long period. Optimum noise level is the other element. Too much noise, such as sound from equipment, tools, and people's conversation, may prevent workers from concentrating on their jobs, consequently decreasing their productivity. According to Keeling and Kallaus (1996) people cannot achieve good performance in a silent environment, because, at some level, the sound may generate a healthy background and can also assist employees to accomplish their work. According to dust free environment, poor air quality can raise a negative impact on employee health in the form of respiratory problems, headaches, and, fatigue, which in the long periods will reduce employee performances. Exposure to different types of dust can result in fibrosis of the lung, allergic reactions and asthma attacks. Lighting intensity on human productivity and capacity is another factor. Energetic and high-quality lighting provides more adjustment between the person and its work environment. The intensity of light causes eyes strain, which affects the patterns of sleep (Byoce and Beckstead, 1997) and visual sensitivity significantly affect the performance (Noguchi an Sakaguchi, 1999). Light with respect to its intensity and shades, like yellow light or white light differently affect the eyes, the nervous system, and level of tiredness and activity of the brain (Irfan,2012). To build a comfortable workplace design, lightning plays a critical role. It can affect the performance of employees depending upon the condition (Liaqat and Misbah, 2017). A number of studies have shown that indoor climate impacts both the health and performance of employees, which in turn affect productivity. Employees can focus more when the high temperature is reduced by the use of air conditioning equipment. Some of the studies conducted by Lorsch and Abdou (1994), shows that when the air-conditioning system was introduced, employees feel that their workspace becomes more comfortable and the productivity tends to increase by 5-15 per cent because they can concentrate on their work (Vischer and Jacqueline,1989).

## **Methodology**

There are approximately 3,284 employees available in the selected garment manufacturing organization. According to Krejcie & Morgan table (1970), 320 employees were selected based on purposive sampling method. Data were collected through primary sources using the questionnaire method and questions were arranged according to five-point Likert scale to gain the responses. 100% valid responses were gained. The conceptual model of the study can be presented as follows. Reliability of questionnaire has been measured by using Cronbach's alpha and value for the observed variables are 0.985 for Dust, 0.977 for Noise, 0.992 for Lightning, 0.974 for Task Responsibility and 0.990 for static posture where all the values are in the satisfactory level of reliability. In order to identify relationship correlation analysis have been performed at present research.

## **Development of Hypotheses**

Hypothesis 01: There is a strong relationship between dust free environment and employee performance

Hypothesis 02: There is a strong relationship between optimum noise level and employee performances

Hypothesis 03: There is a strong relationship between proper lighting and employee performances

Hypothesis 04: There is a strong relationship between task repetition and employee performances

Hypothesis 05: There is a strong relationship between static postures and employee performances

## **Findings**

The descriptive statistics of the variables have been presented in the Table-1..

As per the descriptive statistics, the mean values of each of the variables are closer to four and which depicts that the majority have agreed for the questions raised. Below table exhibits the results of correlation analysis.

The coefficient Summary statistics in the above-mentioned table shows the relationship of each independent variable with the dependent variable of employee performance. According to the table, all five independent variables were significant as the P values of those four variables were less than 0.05 significance

level and strong positive impact on the employee performances of the employees. Therefore, all hypotheses were accepted

Table 01. Descriptive Statistics

	Mean	Std. Deviation
	Statistic	Statistic
DUST	4.012	1.108
NOISE	4.095	.998
LIGHTING	4.004	1.095
TASK_REPETITION	3.925	1.171
STATIC_POSTURE	3.965	1.136
EMPLOYEE_PERFORMANCE	3.893	1.181
Valid N (listwise)	320	

Table 2: Results of Correlation Analysis

Variable	Correlation Coefficient	P value
Dust free environment	0.970	0.000
Optimum noise level	0.974	0.000
Proper illumination	0.980	0.000
Task repetition	0.988	0.000
Static posture	0.996	0.000

## Conclusion

The study conducted has been mainly aimed at the identification if the industrial ergonomics that affect employee performance in the garment industry of Sri Lanka and accordingly, it has been identified the working environment and job tasks affect the employee performance as per literature analysis. Further, it has been indicated that all five ergonomic factors which are dust, noise, lighting, task repetition and static postures have a strong and a positive relationship among the employee performance. Therefore, the company can facilitate employees by introducing a disposal system to dispose of waste properly and provide safety materials to create a dust free and healthy environment. The company also has to take necessary action to minimize the noises and external disturbances as they may affect employee performances negatively. Sufficient level of lighting will also facilitate employees to run the operation smoothly and that will minimize the level of accidents in workplaces. MAS Holding company can implement job rotation strategy and variety of techniques to stimulate employees to perform willingly as the task reparation lead to demotivate

in some of the time. The company can also provide adjustable, movable and comfortable chairs as well as relaxing time to obtain the maximum output from the employees.

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