

CHAPTER 2

LITERATURE REVIEW

The physical capabilities and the limitations of the human body in relation with a persons' work tasks, tool used, and job environment becomes what the Ergonomic scientific is looking up to. It aims to ensuring that workers are safe, uninjured, comfortable, as well as productive.

There are many researches basically based about ergonomic working environment. There are also many approaches been held to conduct the research, as mentioned below :

Sunandar Cahaya Wijaya (2004) in his thesis titled "Penentuan Faktor-faktor Lingkungan Fisik yang Mempengaruhi Kinerja Manusia". Sunandar designed a working environment which hopefully could bring the employees to feel comfort and improving the effectiveness of working hour. Sunandars' thesis mainly discussed about work system which is only held by a light physical work by both hands especially fingers in sitting condition (e.g. typing, writing, etc.). He figured out few factors which giving a direct influence to the workers' productivity mentioned as follows:

- a. Temperature
- b. Noise factor
- c. Lighting

Sunandar located his research in an office not in a factory.

Lindawaty (2003) in her thesis titled "Analisis Ergonomi Pada Sistem Kerja Penyiar Radio Swasta di Yogyakarta" discussed about ergonomic value in a radio working environment. Mostly she talked about the physical environment of a studio includes few factors which built it such as lighting, noise factor and temperature. She also had further research about psychological tension felt by the radio announcer.

Another report was used as a reference is Alvin Wirawan in his thesis titled "Facility Layout Rearrangement at Production Laboratory Atma Jaya Yogyakarta University". He talked about rearranging the existing facility layout based on some methods such as:

- a. From-To Chart analysis.
- b. Activity Relationship Chart.

Sunandars' research will be writers' reference for determining the ergonomic factors in a working environment. Lindawatys' research will be writers' reference for evaluating sound proof room (studio) to design a voice over room. While Alvins' research will be writers' guide to analyze the relations between each existing room, define its degree of relativeness and designing the effective layout.

The entire thesis above composed by Sunandar and Lindawaty were environment design process using the ergonomic disciplines. Sunandar conducted his research by experimental design, using Purdue Pegboard with some anthropometric data and ergonomic based analysis. While Lindawaty held her thesis by hierarchy process started

from determining ergonomic factors continued with psychological aspect.

Unlike the three theses above, this research will analyze the office layout, make a new design, give adjustments and at the same time will try to put the environment design approach as well, for the physical environment, such as:

- a. Thermal comfort.
- b. Lighting level.
- c. Sound level.
- d. Color harmony.

Data needed to redesign the office layout are the existing office layout (includes height and width), relation within each room and work route within each room. While, to redesign the physical condition writer needs room temperature, humidity, air movement, lighting level, sound level, and the employees' degree of comfortness (from the questionnaire).