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THE IMPACT OF ERGONOMICS ON THE PRODUCTIVITY OF PEOPLE

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ABSTRACT

Ergonomics (from the Greek word ergon meaning work, and nomoi meaning natural laws), is the science of enhancing the design of products to optimize them for human use. Human dynamics , such as height, weight, and proportions are taken into consideration , as well as factors such as human hearing, vision, temperature preferences, and so on. Ergonomics is sometimes known as human engineering.
In the era of Digital Explosion, Computers and related products, such as computer tables and chairs, are dominantly the stress point of ergonomic design. Employees at work place use these products and designs for a long span of time .Not to talk of the pressed days ,the regular working days have also become very demanding . If the design of the product is faulty or improperly adjusted for human use, the employee using them may suffer unnecessary fatigue, stress, and even injury.
The study of Ergonomics is essential because when you're doing a job and your body is under pressure by an unscientific posture, intense temperature, or repeated movement your musculoskeletal system is adversely affected. Our body may develop symptoms such as fatigue, discomfort, and pain, which can be the early signs of a musculoskeletal disorder.
This paper tries to find out the effect of Ergonomics study on two independent samples of males & females and other factors related to their readily acceptance of the science of Ergonomics.
A sample of males & females was taken and t test was used for data analysis .The output of the paper will benefit the organizations to employ better practices for the implementation of Ergonomics.

Key words:- Egronomics, Musculoskeletal disorders

Introduction:-

Ergonomics is redesigning a job to suit the worker so that the work is safer and more productive. Implementation of the study of ergonomic solutions can provide employees a better & comfortable working environment & also increase productivity.

Ergonomics is essential because when we're doing a task and our body is tensed by an awkward and unscientific posture, intolerable temperature, or repeated movement our musculoskeletal system is adversely affected. Our body may exhibit symptoms such as fatigue, discomfort, and pain, which can be the initial signs of a musculoskeletal disorder.

Musculoskeletal disorders (MSDs) are conditions that have negative impact on our body's muscles, joints, tendons, ligaments, and nerves.As the time passes we may develop Musculoskeletal disorders or it can occur immediately due to overload. People realized the importance of it and conducted various studies to understand it better. Researches have proved many advantages of the study of Ergonomics as:-

1. Fewer injuries :-A scientific design of the equipment will prevent injuries to the employees.
2. **More productive and sustainable employees** :-Since employees will be physically comfortable their productivity will also enhance.

3. **Fewer workers' compensation claims:-**Less on the job injuries will result in less compensation claims.
4. **Fewer employees experiencing pain :-** The study of Ergonomics will result in happy employees .
5. Implementing ergonomic improvements can reduce the risk factors that lead to discomfort.
6. Ergonomic improvements can reduce the primary risk factors for MSDs, so workers are more efficient, productive, and have greater job satisfaction.
7. Increased morale
8. Attention to ergonomics can make employees feel valued because they know their employer is making their workplace safer.
9. Reduced absenteeism •
10. Ergonomics leads to healthy and pain-free workers who are more likely to be engaged and productive.
11. **Ergonomics improves productivity.** Designing a workplace that promotes good health can only make workers more productive. Encouraging an environment that allows for good posture, less strain, fewer motions and better heights and reaches, will help to create a much more productive staff. After all, as human beings, we all share a need to be comfortable, no matter where we are.
12. **Ergonomics improves quality.** Researchers suggest that people aren't comfortable to work properly when feeling such strains. When the job is too physically strenuous on the worker, they may not perform their job like they were trained.For example, an employee might not fasten a screw tight enough due to a high force requirement which could create a product quality issue.
13. **Ergonomics improves employee engagement.** It is often said that a happy staff is a productive staff. And this often entails strong relationships among the various members of a working team. When a company puts forth efforts to ensure health and safety, employees notice and it often boosts morale. In addition, high energy levels on the job help to decrease absenteeism.
14. **Ergonomics creates a better safety culture.** Ergonomics shows your company's commitment to safety and health as a dominant value.Healthy employees are your most valuable asset; creating and fostering the safety & health culture at your company will lead to better human performance for organization.
15. Increased savings :- The proper implementation of the study will reduce the risk of accidents and will increase productivity and hence savings of the company .

History of Ergonomics

Although the use of the word 'ergonomics' is relatively new, the concept itself is not. One of the first noted interests in ergonomics was in the 16th century, from Italian physician Bernardino Ramazzini, who wrote a medical journal ('De Morbis Artificum' - translated as 'Diseases of Workers') about complaints from his patients. The journal details a variety of injuries and how these related to the working environments and occupations of his patients. The use of the term 'ergonomics' was eventually coined by Wojciech Jastrzebowski and came into use around 1857.

The concept of ergonomics in the 19th century was introduced by Frederick Winslow Taylor. A 'scientific management' was implemented as a method for increasing Productivity & efficiency in workers shoveling coal. Taylor found that by reducing the size and weight of the shovels used, the amount of coal being shoveled was tripled. The changes in the shovel design also lead to reductions in work related injuries and increases in productivity.

In the 1900 the concept of ergonomics was further explored in the 'Time and Motion Studies' by Frank and Lilian Gilbreth, which examined techniques for decreasing the number of motions required to perform a given task successfully. In one example brick layers were able to increase their productivity from 120 to 350 bricks laid in one hour, due to a reduction in the number of motions involved per brick lay.

Ergonomics was further used during World War II to enhance cockpit design as a means to reduce pilot errors and increase safety.

Review of Literature:-

Dr. Michael O'Neil, Senior Director of Workplace Research at Knoll Incorporated in his article "Office Ergonomic Standards; Layperson's Guide" published in 2011 asserts that Furniture designed using ergonomic principles can improve performance and reduce workplace injury. According to Gutnick (2007), a study by The National Safety Council established that on an average workday, one million employees will be absent from

work due to job stress Other researchers such as Taiwo (2009), claims that about 86% of productivity problems reside in the work environment of organizations. The work environment has effect on the performance of employees. The type of work environment in which employees operate determines the way in which such enterprises prosper. Although other organizational elements such as praise and recognition, compensation and financial reward impact on employee performance, studies have also shown that an employee's workplace environment is a key determinant of their level of performance. How well the workplace engages an employee impacts their level of motivation to perform. Indeed poor workplace environment influences employees: health and safety, error rate, level of innovation, collaboration with other employees, absenteeism and, ultimately, how long they stay in the job. In Beer et al. (1994) as cited in Taiwo (2009), we observe that work systems do not only affect commitment, competence and cost effectiveness but also have long term effects on physical health, mental health and longevity of life of employees

Many business executives are under the mistaken impression that the level of employee performance on the job is proportional to the size of the employee's compensation package. Although compensation package is one of the extrinsic motivation tools, it has a limited short term effect on employees' performance. A widely accepted assumption is that better workplace environment motivates employees and produces better results (Leblebici, 2012). Essentially, an elegant and functional workplace environment often culminates in improved employee efficiency and productivity. In recognition of this fact, most offices are now designed and furnished with the employee in mind to ensure that his workplace environment including furniture and equipment adequately supports and induces high performance. The quest to equip employees and workers with most suitable workplace environment, furniture, equipment, tools and techniques to discharge their duties efficiently and effectively is the fundamental philosophy behind the development and growth of ergonomics. The performance of an employee is measured actually by the output that the individual produces and it is related to productivity. At corporate level, productivity is affected by many factors such as employees, technology and objectives of the organization. It is also dependent on the physical environment and its effect on health and employees' performance (Al-Anzi, 2009).

Research Methodology:-

Kind of Research:- The research design is experimental design variables are studied.
Sample Unit:-The sample was collected in the Bhopal city.
Sampling method:- Convenience sampling was used to collect data.
Data used :-primary and secondary data both were used in analysis.
Tools used :-t test ,correlation and percentage method was used to analysis the data .

Hypothesis:-

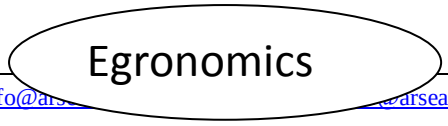
H0:- There is no relationship between Ergonomics and productivity of people at work place.
H1:-There is a strong relationship between science of Ergonomics and productivity of people.

H0:-There is no relationship between Mental Health & Productivity of people.
H2:-There is a strong relationship between Mental Health & Productivity of people.

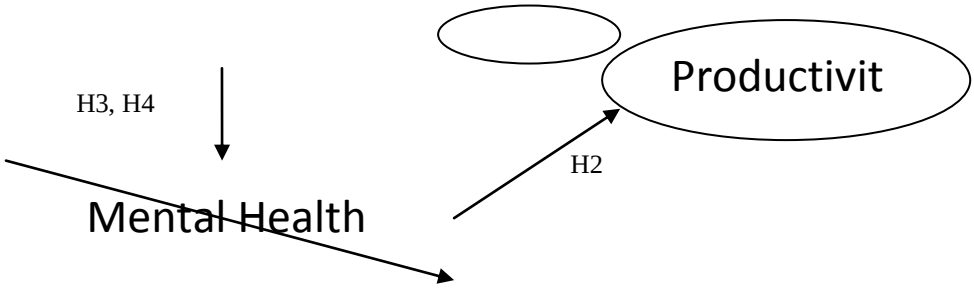
H0:-There is no correlation between Ergonomics and mental well being of female employees at work place
H3:- There is a correlation between Ergonomics and mental well being of female employees at work place

H0:- There is no correlation between Ergonomics and mental well being of male employees at work place.
H4:- There is a correlation between Ergonomics and mental well being of male employees at work place

Model developed:- Dependent variable:-Productivity of employees & Mental Health
Independent variable:-Ergonomics



H1



Data analysis :- We are using t test for finding out the impact of Ergonomics on the males and females of the population .The Hypothesis H3 & H4 is analyzed here

	Levene's Test for Equality of Variance	F	Sig.	t	df	Sig(2-tailed)	Mean Difference	Std.Error Diff
Mental well being	Equal Variances assumed	.000	1.000	-2.066	28	.047	-1.657	.803
	Equal Variances not assumed			-2.066	27.983	.047	-1.657	.803

Here we see that Ergonomics effect is equal on both males and females . It is not dependent on the gender of the employees.

Ergonomics and mental well being of male employees.

	Pearson Correlation	1	.096
ER	Sig.(2-tailed)		.619
	N	30	30
	Pearson Correlation	.096	1
MH	Sig.(2-tailed)	.619	
	N	30	30

ER:-Ergonomics MH:-Mental Health

Here we that there is a strong correlation between Egronomics and mental well being of male employees in the organization

Egronomics and mental well being of female employees

	Pearson Correlation	1	-.222
ER	Sig.(2-tailed)		.236
	N	30	30
	Pearson Correlation	-.222	1
MH	Sig.(2-tailed)	.236	
	N	30	30

ER:-Ergonomics MH:-Mental Health

Here we that that there is a positive correlation between the study of egronomics and mental well being of female employees .But here we that it is also dependent on other factors as work environment ,interpersonal relations,work life balance etc.

Conclusion:-

From the above analysis we see that the study of Egronomics can greatly benefit the productivity of employees in the organizations. Organizations should try their level best to provide comfortable working environment to it's employees to save them from reaching burnout stage soon. Companies now a days are focusing on long associations with their employees and stressing upon both their mental and physical well being . It was also found in the research that female employees requires other factors also to make them mentally comfortable as compared to male employees.So, companies should focus on work life balance , improving interpersonal relations and also enhancing the general working environment of the organization in order to make employees happy and comfortable in the organization & working with full potentiality

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