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ERGONOMIC WORKPLACE FOR QUALITY AND PRODUCTION IMPROVEMENT

by
Gempur Santoso
Expert in Ergonomics and Occupational Health and Safety, Industrial Engineering Study Program, Faculty of Engineering, Ma'arif Hasyim Latif University (UMAHA) Sidoarjo.
Email: gempur-santoso@dosen.umaha.ac.id

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ABSTRACT

Ergonomic workplace is needed to improve quality and production. This paper wants to discuss how to create an ergonomic production workplace so as to improve product quality. This paper is designed using a literature study, which uses several references or literature related to ergonomics, production processes, and the quality or quality of work and products. This paper is written descriptively or data presentation or literature from several opinions and findings. Then analyzed descriptively qualitatively. Conclusion: **First**, that the production site can create ergonomics, as follows: a) the production site must be ergonomically designed so that employees do not get tired easily, do not leave work, do not get hurt, and can increase work productivity; b) the production site can be created ergonomically so that all equipment is adjusted to the anthropometric dimensions of the user or employee. Or, all equipment used by employees needs to be made that can be adjusted (adjustable) to adapt the equipment to human users (employees); c) the environment needs to be made ergonomically, namely the physical environment according to the provisions of the threshold value (NAV), and the chemical and biological environment according to quality standards; d). employees will feel ergonomic if they are protected from psychological/psychic pressure and heat stress; and e). the application of ergonomics in the company will be implemented if there is a commitment from all parties in the company and especially management commitment. **Second**: a). quality improvement will occur if customer satisfaction occurs, and employees need to have good character and are experts in the field of product production; b). the application of ergonomics in the manufacturing (production) process will improve product quality, reduce production costs, and are needed by customers.

Corresponding Author:
Gempur Santoso,
Expert in Ergonomics and Occupational Health and Safety, Industrial Engineering Study Program,
Faculty of Engineering, Ma'arif Hasyim Latif University (UMAHA) Sidoarjo.
Email: gempur-santoso@dosen.umaha.ac.

1. INTRODUCTION

Production process requires quality (quality) products. This can be achieved if the workplace must be made according to ergonomic requirements. In this paper, it is stated that the company's actors, especially the management, pay attention to the application of ergonomics in the workplace in companies or industries.

Ergonomics affects quality, as Laksmi Kusuma Wardani (2003) says that "ergonomics is one of the requirements to achieve a qualified'. Then, work tools that are not ergonomic also cause complaints of the skeletal muscles of the workforce. As Ika Wardaningsih (2010) found that "Based on the initial survey, it was found that the number of female workers in the cutting machine section of PT Iskandar Indah Printing Textile was 25 people consisting of two shifts (morning, afternoon). When working in the field, the worker in the shaving machine uses a non-ergonomic work chair. The chair only consists of a sitting mat and four chair legs. With a work chair that is not ergonomic (there is no match between the size of the worker's body and the design of the chair) there is no worker comfort at work. This discrepancy can cause skeletal muscle complaints in the workforce.

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In addition, the workplace often causes work accidents, because the workplace not ergonomics. As stated by Nisa Destiana (2021) that "ergonomics that do not whether they are major contributors to acute occupational accidents or those that occur concomitantly time. Acute accidents due to poor work ergonomics such as bone injuries back due to lifting objects with improper technique".

Therefore, the issue of ergonomics in the workplace needs to be resolved immediately. With Ergonomics adjustment in the workplace for example: tools, environment, work flow, etc., It is hoped that product quality can be guaranteed, and production runs smoothly.

With the application of ergonomics in industry, especially in production sites, it is hoped that employees will be safe, comfortable and healthy, so they can work to earn money high productivity, low cost, and quality. It will improve quality and production, with the hope of benefiting the employees and management of the company or industry.

2. RESULTS AND ANALYSIS

1. Proper Ergonomic Workplace (gonomicErWorkplace)

In the workplace, ergonomic conditions are needed, as Nadiyah Rahmalia (2021) says that "without ergonomics in a comfortable office, employees will get tired, get sick, and even resign. Therefore, ergonomics in the company should not be considered unimportant".

Then, Reza Angelita (2021) also stated that "The application of ergonomics in the workplace is important to increase productivity. The main purpose of implementing Ergonomics is to understand or gain knowledge about the interactions between humans with everything that is around humans related to work can optimize human well-being and overall performance in work systems. Example application of ergonomics to work".

Tools or equipment and the work environment greatly affect the quality of work. The type and number of tools or equipment must be adjusted to the needs. Only the tools needed for production and production support are provided. Also, the tool must be adapted to the anthropometry or range of the workforce. No less important, that the work environment must also be adjusted to the threshold value (NAV) as well as quality standards. We know that the work environment consists of: physical, chemical, and biological.

If everything is appropriate, among others: the size of the tool according to anthropometry and the reach of the workforce, and the environment according to the threshold and quality standards. This will create a workplace in ergonomic conditions. Everything will be created ergonomically, if the company's management has a commitment. Usually the commitment of only subordinates or workers has not optimal results without the commitment of superiors in the management of the company/institution is not optimal.

At workplace, the use of tools/equipment must be available and easy. Don't make it difficult. As long as it is used for work, the tool must be available and easy. Easy to use and easy to get. If the tool is difficult, it will take a long time and experience work delays. Including work should not be tiring, because the impact of work repeatedly, often damaged, and harmful. This includes making work delays also a loss.

Try all equipment can be adjusted (adjustable) to suit human anthropometry. This makes it easier for the workforce to work. So, tools must be human-adapted, not human-adjusted tools.

In working avoid vibration conditions. Because a certain period of time causes dizziness (motion). If it continues, it can cause nausea, vomiting. Then, it could be a coma (fainted). In working in the workplace must also avoid pressure.(heat stress). It will make the workforce unhealthy and harmful. It must also avoid psychological/psychological pressure. Usually humiliating the workforce (people) in public will suppress a person's psyche. Do not hurt and embarrass the workforce or other people. Do not pierce the heart (feelings) of the workforce so as not to be hurt or psychologically/psychologically depressed.

According to Santoso (2011) that the design of an ergonomic office environment and production room includes at least several aspects, namely: the threshold value for reading carefully is at least 200 lux; temperature and humidity (climate) (work 75% rest 25%, light work for 8 hours/day at the door, threshold value ISBB = 30.6°); noise (threshold value 80-85 dB for working 8 hours/day); vibration level (exposure to vibration in the feet and hands less than 4 hours and 4 hours, threshold value = 4 m/sec2), and Minister of Manpower No. 51/Men/1999, UV threshold value 0.1 Wcm2 for working 8 hours/ days with a standard deviation of 0.2281.

Based on some of the opinion data above, it can be given the results of the analysis that the ergonomics of the place of production can be created, as follows:

a. The production site must be ergonomically designed so that employees do not get tired easily, do not leave work, are not injured, and can increase work productivity. b. The production site can be created ergonomically so that all equipment is adjusted to the anthropometric dimensions of the user or employee. In order to be ergonomic too, all equipment used by employees needs to be made which can be adjusted (adjustable) to adapt the equipment to human users (employees).

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c. The environment needs to be made ergonomically, namely the physical environment according to the provisions of the threshold value (NAV), and the chemical and biological environment according to quality standards.
d. Employees will feel ergonomic if they are protected from psychological/psychological pressure and heat stress.
e. The application of ergonomics in the company will be implemented if there is a commitment from all parties in the company and especially management commitment.

2. Quality and Production

Improvement Afnina and Yulia Hastuti (2018) state that "product quality has a positive and significant influence on customer satisfaction". To increase production, including the quality (quality) of the product. There are at least two things to note. **First**, customer satisfaction, it can happen if the product is of quality according to standards. Consumers buy, of course, need quality products that can be used, according to the money spent. In addition, you need service, not complicated in purchasing, which is simple and safe. That way a quality product will providevalueto brand factoryBecause consumers will believe in the factory-made. With that trust, consumers will come back to buy again.

Second, in order to produce quality products, it is necessary to have workers with good character and experts in their fields. Need equipment or production process equipment that is ergonomic, also needs adequate raw materials. No less important, making quality products, affordable to buyers, namely: the location of the main factory is close to the procurement of raw materials and labor

And energy (source of energy) is not expensive. Factory layout, looking for uncomplicated work flow and short time (ergonomic). Production capacity is related to the number of production equipment needs and locations as well as avoiding natural disasters/disasters.

When product production is running, don't forget to control production. This is to get closer to the amount produced, not to suffer losses. Therefore, the analysis used is forecasting . Forecasting can be used to control raw materials, control inventories, control quality, and can schedule them according to the results of forecasting.

Of course, there are factories that producerowmaterials into semi-finished materials, which are then processed and turned into finished goods. There are also companies that specialize in assembling, but have brand , so they just need to take semi-finished goods from other companies. Then, the assembly company that owns the brand only needs to assemble, the product is warehoused and then marketed.

Ergonomics is used to get a quality product design (quality) and required by the customer (customer) and to determine how to get a certificate. As Saufik Luthfianto and Siswiyanti (2008) in their research results state that "ergonomy is one of the requirements to achieve a qualified, certified and customer need". Then, I Wayan Surata (2016) also said that "the application of ergonomics in the manufacturing process has proven to be effective and efficient in increasing productivity, product quality, and reducing production costs, so that ergonomics is a necessary requirement to increase competition".

Based on some of the opinion data above, it can be analyzed which concludes that: a). The quality of the product is based on customer satisfaction, and is carried out by employees who have character and are experts in the field of product production; b). the application of ergonomics in the manufacturing (production) process will improve product quality, reduce production costs, and are needed by customers.

3. CONCLUSION

First, that the production site can create ergonomics, as follows: a) the production site must be ergonomic so that employees do not get tired easily, do not leave work, do not get hurt, and can increase work productivity; b) the production site can be created ergonomically so that all equipment is adjusted to the anthropometric dimensions of the user or employee. Or, all equipment used by employees needs to be made that can be adjusted (adjustable) to adapt the equipment to human users (employees); c) the environment needs to be made ergonomically, namely the physical environment according to the provisions of the threshold value (NAV), and the chemical and biological to quality standards; d). employees will feel ergonomic if they are protected from psychological/psychic pressure and heat stress; and e). the application of ergonomics in the company will be implemented if there is a commitment from all parties in the company and especially management commitment.

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SUGGESTION

Workplace in a company or industry should be designed and implemented according to the provisions of ergonomics, so that all human beings or company employees feel safe, comfortable, healthy, and that quality products and production quantities increase.

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