

A Study on Working Culture of Ergonomics in India

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Abstract- Ergonomics have seen an increasing interest in documenting the effectiveness of intervention to prevent musculoskeletal disorders at the primary and secondary level. Ergonomics aims to enhance workspaces and environments to minimize risk of injury or hurt. Ergonomics deals with the ‘fit’ between the user, instrumentation and their environments. It takes account of the user’s capabilities and limitations in seeking to make sure those tasks, functions, and the atmosphere suit all users. Therefore as technologies modification, therefore too force the requirement to make sure that the tools we have a tendency to access for work, rest and play designed for our body’s needs. The article concerns about human factors and ergonomics at workplace, how far a workplace and the equipment used there can best be designed for comfort, efficiency, safety, and productivity of human. Ergonomics applies to the design of something that involves individual’s workspaces, sports and leisure, health and safety.

Index Terms- Culture, Environment, Ergonomics, Human Factors, India

1. INTRODUCTION

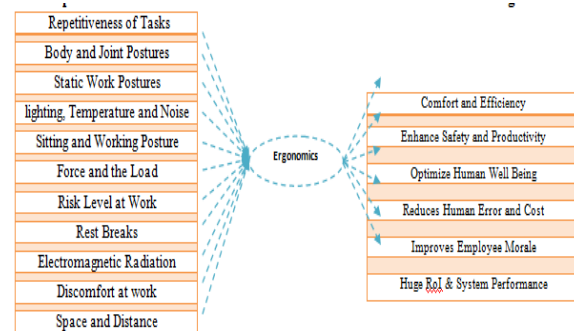
Ergonomics is the study of designing equipment and devices that fit the human body, its movements, and its cognitive abilities. Ergonomics is employed to fulfill the two goals of health and productivity. It is relevant in the design of such things as safe furniture and easy-to-use interface to machines and equipment. Proper ergonomic design is necessary to prevent repetitive strain injuries, which can develop over time and can lead to long-term disability. Ergonomics is sometimes defined as the science of fitting the work to the user instead of forcing the user to fit the work. However this is more a primary ergonomic principle rather than a definition. Also Known as Human Factors, Human Engineer in Human Factors Engineering.

Conceptual Frame work of Work Environment Attributes and outcomes of Ergonomics

The below figure1 is demonstrating the factors that normally prevails at work environment, by following Ergonomics at work place the organisations can achieve the outcomes of more comfort and efficiency level of employees, enhance safety and productivity, optimizes human well being, reduce human error and cost, improves employee morale, and gives huge return on investment, and system performance.

Figure 1

Conceptual Frame work of Work Environment Attributes and outcomes of Ergonomics



2. RESEARCH METHODOLOGY

2.1 Objective of the Study

- To study about the working culture of Ergonomics at Tube Products of India
- To know and understand employees’ feel towards their work postures and repetitive bodily movements at work

2.2 Sampling Design

Field work : Tube Products of India, a unit of Murugappa group
 Period of survey : January 2018 to March 2018
 Population : 480 Members
 Sample size : 100 Nos.

Sampling procedure : Simple random sampling (probability sampling)

2.3 Scope of the Study

On the basis or results of this study it can be possible to develop this study at a experimental research type concentrating performance of workers at different ergonomics. Separate study for physical ergonomics can also be possible for physical work based organization. Ergonomics on the basis of employee cognition has also been taken as main research motto for mental and attitudinal work areas in near future. Drawbacks in the current designing of workplace, material handling, tools designing, environmental mapping can also be identified and corrective measures also been made with help of this study.

3. DATA ANALYSIS & INTERPRETATION

3.1 Analysis of Opinion of the Respondents' Towards the Age Group and Year of Experience

Table 3.1 (Chi Square) Cross Tabulation of Age vs. Years of Experience

		AGE				Total
		20-29 yrs	30-39 yrs	40-49 yrs	50 & above	
Experience	1-3 yrs	10	1	0	0	11
	3-5 yrs	0	17	0	0	17
	5-7 yrs	0	16	12	0	28
	7 yrs & above	0	0	17	17	34
Total		10	34	29	17	90

Hypothesis:

(H0): There is no significant association between the age and the years of experience of the employees.

(H1): There is significant association between the age and the years of experience of the employees.

Table 3.2

Chi-Square Tests

	value	df	Asymp. Sig. (2-sided)
Pearson chi-square	1.486E2 ^a	9	.000

Likelihood ratio	140.410	9	.000
Linear- by -linear association	67.787	1	.000
N of valid cases	90		

Calculation:

Calculated value = 1.486

Degrees of freedom = 9

Table value = 0.000

Interpretation: The above SPSS generated table clearly states that the significant value is below 0.05. Therefore Null Hypothesis is rejected and the alternative hypothesis is accepted. Hence, by accepting Null hypothesis it can be interpreted that there is an association between the age group and years of the experience of the respondents. The association among the age group and years of the experience of the respondents explains that the age of the respondents increases, the years of the experience of the respondents also simultaneously increases.

3.3 Analysis of Opinion of the Respondents' Towards the Present Posture and Equipment Handlings

Table 3.3 Correlation

S.NO	Response Scale	Present Posture	Equipment Posture
1	High comfort ability	20	43
2	comfortable	11	15
3	Neutral	9	12
4	Uncomfortable	29	14
5	High uncomfortable	21	6
Total		90	100

Hypothesis:

(H0): There is no significant relationship between the present posture of the workplace and equipment handling of the employees.

(H1): There is significant relationship between the present posture of the workplace and equipment handling of the employees.

Table 3.4 Correlation

		Present posture	Handling equipment for long hrs
Present posture	Pearson correlation	1	.831
	Sig-(2-talited)		.000
	N	90	90
Handling	Person	.831"	1

equipments for long hrs	Correlation		
	Sig(2-talirf)	.000	
	N	90	90

r=0.831

Interpretation: The above SPSS generated table depicts that r=0.831 which falls between (0 to 1) and shows a positive correlation between respondents present posture at work and equipment handling. From the above table it is inferred that the significant value is below 0.05 which shows a significant relationship between the present posture and equipments handling of the respondents.

3.5 Analysis of Opinion of the Respondents' Towards the Age Group and the Present Posture of the Respondents' (ANOVA)

Table 3.5 -Age Group of the Respondents

S.NO	Age	No. of respondents
1	20-29 yrs	10
2	30-39 yrs	34
3	40-49 yrs	29
4	50& above	17
Total		90

Table 3.5- Present Postures of the Respondents

S.NO	Response Scale	No of Respondents
1	High comfort ability	20
2	comfortable	11
3	Neutral	9
4	Uncomfortable	29
5	High uncomfortable	21
Total		90

Hypothesis:

(H0): There is no significant difference between the age and the present posture of the employees at workplace.

(H1): There is significant difference between the age and the present posture of the employees at workplace.

Table 3.6 - One-Way ANOVA

Age	Sum of squares	df	Mean square	F	Sig.
Between group	64.103	4	16.026	116.561	.000
Within group	11.636	85	.137		
	75.789	89			

Table 3.7 Post Hoc Tests, Homogeneous Subsets

Present posture

Duncan					
Age	N	Subset for alpha=0.05			
		1	2	3	4
20-29 yrs	10	1.00			
30-39 yrs	34		2.21		
40-49 yrs	29			4.14	
50& above	17				5.00
		1.000	1.000	1.000	1.000

Interpretation: The results derived from the SPSS calculation shows that significant is below 0.05 and it paves the way for rejecting the Null Hypothesis by accepting the alternative one and shows a significant difference between the respondents' age and the present work posture.

4. FINDINGS

- Majority i.e. 38% of respondents are in the age of the respondents belong to the age group of 30 to 39 years and also 37% are diploma qualified among and 38% are having more than seven years experience.
- Majority of respondents i.e. 32% of the respondents feel uncomfortable present posture at their work and also 68% of respondents inconvenient towards performing repetitive work for long duration, as well 59% of respondents are use their hands as frequent bodily moment at their working hours
- 30 % Respondents expressed that they perform the activities with hands raised above shoulder height at workplace sometimes and their work postures are static, and 43% of the respondents feel that working long hours in the same postures can be adjustable but modification and improvement is required.
- Majority respondents have replied that their nature of job is repetitive and 30% respondents feel very good about the first aid facilities
- Majority 77% of the respondents answered that the equipments are always serviced and maintained at their workplace and 48% of the respondents feel highly comfortable about handling the equipments 37% of the respondents strongly agreed about the adjustability of workstation is possible.

- Majority 41% of the respondents have responded they often involved in vibration work and 39% of the respondents answered that that they are not at all distracted by noise as well 74% of the respondents tolerate noise at their workplace

5. CONCLUSION

Ergonomics is that the study of designing equipment and devices that fit the individual body, its actions, and its cognitive abilities. Ergonomics is the process of designing or arranging workplaces, commodities and systems as a result they fit the persons who use them. Ergonomics applies to the design of something that involves individual's workspaces, sports and leisure, health and safety. This study has exposed that suitable workstation and equipment designs as well as condition of work posture are aspects of ergonomic factors that contributed significantly in attaining a higher level of job satisfaction. From the study it is analyzed that the most of respondents are moderately satisfied with the present working postures (working for long duration in the same postures), nature of job includes vibrations work etc. Hence the researcher concludes that the present workplace ergonomics at Tube products of India, A Unit of Murugappa Group feels satisfied. Hence the researcher concludes that the present workplace ergonomics at Tube products of India, A Unit of Murugappa Group feels satisfied. In order to improve it further the management may take suggestions such as providing comfortable postures based upon their age group, convenient environmental setting by providing well equipments in order to improve the grips with hooks or straps or magnets to reduce the vibration level and allotting jobs at random and rotation basis etc. This in turn will increase productivity and high morale among employees.

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